



SURE WATER Dawson Creek

Ensuring our future water supply

Important
survey
inside!

Ensuring reliable water supply for all uses

April 2013

The City of Dawson Creek—on behalf of all water users, including the Village of Pouce Coupe—is exploring options for the future of our water supply. Please join us April 24th at the **Community Water Security Forum**, where you'll learn about water supply opportunities and can share your input and ideas about this important community issue.

For more information visit the water page on the City of Dawson Creek website, where you'll find an informative video and an online survey to share your thoughts about the future of our water supply. You can also complete and mail the survey attached to this newsletter, or deliver it to one of the convenient drop-off locations noted on the attached survey.

WATER SECURITY: A 2013 Council Priority

One of five key priorities for Dawson Creek Council, 'water security' means ensuring a reliable supply of good quality water for all residential, commercial, industrial, and agricultural uses now and into the future. A water-secure community is also protected against the potential impacts of serious and/or frequent drought.

The current combined population of Dawson Creek and Pouce Coupe is roughly 12,000. Based on projected population growth and current

residential and commercial/industrial usage, our water supply is sufficient until the combined population reaches about 16,000. But because system upgrades take years to plan, and cost millions of dollars to build, it's important for us to start talking now about various opportunities and related costs.

To that end, the SURE WATER campaign focuses on four options that address water supply challenges. The City could:

- maintain and upgrade the existing Kiskatinaw River water supply system
- enhance the existing system with increased raw-water storage to minimize drought-related impacts and water restrictions
- tap into groundwater aquifers as a back-up to the existing source
- build a water pipeline from a new source such as the Peace River or Murray River.

Before researching any of these costly water supply upgrades, council and staff want to hear from you. The SURE WATER campaign will inform you about existing options, invite ideas about other alternatives, and provide opportunities for you to weigh in on your preferred approach.

Please read on to learn more about water supply issues and options so you can provide informed input!

Help Determine the Future of Our WATER SUPPLY SYSTEM!

Quench your thirst for info
about our water supply!

Learn more and share your thoughts
about future water supply upgrades
for Dawson Creek and Pouce Coupe.

Join us at the...

Community Water Security Forum

Wednesday, April 24th

Encana Events Centre

#1-300 Hwy 2, Dawson Creek

Open House from 4pm-9pm

(View displays and talk to staff
and experts one-on-one)

Presentations at 5pm and 7pm

(With Q&A after)

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Sustainable Development

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Phone: 250-784-3622

The water source for Dawson Creek and Pouce Coupe is the Kiskatinaw River. Based on current usage, it can meet our water supply needs until Dawson Creek and Pouce Coupe's current combined population of about 12,000 reaches 16,000.

WATER SUPPLY OPPORTUNITIES: A Closer Look

Water supply opportunities studied to date include:

- A. Upgrading the existing water supply system as needed
- B. Building a new raw-water storage reservoir
- C. Tapping into groundwater aquifers
- D. Building a new water pipeline.

Population growth projections based on two percent per year have been used to compare the lifespans of each of these options.

A. UPGRADE THE EXISTING WATER SUPPLY SYSTEM AS NEEDED

The City of Dawson Creek’s water source is the Kiskatinaw River located about 18 kms west of the city. The original water system was built in 1943 and included very little storage. In 1960, the City received a permit from the province to withdraw up to 18,000 cubic metres (cu/m) per day from the river, but no more than an annual volume of 3.3 million cu/m. Over the last 40 years, a number of projects have helped build storage capacity to 2.5 million cu/m. These include the:

- Trail Reservoir (holds enough water for about 60 days)
- Hart Reservoirs (hold enough water for about 5 days)
- Arras Weir (allows the City to draw water in times of severe drought)
- Hansen Reservoir (holds enough water for about 50 days)
- Bearhole Lake Weir (provides enough water for about 200 days).

As our need for supply and/or storage increased, the City partnered with senior governments, industry, and universities to research, design, and implement effective, practical, and affordable solutions. While upgrading the existing system could continue to meet our short-term water supply needs, there’s no guarantee this approach would accommodate future water demands or reduce the impacts of drought.

The current water supply system, with incremental upgrades, could meet

Do we continue to upgrade the existing system knowing that water restrictions might still be needed in times of drought?

residential and commercial/industrial water demands (including gas fracking) until Dawson Creek and Pouce Coupe’s combined population of about 12,000 reaches 16,000. If water use for fracking was discontinued, the existing system with upgrades could meet the residential demands of about 20,000 people.

During the last ten years, the City has invested \$7.8 million in supply-system upgrades. It is estimated that at least the same amount would be required over the next decade.

B. BUILD A NEW RAW-WATER STORAGE RESERVOIR

While the City has increased raw-water storage capacity incrementally since the system was first built in 1943, additional storage has been recommended in every engineering study conducted for the City since 1960.

