

IN SEARCH OF
A LOST BROTHER

FRED STENSON
ON GOLF AND POLITICS

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City Versus Country



The controversial
Springbank dry dam

Chris Turner and Sid Marty
disagree on urban vs. rural life



Deliverance from Flood

Pitting city against country

By COLETTE DERWORIZ



ANDY CURTIS

WHEN THE JUNE 2013 FLOOD HIT Calgary, Tony Morris was sitting at his desk in a downtown office tower. He looked out a window and could see the Bow River was rising. Morris left work and met his family at their Roxboro home, not far from the Elbow River. They moved family photos and treasured books to higher ground, packed up their vehicles and left the neighbourhood to stay with relatives in the west end of the city. "It was surprisingly calm," he says.

The calm turned into the storm by the next morning when there were "literally rivers going down the street" and one of his neighbours had to be rescued in a boat. Morris got back in the car and drove to a ridge where he could see his family's home. Like many others, it was partway submerged.

The flooding led to the evacuation of about 100,000 people, spread destruction across southern Alberta and left a mess. Brown, muddy water filled backyards and basements. Entire homes were destroyed. Communities were cleaning up for weeks, months, even years. The disaster cost approximately \$6-billion.

As the cleanup began in the days after the flood, Ryan Robinson was at his family's home on his ranch near Springbank, some 15 kilometres west of the city. He saw the destruction on the TV news and decided he had to help. He drove to Red Deer and Edmonton, where he bought all the sump pumps and giant fans he could fit in his half-tonne truck. He loaded up and hauled it all to communities along the Elbow River.

"We believe in being good neighbours," Robinson says. He, his family and his ranchhands "spent two days in those areas, pumping out basements and giving away the fans and pumps, working like dogs to help people we didn't know."

It's unlikely Robinson ever crossed paths with Morris during the cleanup, but the fates of the city and country dwellers are now intertwined in disaster preparation. Springbank ranchers, including Robinson, are again helping Calgarians—only this time not by choice. They're being told they will have to leave their century-old ranches on nearly 7,000 acres of land so the province can build a 3,610-acre dry dam (also called an off-stream storage reservoir) as flood mitigation for Calgary.

By pitting the 22 landowners against thousands of city residents along the Elbow River, the project—intended to help Calgary better withstand a future flood—has stalled. The battle over the dry dam exemplifies the inevitable conflicts society faces in dealing with natural disasters.

NATURAL DISASTERS HAVE BECOME A TREND on the prairies—a 2016 report shows the cost of federal assistance is rising fast in the two westernmost Prairie provinces, mostly due to floods in areas where floodplain regulations

aren't as strict as in Ontario and Manitoba.

Flood zones in Toronto were mapped to a one-in-100-year flood standard after Hurricane Hazel caused major damage and 81 deaths in 1954. In Manitoba the Red River's overflowing in 1950 led to a massive engineering project, the Red River Floodway. After the river rose precipitously again in 1997, the floodway was expanded to withstand a 1-in-700-year flood. The project originally cost \$63-million but is estimated to have prevented \$40-billion in damage. Both provinces have strictly enforced building regulations in flood plains.

This hasn't happened in Alberta even though flooding on the prairies is only expected to get worse due to climate change. "The extremes we've seen recently probably would've been considered low likelihood with all of the climate models of the past decade or so. We're seeing things worse than that," says John Pomeroy, a hydrologist and director of Global Water Futures, a University of Saskatchewan research program exploring water issues. "We're not done with flooding at all. So, expect more flooding, more fires, more severe droughts—sometimes in the same year."

**"We can't encourage
development in floodways.
It's too dangerous."**

THEN-MINISTER DOUG GRIFFITHS

As an example, a record-high snowpack in parts of the Canadian Rockies in 2017 was followed by a record hot, dry summer—both extremes within just a few months. The past three summers have seen unprecedented glacier melt in the Rockies, with the Athabasca Glacier alone losing up to five metres from its surface each year.

"In just a few years since 2013, we've seen every record broken," says Pomeroy. "It's terrifying. We're into extremes now."

