



# the FOSSIL WATER report

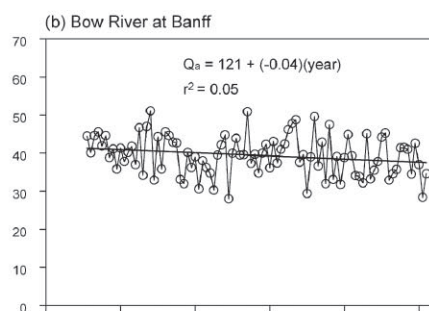
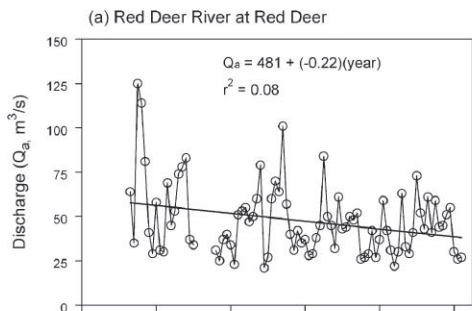
## Researchers Confirm Rocky Mountain Streams in Decline

The Rocky Mountain region is North America's hydrographic apex, with streams flowing to the Pacific, Arctic and Atlantic oceans. Stewart Rood et al<sup>1</sup> from the University of Lethbridge analyzed patterns of mean annual discharge from 31 river reaches (see map) using hydrologic records typically commencing in the 1910s up to about 2002. Overall, the rivers displayed a mean annual discharge reduction of 0.22%/year with four or the 31 rivers showing recent decline rates exceeding 0.5%/year.

The progressive decline appears to be linked to the Pacific Decadal Oscillation and longer term climate effects. It appears likely that there will be continuing decline in future decades. Historic and continuing reductions in these stream flows will impact aquatic and riparian ecosystems and diminish water supplies for irrigation, industrial and domestic use.

A decline rate of about 0.2% per year, translates to a 20% decline in stream flow over the past century. If the pattern continues, a further 10% decline might be expected by 2050. However, for some rivers such as the Castle and Oldman, the rate of decline may have accelerated over the past half-century

(0.5%/year) and therefore this future forecast may be conservative. The prospect of increasing temperatures (due to global warming) and declining precipitation and stream flows are likely to impose significant challenges on natural environments as well as water supplies for human use.



<sup>1</sup> Rood, Stewart B., Samuelson, G.M., Weber, J.K., Wywrot, K.A. 2005. Twentieth-century decline in stream flows from the hydrographic apex of North America. *Journal of Hydrology* 306 (2005) 215–233 used with permission of principal author.



## C O M P A N Y N E W S Fossil Water Helping Plan a Sustainable BC Community

Grizzly Ridge Developments is developing a portion of 3,200 acres of property adjacent to the District of Invermere in south eastern British Columbia. This region is one of Canada’s premier recreation and resort areas, known for its hot springs, mountain biking, access to Panorama ski resort and watersport activities.

Fossil Water Corporation has been working closely with Grizzly Ridge to develop comprehensive water and wastewater servicing that is compatible with British Columbia’s SMART Growth program. The strategy is being developed in consultation with the

District of Invermere to ensure compatibility with the District’s long term vision for a safe and secure water supply for the community.

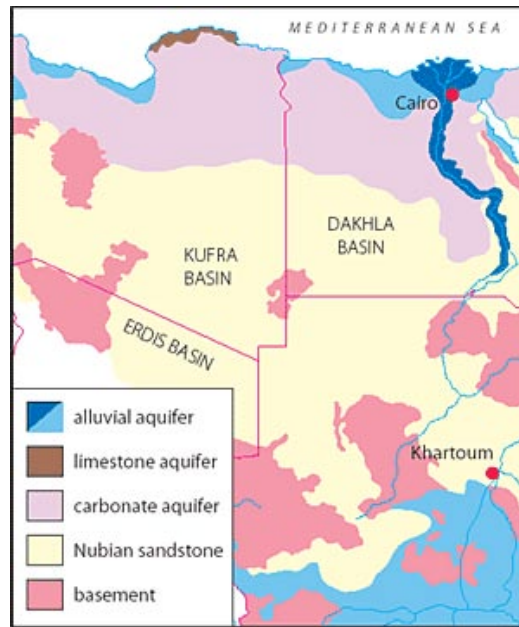
Smart Growth is a collection of urban development strategies to reduce sprawl that are fiscally, environmentally and socially responsible. Smart growth is development that enhances BC’s quality of life, protects its environment, and uses tax revenues wisely.

Smart Growth BC is a provincial non-governmental organization devoted to fiscally, socially and environmentally responsible land use and development. Working with community groups, businesses, municipalities and the public, they advocate for the creation of more livable communities in British Columbia.

## Nubian aquifer one of the world’s most important fossil water aquifers

Underlying more than two million square kilometres of land—about 20 times the area of North America’s Great Lakes—the Nubian aquifer is the world’s largest fossil water reserve. Experts estimate it holds up to 150,000 cubic kilometres of water, about 30 times more than the entire world uses today.

Only a small fraction of Nubian water now is being tapped, while more ambitious plans take shape for supplying expanding cities and new settlements. In Libya, for example, thousands of deep wells have been drilled in the desert frontier. The ambitious US\$ 25 billion “Great Man-Made River Project” pumps and pipes Nubian water thousands of kilometres to Tripoli and cities along the Mediterranean. In Egypt, wells drawing on shallower basins supply new and expanding communities in southwestern oases regions including businesses that bottle and sell drinking water from the Nubian lakes.



Though the aquifer is meeting the needs of communities throughout the region, over-exploitation poses a significant risk. The Nubian is considered a closed water system, with limited sources of replenishment. Experts say that this fossil water source is not renewable and that development must be responsibly managed in order to ensure its sustainability.





## About the Fossil Water Report

The Fossil Water Report is published monthly as a service to our clients and partners. Each issue will focus on three areas:

- (i) trends that are important to water managers in western Canada;
- (ii) perspectives from our active projects, and
- (iii) news and views regarding fossil water resources around the world.

If you would like to receive copies of our report, please contact us.



## About Fossil Water Corporation

Fossil Water Corporation provides turnkey water and wastewater solutions to the energy and development sectors. Our goal is to become part of our client's competitive advantage by delivering innovative solutions that consider the full life-cycle of our clients' projects.

Our name comes from our commitment to treat water as a non-renewable resource – we seek to unlock the hidden value in this precious resource.

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