



TOWN OF COCHRANE

**WATER CONSERVATION STRATEGY
2008 - 2009**

**ENVIRONMENTAL SERVICES DIVISION
NOVEMBER 2008**

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Figure 1: Cochrane Rancho House
Town of Cochrane Headquarters

Water Conservation Strategy 2008 – 2009

The Water Conservation Strategy 2008 – 2009 implements Town of Cochrane bylaws, policies, programs, and projects related to the conservation of potable (drinking) water from the Bow River by Cochrane businesses and residents connected to the municipal water supply.

As requested by Town Council, this report describes the background, objectives, programs and projects, results, and proposed future actions under the Water Conservation Strategy for 2008 - 2009. It connects the delivery of potable water taken from the Bow River for Cochrane residents to the larger efforts to protect water quantity and quality in the watershed. Detailed reports will follow on potable water consumption and the new Water Conservation Initiatives in the summer of 2008.

Background

Cochrane draws its potable water from the Bow River under a licence from Alberta Environment. The Bow River watershed is closed to new water licences, so Cochrane has to stay within the limits of that licence. With increasing population and fixed supply, residents must learn to conserve potable water, especially in the hot, dry summer months when demand is high and river flow is low. Cochrane is also dependent on the quantity and quality of water in the Bow River basin, including the headwaters. Cochrane relies on upstream water users to maintain water quality and quantity, as downstream users depend to some degree on Cochrane to do the same.

Cochrane's water conservation programs started in earnest in 1992, with the introduction of the Water Conservation Measures Bylaw. The Town of Cochrane has 16 years experience with education, communication, monitoring, and enforcement of water

conservation measures. Town staff members take a balanced and adaptive approach to water conservation, and engage all Departments and Divisions in the effort. Information and results are communicated to Council and the public from time to time during the year, and summarised in a final report in the autumn following the May to October outdoor watering season. Water consumption figures are usually reported early in the New Year, once the full year of data can be compiled and analysed.

Other Town of Cochrane management initiatives related to water conservation include:

- Stormwater management;
- Wastewater and sewage management;
- Meltwater (snow and ice) management;
- Wetlands and riparian areas conservation and management;
- Watershed management.

Objectives

The Town of Cochrane must meet or exceed the requirements of the statutes, regulations, bylaws, and policies related to potable water. This is done within the framework of watershed and land use plans.

Using a combination of communication, information, public education, community – based social marketing, and new and emerging technologies, the Town of Cochrane will ensure a safe and reliable potable water supply to meet present and future needs.

Cochrane intends to reduce its per capita residential water consumption volume from the 2004 baseline by 25% by 2009.



Figure 2: Dewey the Dewdrop
The mascot of the Water Conservation Initiative keeps Cochrane residents afloat.

Programs and Projects

During the 16 years under the Water Conservation Measures Bylaw, Cochrane has become a municipal leader in water conservation and management. Residents benefit from a combination of communication, information, education, incentives, and enforcement initiatives to raise awareness of the need for water conservation.

Water Talkers

For several years, the Town of Cochrane employed seasonal summer staff to visit residents at their homes to discuss water conservation, and to distribute water conservation kits that included outdoor tap timers, low flow shower heads, low flow aerating faucet heads, leak detection kits, and information. A special collection was established in the library and on the Town web site for those interested in learning more about water conservation. With an increasing population and areal footprint, Cochrane's "Water Talker" program was becoming less effective over time in reaching residents in the limited summer season.

Water Meters



All clients connected to the Cochrane municipal water supply, including residences and businesses, are metered. As technology improves, the customers' meters and the Town's monitoring and management systems are being upgraded. The data is collected, analysed, and mapped (with the assistance of the GIS staff). High quality metering and remote meter readers help ensure that Town staff and Cochrane residents know exactly how much water they are using, where it is being used, and are billed for that amount.

Accurate water consumption data also enables Water & Wastewater Division staff to monitor water use, identify potential problems (such as leaks or other unexplained water loss), and to effectively manage the flow, treatment, and storage of municipal water.

Water Rate Incentives

Cochrane has a Three Tier Water Rate Incentive Program, where the more potable water you use, the more you pay. The base rate and tiers are adjusted from time to time. In 2008, the rates were \$0.95 per cubic metre for the first 25 cubic metres per month, \$1.27 per cubic metre for 26-60 cubic metres, and \$1.89 per cubic metre for any volume over 60 cubic metres.