THE 2013 FLOOD IN SOUTHERN ALBERTA WAS THE result of a convergence of two unusually large weather systems over the Rockies, from Jasper National Park to the US border and from the Elk Valley in BC to Calgary. Three days of rain fell on a late-season snowpack, and most of it—a total of 345 millimetres—fell in an area surrounding Burns Creek, which provides the source water for the Highwood, Elbow and Kananaskis rivers. It was the eye of the storm. The Kananaskis flows into the Bow, which meets the Elbow in Calgary.

The City of Calgary takes the likelihood of more flooding seriously. Its officials have met with Pomeroy and other

scientists, crunched numbers from organizations such as the Prairie Climate Centre and NASA, and come up with a risk and environmental impact assessment to see how weather-related changes could affect the city and its residents.

"We look at heat waves, multi-year droughts, winter storms and short-duration, high-intensity storms," says Dick Ebersohn, manager of climate change and environment for the City. Some people might be happy to hear it could get hotter in Calgary, but Ebersohn notes that a heat wave combined with drought could also lead to more flooding. "As soon as you get that high-intensity rainstorm, it just thrashes down and it flows away," he explains. "This is the big challenge we have: People see these as individual pieces but we have to start understanding them together."

"Calgarians are not open to having these communities completely relocated."

CITY OF CALGARY HYDROLOGIST FRANK FRIGO

THE 2013 FLOOD REQUIRED SOME BIG decisions. Within a month of the disaster, the province declared that it wanted to move some residents out of floodplains to avoid similar damage in the future. "We simply cannot encourage development in floodways," said Doug Griffiths, at the time Minister of Municipal Affairs. "It is just too dangerous and represents an ongoing risk to all taxpayers."

The government made relocating voluntary, however, and offered only to buy out the 250 homes most affected by flooding in High River, Calgary, Medicine Hat, Bragg Creek, Black Diamond and Turner Valley. Officials added that anyone not taking the buyout wouldn't be eligible for provincial disaster relief in the future. Some residents, including the entire community of Wallaceville in High River, took the province up on its offer.

But Calgarians were less interested in the deal, with many suggesting it had come too late. "They were completely missing the mark, in our view," says Morris, who notes that only 17 of 50 homeowners eligible for the buyout in Calgary took it. "The fact is, Calgary was built at the confluence of the Bow and the Elbow, so all of downtown is at risk. Thirty-two separate communities were impacted by the floods along both watersheds, so the decision to build in these areas was made a long, long, long time ago."

After the flood, Morris became co-president of the newly formed Calgary River Communities Action Group, whose members were determined to stay in their homes. They started pushing the province on upstream mitigation options.

The government appointed a panel to provide advice. The head of Alberta's Flood Recovery Task Force, Andre Corbould, was joined by engineer and past chairman of

Canadian Natural Resources Ltd. Allan Markin, architect Richard Lindseth, and Tino DiManno, a civil engineer and VP at Stantec. The panel went on to recommend \$830-million in mitigation projects for southern Alberta. (Markin himself, probably in recognition of how long such projects take, has already built a three-metre-high floodproof wall around his Elbow Park home, which was deluged in 2013.)

The proposed projects included a dry dam at the Kananaskis Country confluence of McLean Creek and the Elbow River to protect Bragg Creek, Redwood Meadows and Calgary; a diversion channel around the town of High River; and money to study the feasibility of a tunnel to divert some of the Elbow River's flow under Calgary's 58th Avenue from the Glenmore Reservoir to the Bow River.

The province ultimately rejected the McLean Creek and tunnel projects. On the advice of a Dutch water-research firm, it decided to proceed with the Springbank storage reservoir, which was determined to have less environmental impact, less risk of "catastrophic failure," and a lower cost, and whose proximity to Calgary meant more runoff would be caught and better protection provided. It could also be built more quickly. The cost of the project, initially pegged around \$200-million, has since grown to at least \$372-million. The final cost could be higher still, although some money might be recovered by reselling unused land.

The Springbank project was initially scheduled to be complete by 2019, but it was delayed after a federal court sided with landowners in an application that argued Ottawa must make the final decision on the environmental review. This is expected to take until the fall of 2018, meaning construction wouldn't get started until later this year (if the projected is approved at all) and the dry dam wouldn't be useful until at least the spring 2021 flood season.