To that end, former Councils approved the development of a new raw-water reservoir on the existing system that would provide storage during periods of drought and help meet water demands until the population reaches about 16,000 (with fracking) or about 20,000 (without fracking).

When full, the new reservoir (along with the existing reservoirs) would increase capacity by almost two million cu/m, which would sustain water supply at current usage for an entire year without having to draw any from the Kiskatinaw River at the Arras Weir.

Plans to proceed with the reservoir included the purchase in 2007 of 150 acres west of the city, and the start in 2012 of preliminary engineering design work to better understand the requirements and costs of moving forward with this option. The estimated construction cost of the reservoir is \$22 million, which does not include operations or maintenance costs.

Do we invest \$22 million in a new water reservoir that will reduce the impact of drought, but may not meet future water demands?

C. TAP INTO GROUNDWATER AQUIFERS

The City is also exploring what appear to be significant volumes

A Quick Look at the Four Water Supply Options	Sufficient to an estimated population with fracking	Sufficient to an estimated population without fracking	Provide water in times of drought	Rough cost to build (over 20 years)	Rough cost to operate
A. EXISTING SYSTEM UPGRADE	16,000	20,000	Limited	\$16M	Medium
B. NEW STORAGE RESERVOIR	16,000	20,000	Yes	\$22M	Low
C. GROUNDWATER AQUIFERS	Unknown	Unknown	Yes	Unknown	Unknown
D. NEW RIVER PIPELINE	26,000	32,000	Yes	\$57M	High

of water available in the Arras area aquifers, as identified by the University of Northern BC and industry partners. Storage scenarios that would boost existing supplies from the Kiskatinaw River are based on the assumption that there will be wet and dry years, or wet and dry periods within a year.

Do we continue to research the possibility of using nearby aquifers to boost our current water supply in times of drought?

In these cycles, water trapped during the wet periods could be used during dry times, as is being done on Vancouver Island. Unlike the above-mentioned opportunities, this groundwater option would meet only a portion of the City’s water supply needs, and then only during times of drought. The viability and cost for this option have not been determined.

D. BUILD A NEW WATER PIPELINE

Last October, a group of Dawson Creek residents approached Council about constructing a water pipeline from the Murray River to the Arras Reservoir. The group believes this option will eliminate the need for water restrictions during periods of severe drought, and address water supply and quality challenges well into the future.

Group members presented information comparing the water quality and supply properties of the Peace and Murray Rivers to those of our existing source, the Kiskatinaw River. Their understanding is that both the Peace and Murray Rivers provide higher volumes of better quality water, with their preferred option being the Murray River.

The group recommended that work begin immediately to develop the Murray River as a new source to supplement the existing system with an additional 14,000 cu/m per day.

The group’s long-term vision is to convert totally to the Murray River system, which would meet water demands until Dawson Creek and Pouce Coupe’s combined populations reaches about 26,000 (with fracking), and about 32,000 (without fracking).

Do we invest \$57 million in a new water source that would minimize the impact of drought and meet water demand for all uses well into the future?

The water pipeline’s estimated costs of \$1,000/metre of pipeline result in a proposed project cost of \$57 million, which does not include operating or maintenance costs.

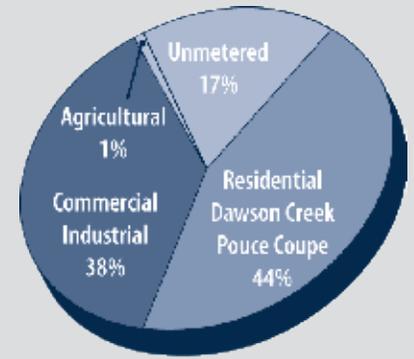
It should be noted that the Murray River option—and another one that included the construction of a water pipeline from the Peace River to the Trail Reservoir—was studied by the City in 2003. At that time, it was determined a pipeline would be too costly.

If, through this consultation process, the public prefers the construction of a new water pipeline over the other options, the City would then investigate both the Peace and Murray Rivers to determine the most effective, practical, and affordable approach.

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WATER USERS & USAGE

- Water-use statistics from 2008 show that residential use in Dawson Creek and Pouce Coupe accounts for 44% of total usage. About 38% is used by commercial and industrial users, and 1% by agriculture.



The remaining is unmetered usage and includes leakage, firefighting, and hydrant and sewer flushing.