If customers wish to reduce the cost of water on their utility bills, they need only reduce the volume they consume. Clients can quickly see how effective their personal water conservation efforts are. Canadians use more water per capita than any country other than the United States, and Albertans use more water than other Canadians.



Figure 3: Looking East from Cochrane

Seasonal Outdoor Water Use Restrictions

In the dry summer season from May through October, The Town of Cochrane imposes seasonal outdoor water use restrictions, including mandatory time of day watering periods. Although most Cochrane residents use water wisely, some new arrivals may not be aware of the conservation program and, unfortunately, some people are not yet convinced water conservation is necessary or that the restrictions should apply to them. Our

mission is to educate the former and, if necessary, penalise the latter by enforcing the bylaw. Either way, Cochrane residents soon learn that the community takes water conservation very seriously.

Level One outdoor water use restrictions come into effect automatically during the watering season, starting early in May. Residents and commercial irrigators may water only from 5 a.m. to 10 a.m., or from 7 p.m. to 1 a.m. Irrigated lawns may be watered sparingly during the watering hours, and gardens or flower beds may only be watered by hand. These steps control water use, and help residents think about conserving water.

If a new neighbour is watering their lawn outside the outdoor watering hours, home owners often tell them where they are going astray and, if there is no response, they may call the Town to initiate a friendly reminder. Town employees provide information and explanations first, then a polite warning, and then, as a last resort, a bylaw violation tag.

Naturescaping

Both new and established residents are encouraged to reduce their lawn area with naturescaping or xeriscaping. A naturescaping demonstration site was established at a water pumping station in a residential neighbourhood, so residents can explore the possibilities up close.



Figure 4: Naturescaped yard in Cochrane

Rain barrel storage, drought hardy plants, and creative landscaping may reduce summer outdoor

potable water use for yards and gardens to zero. Most converts to low moisture gardening find that the time it takes to plant a drought hardy garden pays off with fewer pests, less tending time, and reduced maintenance costs. Naturescaped gardens look wonderful once they become established.

Under the Land Use Bylaw, the minimum naturescaping requirement for residential areas is 25%. Many home owners are 100% naturescaped or xeriscaped, and find that their water use is reduced significantly. Some folks with one or more rain barrels don't put a drop of municipal water on their properties all summer!

Although allowances are made for the extra water required to establish new lawns or other plantings, any new sod installations require watering permits so the water demand can be spread more evenly. The Town works with landscaping companies to ensure sod watering demand is reasonable – not concentrated in one area at one time – to maintain reservoir levels for other more important uses, such as domestic consumption and fire fighting.

Commercial properties must be 100% naturescaped. The Town works with business owners, landscape companies, and the irrigation industry to control how much municipal water is used on commercial properties. Local golf courses have their own water licences, so do not use municipal water for irrigation.



Figure 5: Downtown Cochrane

Car Washes

Commercial car washes in Cochrane recycle their wash water as much as possible. Commercial car wash effluent is directed into the wastewater system so it does not reach the Bow River. Residents are discouraged from washing their vehicles in their driveways, or from hosting community car washes to raise money, because that wash water would otherwise flow into the storm drains to the river untreated.

Parks and Playfields

The Parks and Facilities Division staff use mowing, trimming, mulching, and watering best practices to control water use on Town properties, including Smart Irrigation for parks and playfields. Hardy plants are selected wherever possible, and all beds are mulched for moisture retention and weed control. The long-standing tree replacement program uses hardy local stock wherever possible and practical to do so. Older exotic cultivars are being replaced with native prairie species when they are damaged or die off.

Millennium Creek Restoration Project

The Parks and Facilities Division also worked closely with community groups to help restore Millennium Creek, a tributary of Bighill Creek that flows into the Bow River. Restoring tributaries adversely affected by urban development improves water quality, repairs unproductive aquatic and riparian habitat, and contributes to the health of the watershed.



Figure 6: Healthy Creek Habitat

Local stewardship groups have also done streamside cleanups, bank restoration, riparian vegetation planting, invasive weed pulls, and other habitat enhancement projects over the years, and more are planned for the future.

Toilet Rebate Program

The Town of Cochrane has been paying rebates for many years so people in single and multi-family residences, schools, and businesses on the municipal water system that have higher flow toilets can switch to low flow toilets, preferably dual flush models. In the past three years, over 300 water hungry toilets have been replaced. Toilets installed after 1992 should already be low flow models, if the installation complies with the Water Conservation Measures Bylaw. Since toilets can use the most water among household plumbing fixtures, this program helps reduce residential water consumption significantly.