In the meantime, the City of Calgary has started to increase the capacity of the Glenmore Reservoir to protect properties along the Elbow River. This effort will, however, only account for a fifth of the storage required to "have even a fighting chance" to prevent the damage experienced during the 2013 flood. "The lion's share of the storage is proposed in the upstream reservoir at Springbank, which is being pursued by the province," says Frank Frigo, a hydrologist and the leader of watershed analysis with the City of Calgary. "We've worked together to provide an amount of storage that would allow the overall river system to be managed."

According to the province, the Springbank off-stream reservoir would store an estimated 70 million m³ of water temporarily during a flood. Combined with the increased storage capacity in the Glenmore Reservoir (10 million m³ in total), it would ideally prevent a flood similar to the one in 2013.

Experts admit that even these projects combined might not be enough. "It may well not be," says Frigo. "We expect that... the two pieces of infrastructure functioning together would get us somewhere in the order of the 200-year return period—but there's nothing stopping nature from producing something larger."



Left: The proposed McLean Creek dam, many rural residents' preference, was rejected by the province because it was expected to cost more than the Springbank dry dam (right) and have a bigger environmental impact, higher risk of failure and longer timeline.

AS ROBINSON LOOKS OVER HIS LAND IN Springbank, he watches ranchworkers sort about 600 head of cattle in the pens below—the same area where the reservoir would be built—and wonders why the province would bother to build a storage facility that may not even be big enough to protect the city from future flooding.

“They want to forcibly move us, bulldoze everything, turn it into a big mud pit,” says Robinson, referring to the 3,600-acre reservoir. “It’s half the size of the entire area just for water storage, and not very deep storage. It’s a pretty shallow valley, so to fill it all up would be a large amount of shallow, muddy, debris-filled water.”

He and the other affected landowners, as well as the nearby Tsuut’ina Nation, would prefer to see the province build the larger, in-stream dam at McLean Creek. “The (Springbank) project is located squarely within our traditional territory, in an area where our citizens exercise their Aboriginal, treaty and inherent rights,” said Tsuut’ina Chief Roy Whitney in a letter to the Canadian Environmental Assessment Agency. “As such, we stand to be directly and adversely affected by the project, which could permanently change the course of the Elbow River, result in flooding of areas of our traditional territory and potentially portions of our reserve lands, and alter surrounding ecosystems.”

Residents of Springbank don’t accept the province’s conclusion about the relative merits of the dry dam. “Ever since day one,” says Robinson, “we’ve been beating the drum that the alternative at McLean Creek is doable and protects more communities, like Bragg Creek and Redwood and the (Tsuut’ina) Nation. The Nation favours it; Redwood and Bragg Creek are in favour; it requires no dollars of private land to be bought. No one gets their house bulldozed.”

The McLean Creek option, however, was rejected by the province in part because it’s expected to cost \$34-million more

than the Springbank dam, to say nothing of the environmental impact, higher risk of failure and longer timeline.

The provincial government also says dry dams are just the start, and that many new approaches must be taken to manage flood risk. On the Bow River, for example, the province made a five-year deal with TransAlta to reduce the volume of reservoirs upstream of Calgary (e.g., at Ghost, Barrier and Upper Kananaskis lakes) to deal with potential flooding. The arrangement could cost the province \$5.5-million annually to compensate the company for reduced power generation, but less water will flow into the city all at once. “It means a reduction of about a fifth,” explains Frigo. “It’s a great step forward. What it really means is dealing with intermediate flood events. It’s not enough.”

The province’s Bow River working group, which has looked at other mitigation options, has recommended 14 additional measures—including more dams upstream of Calgary.

OTHERS ECHO SPRINGBANK RESIDENTS’ CONCERNS about the dry dam but would prefer the province avoid large infrastructure projects such as dams and storage reservoirs entirely, in favour of more-natural solutions. “Climate change changes everything,” says Kevin van Tighem, a conservationist and author of *Heart Waters*, a book about the province’s headwaters regions. “We can’t just go throwing money at individual problems and think that fixes them. We really need to look at integrated approaches.... Building a flood-control system like we’re planning to do in Springbank (is) like applying bandages to somebody who’s suffered a major traumatic vehicle accident.”

He notes the project only addresses flooding on the Elbow River. “The Bow watershed is much larger,” says Van Tighem.