- Current daily water demand for all residential, commercial, industrial (gas fracking) and agricultural uses for Dawson Creek and Pouce Coupe is about 550 litres per person per day. This represents about 44% of the 18,000 cu/m per day the City is permitted to draw from the Kiskatinaw River. (When the river is low—typically in late summer, fall, and winter—the City can extract only 9000 cu/m per day.)
- Our current water supply system, with no upgrades, is sufficient for all uses (including gas fracking) until Dawson Creek and Pouce Coupe’s current combined population of about 12,000 reaches 16,000.
- If fracking use was eliminated, daily per-person consumption would drop to about 435 litres, and as a result, the current water source would be adequate until 2048.

DROUGHT & OUR WATER SUPPLY

- As noted in the 2009 *City of Dawson Creek Water Strategy*, “the area is susceptible to drought. There has been concern over changes in flow patterns over the last 20 years, with very low flows in 1992 and 2002/2003. Uncertainty and supply risk will increase with climate change.”
- Since 1960, the City has restricted water use in response to drought conditions in 1992, 2002/2003, 2006, 2010, and 2012. While lawn watering was affected, there were no impacts on drinking water, water for cooking and bathing, or water for commercial/industrial use other than fracking.
- Drought led the City to prohibit fresh water use by the gas industry for a total of 60 days since 1993.
- Climate scientists predict that the long-term trend will be toward drier summers and wetter weather the rest of the year.

GAS FRACKING'S IMPACT ON OUR WATER SUPPLY

- Fracking, short for hydraulic fracturing, is a drilling technique used by the oil and gas industries to release petroleum and natural gas from shale rock layers deep within the earth. Vertical and horizontal drilling units inject highly pressurized fracking fluids (including fresh water), which creates new channels within the rock from which natural gas is extracted at higher than usual rates.
- It is believed that the use of fresh water for fracking peaked in 2010, and will continue to diminish as it has in recent years.
 - 2008: 310,000 cu/m (12% of all water usage)
 - 2009: 359,000 cu/m (13%)
 - 2010: 450,000 cu/m (17%)
 - 2011: 390,000 cu/m (16%)
 - 2012: 322,700 cu/m (13.5%).
- It is expected these levels will continue to drop as the industry moves toward water recycling and salt-water drilling solutions. The potential for new provincial or federal government or industry regulations to govern water for fracking is also very real.

RECYCLING / RECLAIMING WATER FOR INDUSTRIAL USE

In 2006, the City began looking at industrial water demands and options that would meet industry's needs without compromising its fresh water supply. The resulting Water Reclamation Project will take effluent from the sewage lagoons at the waste water treatment plant and treat it to provincial standards for water reuse.

The City partnered with Shell Canada to fund the \$18.3 million project in exchange for 3,400 cu/m of the 4,500 cu/m produced daily by the water reclamation plant. The remaining reclaimed water can be directed to other industry users.



The Dawson Creek Water Reclaimed Facility opened in 2012.

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Please note that if water users prefer either the storage reservoir option (B) or the water pipeline option (D), detailed costing would have to be undertaken to determine the level of borrowing needed. Then a referendum or an alternative approval process to gain public assent would be required before the City could proceed.

CAPITAL INVESTMENT: A Public Decision

The City built a reserve fund over the last five years of about \$5 million to help cover the cost of the reservoir project. How the money is spent will depend on the outcomes of the public consultation process and Council's subsequent decision. If water users prefer to upgrade the existing system by way of incremental improvements, the \$5 million would be used to support ongoing enhancements. If water users prefer to build a new reservoir or develop a new water pipeline, the \$5 million will go toward design and construction costs. The remainder of the money needed would be borrowed. Because of the scope of the borrowing, a referendum or alternate approval process would be needed to get public approval.

NEXT STEPS: An Informed Council Decision

Your input will help guide future decisions. If water users prefer to upgrade the existing system by way of continual improvements, the City will continue to investigate and implement appropriate actions. If residents prefer either the reservoir or the water pipeline, the City would proceed with detailed design and costing. Given the significant costs of either of these projects, a public approval process would be required to gain public assent for the needed borrowing prior to construction.

WHERE TO LEARN MORE!

Visit our water page on our website at www.dawsoncreek.ca/water/ and watch the informative video. Add your name to our email distribution list – simply send us your email to water@dawsoncreek.ca

For more information contact Kevin Henderson, Director of Infrastructure and Sustainable Development, at 250-784-3622 or khenderson@dawsoncreek.ca.

This newsletter is published by



The Kiskatinaw River originates at Bearhole Lake, about 60km south of Dawson Creek.



We need to hear from you about the future of our water supply. Your input will help us make the important decisions needed to ensure a reliable source of water for current and future residential, commercial, industrial, and agricultural uses. And it's important for us to start talking now, as water system upgrades are expensive and take years to plan and build.

Please take a moment to share your thoughts by completing and returning this paper survey, or by completing the online survey at www.dawsoncreek.ca/water.

Be sure to read our newsletter to learn more.