Figure 7: Water Treatment Plant Expansion Project

2008 - 2009 Water Treatment Plant Expansion Project

The Town of Cochrane’s “new” Water Treatment Plant began operation on April 5, 1998 in the West Terrace neighbourhood. With a minor upgrade in 2001, the water treatment plant capacity is now 11 million litres a day. Since 2001, Cochrane’s population has increased beyond expectations and, if growth continues, would put a serious strain on the water treatment plant capacity, especially during

periods of hot, dry weather. The facility has also experienced some difficulty dealing with fine sediments, which clog the intakes and filters thereby reducing flow capacity from time to time.

In 2008 a major expansion project began with the objective of increasing treatment capacity to 22 million litres a day. Once Phase Two is complete in spring 2009 and has operated for a while, Phase Three will improve residuals management and increase plant capacity by an additional 7 million litres per day, which will put the plant capacity close to 30 million litres per day.

With a \$12,170,000 budget, this is one of Cochrane's most ambitious capital projects that includes a new water intake on the Bow River, state-of-the-art filtration and treatment systems, Supervisory Control and Data Acquisition (SCADA) systems for remote operation and monitoring, and significantly increased flow-through capacity. The work is also designed to protect the Bow River from adverse effects on fish and fish habitat, and on navigation.



Figure 8: Cochrane Water Distribution System

The entire potable water treatment, pumping, storage, and delivery system also benefitted from a detailed energy audit in 2008, the results of which are already being implemented. Since the energy used to move and treat potable water in Cochrane is significant, those costs must be carefully managed.

Bow River Watershed

Although the Town of Cochrane is doing quite a lot to conserve and protect its water supply, the community is not operating alone or in isolation from its neighbours.

Town staff participate in watershed management efforts through the Bow River Basin Council, a Watershed Planning and Advisory Council (WPAC) established through Alberta Environment under the provincial Water for Life Strategy. The Bow River Basin Council is busy creating a Watershed Management Plan for the Bow River basin, an ambitious task that involves many aspects including the recently released Water Quality Objectives. The Town is also contributing to the Upper Bow Basin Cumulative Effects Study, which is examining the environmental effects of development on the headwaters of the Bow River.



Figure 9: Bow Valley at Cochrane

The Town of Cochrane is a member of the Canadian Water Resources Association (CWRA) and the Canadian Water and Wastewater Association (CWWA). Membership in national associations enables staff to share professional knowledge with their colleagues, stay abreast of new technologies and approaches, and improve their professional capabilities through continuous learning. Other municipalities in North America are interested in Cochrane's approach to water stewardship.

Closer to home, the Town of Cochrane supports the Three Creeks Watershed Partnership, which is starting work on watershed management plans for the Jumpingpound, Bighill, and Horse Creeks that flow through or near to the town site. This is a community-based

effort engaging property owners, stewardship groups, municipalities, industry, and other stakeholders who develop communication networks, conduct studies, create watershed atlases, and plan for current and future activities in the watershed.

In Cochrane itself, the Branches & Banks Environmental Foundation and the Cochrane Environmental Action Committee are very active and vocal advocates for environmental stewardship. Branches & Banks has planted approximately 30,000 trees around Cochrane in the past ten years. The Cochrane Environmental Action Committee have done everything from organizing Low Impact Development conferences to conducting invasive weed pulls. Many Cochrane residents are intensely interested in environmental issues, and are not shy about sharing their opinions. This valuable community interest enables Council to devote time and budget resources to environmental programs when other, perhaps less environmentally focussed, communities may not be so fortunate.

Water Matters



In 2008 the Town published a brochure called “Water Matters” that explained how water is managed in Cochrane and outlined plans for ensuring an adequate water supply in the future. From time to time throughout the year, more information is published in local newspapers, sometimes in specific articles and sometimes in the “Municipal Matters” feature. Other material, including copies of reports and links to relevant web sites, is provided on the Town of Cochrane web site.

What was so Special about 2008?

The Town of Cochrane faced two challenging circumstances in the summer of 2008. First, the Water Treatment Plant expansion would start in the spring and had the potential of disrupting, from time to time and hopefully at a minor level, extraction, treatment, and distribution of potable water. Second, Alberta Environment predicted lower than usual flow in the Bow River for the summer.