ARCHIVE: Ready for the Next Flood? (April 2014)
albertaviews.ca/archive

"We're going to have flood events concentrated at different parts of the watershed at different times." And both are gravel-bed rivers, he says, meaning that their course changes. "It's not just the water that moves, it's the entire riverbed. Everything moves," he explains. "These systems [e.g., dams] that modify the behaviour of a dynamic system rarely deal with all the variables that come at you. We're going to have bigger bed movements in the future because we're going to have bigger floods. So, even just in the context of the Elbow, it's a short-term fix for a very specific range of potential risks."

He says the city and the province should start focusing on the condition of the headwaters landscape. "If we're going to invest vast amounts of public money or create vast amounts of public debt, we should look at what would actually turn around [the damage] we've done," he says. Our forests, for example, have been managed for timber production rather than watershed health, and wildfires have thus been suppressed. Strategically thinning out these "unnatural" forests, he argues, would address flooding and wildfire risk alike, with more snowpack collecting on the ground instead of in treetops, with the snow shaded and released into waterways more gradually.

Van Tighem also says the province should remove linear disturbances such as off-road vehicle trails and roads built for industry. "Not just reduce them, but remediate them," he says. "We need to create forest soils where they are currently compacted, and vegetate surfaces that are currently unvegetated, so that when we do get water, it is saved in the soil." In other words, water should be absorbed rather than quickly funnelling off the land and becoming a flood.

"They want to forcibly move us, bulldoze everything, turn it into a big mud pit."

SPRINGBANK RANCHER RYAN ROBINSON

THE CITY OF CALGARY'S FRIGO AGREES that headwaters protection is one component, but suggests it's part of a much larger solution that includes major infrastructure and other policy options such as land-use management and education to help citizens understand the risks. "It's unfortunate that 2013 has evoked a lot of man-versus-man conflict," he says. "I love the beautiful Bow and Elbow rivers and I love the beautiful mountain terrain that supports them, but in reality our wild natural system is prone to natural changes and we have to learn to adapt—the fact that nature itself is changing makes it more complex."

Some say that's precisely why the City of Calgary and the province need to take stronger measures to buy out homeowners and move them away from the rivers. Frigo notes the city has acquired other land for flood protection, such

as the Bowmont Park area near the northwest community of Bowness. "The city turned the entire area into park and it has used the land to build two major stormwater ponds, benefitting water quality for an urbanized area and preventing more development from coming closer to the river," he says.

But he sides with Morris, saying it's simply not practical to get every development off the floodplain in a city like Calgary. "Wholesale community land-use redesignation from a water perspective doesn't make a lot of sense from a policy perspective," he says. "Most people would accept that London is on the Thames, Paris is on the Seine. Virtually every major city everywhere throughout the world is close to water and sees some degree of risk."

"It's a really difficult and intractable discussion where you've got densely developed communities: Mission, the downtown, Kensington, Sunnyside. The value of the infrastructure that's in place and the cultural and historical resources there are really irreplaceable," Frigo says. "In the work we've done with Calgarians, they are not open to having these communities completely relocated. They are comfortable with modifications to how they look."

Others in the Calgary area, however, will need to become less comfortable. Back on his ranch, Robinson says he wishes the residents of communities along the Elbow River would at least consider other options, giving rural landowners enough respect to listen to their concerns about losing their livelihoods as well as their homes. He hopes the province's decision to build the dry dam is thwarted by the federal review scheduled to be completed this year.

"Who doesn't want to protect the city? Of course we all do," says the rancher. But he feels he and his neighbours will make a sacrifice with no guarantee of a greater public benefit. "Nobody predicted the 2013 flood. The next flood will concentrate rain somewhere else in the valley, so the concerning part for the public is that we're addressing this with an unproven, untested concept."

Furthermore, he agrees it's been an extremely divisive process: "The government's actions pit community against community." He claims no one from the province or the city has come to see what will be lost by Springbank ranchers to (maybe) protect homeowners downstream along the Elbow. He mimics what he perceives is the city's attitude: "We want to save our community, so we need you people to get out of the way."

Morris says he sympathizes with the ranchers but suggests it's about numbers—the protection of thousands of Calgarians, as well as the Stampede grounds, the Saddledome and much of downtown. He adds that a storage facility near Springbank would only be the first step in a longer process.

Frigo says there's no simple solution. "Anybody who thinks it's just a dam, or it's just education... or it's just 'buy out these properties,' is probably not looking at this in a holistic manner," he says. "If a solution were easy, it probably would have been done already." ■

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