1. Please indicate your level of support for the City investigating future water supply options, with 1 being 'Do Not Support' and 5 being 'Support Strongly.'

Do Not Support		Support Strongly		
1	2	3	4	5

2. As you may know, Dawson Creek and Pouce Coupe have experienced drought conditions during two of the past three summers. These droughts have resulted in local water restrictions. The City is currently considering four options to upgrade our water supply system that would protect us against drought and ensure a reliable water supply for all uses well into the future. Please indicate your level of support for the following, with 1 being 'Do Not Support' and 5 being 'Support Strongly.'

A. UPGRADE THE EXISTING WATER-SUPPLY SYSTEM AS NEEDED: Make ongoing improvements to the existing system only as needed or as viable opportunities arise. This option would meet water demands for all uses, including gas fracking, until the current combined population of about 12,000 reaches 16,000. It could cost about \$16 million over the next 20 years.

Do Not Support		Support Strongly		
1	2	3	4	5

What do you think?

B. BUILD A NEW RAW-WATER STORAGE RESERVOIR: Continue to investigate construction and operating costs for a raw-water storage reservoir. This option would provide water storage during periods of drought and help meet water demands for all uses, including gas fracking, until the current combined population reaches about 16,000. It could cost about \$22 million over the next 20 years.

Do Not Support			Support Strongly	
1	2	3	4	5

C. TAP INTO GROUNDWATER AQUIFERS: Investigate costs for design and construction of new groundwater wells into the Arras Aquifer. This option could provide a back-up source of water during drought periods. Costs are unknown, as this is a relatively new and unresearched option.

Do Not Support			Support Strongly	
1	2	3	4	5

D. BUILD A NEW WATER PIPELINE: Investigate construction and operating costs for a new water pipeline from the Peace River or the Murray River. This option would provide enough water for all uses, including gas fracking, up to a current combined population of about 26,000. It could cost about \$57 million over the next 20 years.

Do Not Support			Support Strongly	
1	2	3	4	5

3. Which of these four options do you most prefer the City to investigate? Please choose only one option.

- Upgrade the existing water supply system as needed
- Build a new raw-water storage reservoir
- Tap into groundwater aquifers
- Build a new water pipeline

Why is this your most-preferred option?

4. Which of these four options do you least prefer the City to investigate? Please choose only one option.

- Upgrade the existing water supply system as needed
- Build a new raw-water storage reservoir
- Tap into groundwater aquifers
- Build a new water pipeline

Why is this your least-preferred option?

5. Gas fracking in 2012 accounted for 13.5% of all water usage. If the use of fresh water for fracking was discontinued, the capacity and lifespan of the above-mentioned options would be increased. Please indicate your level of support for the use of fresh water for industrial purposes such as gas fracking, with 1 being 'Do Not Support' and 5 being 'Support Strongly.'

Do Not Support		Support Strongly		
1	2	3	4	5

6. Studies have identified other workable measures to ensure future water supply. These include reducing the amount of water we use through education and pricing. Please indicate your level of support for the following, with 1 being 'Do Not Support' and 5 being 'Support Strongly.'

Increased public education about water conservation

1	2	3	4	5
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Implementation of water-use efficiency policies and bylaws

1	2	3	4	5
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Enforcement of water-use efficiency policies and bylaws

1	2	3	4	5
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Increased water rates and/or taxes based on a "user-pay" system

1	2	3	4	5
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7. Please indicate what you do to reduce indoor and outdoor water use:

- Use low-flow shower heads and faucets
- Use water-efficient appliances
- Water yard between dusk and dawn

- Set automatic sprinkler system according to weather conditions
- Use a rain barrel
- None of these
- Other : Please specify _____

8. Please tell us how you heard about the SURE WATER campaign and/or Community Water Security Forum?

- Dawson Creek newsletter in mailbox
- Dawson Creek website (www.dawsoncreek.ca)
- Local newspaper
- Radio
- TV
- Online news
- Word of mouth
- Social media (e.g. Facebook)
- Other: Please specify _____

9. Please indicate in which area you live:

- City of Dawson Creek
- Village of Pouce Coupe
- Rural Area

10. Do you have any other ideas for how we can ensure a reliable source of water to meet future water supply needs? Or any additional comments related to our water supply?

Please return your comments by May 10, 2013. Thank you!

- Answer online at: www.dawsoncreek.ca/water
- Email completed form to: water@dawsoncreek.ca
- Mail completed form to: City of Dawson Creek, Box 150, Dawson Creek, BC, V1G 4G4
- Drop off completed form at:
 - Dawson Creek City Hall, 10105-12A Street.
 - Dawson Creek Public Library, 1001 McKellar Ave.
 - Kenn Borek Aquatic Centre, 300 Highway 2.
 - Pouce Coupe Village Office, 5011 – 49 Ave.