Water Conservation Officer Program

In response to these circumstances, and following a review of the previous summer's Water Talker program results, staff proposed a change to the summer of 2008 Water Conservation Initiative that added enforcement responsibilities for the first time. Three seasonal Water Conservation Officers (WCOs) would focus 75% of their time on education, information, and communication, and 25% of their time on bylaw enforcement from May through October 2008.



Figure 10: Talking about water at summer camp

Cochrane is the first municipality in Alberta to establish specialized WCOs with the authority to enforce water conservation bylaws. Other communities rely on their regular Bylaw Enforcement Officers or Peace Officers to do this work along with enforcing all the other laws and bylaws they are responsible for.

Formally sworn in as Town of Cochrane Peace Officers with the authority to issue warnings and violation tags, Cochrane's WCOs were trained and backed up by the regular Peace Officers. The WCO candidates were selected for their knowledge and

understanding of environmental matters, and also for their maturity and willingness to take bylaw enforcement seriously.

After the orientation and training period, the WCOs established a random patrol schedule (including evenings and weekends) so Cochrane residents would not know in advance when they might be in their neighbourhood. Using two patrol cars linked by mobile communication, the WCOs could cover a lot of territory in a short time, or park and walk through back alleys or side streets to keep an eye on watering habits both within and outside the time of day watering periods. The WCOs patrolled residential neighbourhoods and irrigated commercial / institutional facilities, but also responded to specific observations, calls, and complaints. The WCOs frequently followed up on individual locations that had received warnings in the past. All three WCOs spent a lot of time chatting with residents, providing information about water conservation and naturescaping, issuing sod watering permits, and generally raising awareness of the need for good watering practices.

The seasonal WCO office in the Cochrane RancheHouse had workstations with a direct telephone line for inquiries and complaints, and a secure cabinet for evidence storage. While in the office, the WCOs answered e-mail and phone messages, did research, developed communications materials, filed evidence, conducted equipment and material inventories, and completed routine administrative tasks. As the summer progressed, the WCOs also contributed to a draft report on their activities to summarise their



Figure 11: WCOs at Farmers' Market

experience, make suggestions for improvement, and document all the sources they developed during their term at work. Comments and suggestions from residents were also compiled and reported.

The most interesting part of the WCO job was community outreach at the weekly Farmers' Market, presentations at kids' summer camps, and attendance at special events such as Canada Day. The WCOs spoke with many Cochrane and area residents, provided lots of information pamphlets and brochures, and offered free low flow shower heads, low flow faucet aerators, outdoor tap timers, leak detection tabs, and other rewards for water conservation. The WCOs came equipped with chilled water bottled at the Water Treatment Plant (the bottles are recyclable at the Cochrane Recycling Depot), which proved to be very popular on the hottest days.

The WCOs were very popular at the kids' summer camps, especially when the water rifles came out so children could see exactly how much water it took to fill a measuring cup to one inch deep – the amount of water the average lawn might need in a week during dry conditions. Other games and challenges were equally exciting for the WCOs and the campers, all of whom ended up quite wet on the hottest days of the summer. Water Conservation Initiative t-shirts were welcome give-aways, and served to remind the children and their parents of the need to use water wisely.



Figure 12: Water Demand Meter

As recommended by a Town Councillor, The Town of Cochrane placed a Water Demand Meter sign at a prominent street corner to inform residents of the status of water consumption on any given day. Further details were available on the Town web site all summer.

Recommendations

The summer of 2008 proved that our water conservation efforts are paying off with a more informed and aware population, reduced water consumption during the Outdoor Water Conservation period, and generally positive community feedback. The WCO program should continue, so the special purpose budget has been included in the proposed Environmental Services budget for 2009. How do we build on that success?

In addition to existing programs, in future years the Town of Cochrane could:

- Offer discounts or rebates on innovative technology, such as low flow irrigation systems, weather –based watering sensors, or other incentives to conserve irrigation water (which consumes a large volume of municipal potable water during the summer).
- Subsidise the replacement of thirsty turf in a sod replacement program, in cooperation with a local nursery and / or landscaper, to change a square metre of sod to a square metre of naturescaping or xeriscaping.
- Start the WCO program earlier in April and extend it until the end of October.
- Subsidise water / rain barrels with drip irrigation systems (with a voucher or coupon, instead of buying and marketing the rain barrels themselves).
- Simplify the toilet rebate program so anyone with a high flush volume toilet can replace it more easily, no matter when their home was built or whether they prefer a low flush or dual flush model.
- Establish a conversion program for clothes washers and dish washers, offering a subsidy for anyone who switches from a high water volume machine to a lower water volume machine.



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