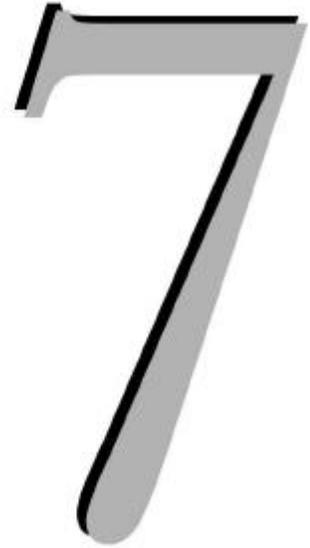


*Around the Next Bend
— the Future of the Sturgeon*



The canoe slides into the Sturgeon River. Roger Belley pushes off and starts paddling.

As parks co-ordinator for the City of St. Albert, Belley is the go-to guy for almost anything environmental in the area. He has the passion of a pastor, the body of a Hell's Angel, and a tattoo of a tree on his arm. He's also willing to do anything to promote the Sturgeon River, which is why he's commandeered two city workers and a truck to drag this canoe across town so a reporter could shoot a picture of him in it.

He says he goes out in the boat four times a year to pluck trash out of the river. "Look at these weeds," he says, lifting a tangle of them with his paddle. Weeds choke the river with excessive growth, he says, and the fuel for that growth comes from everywhere: farmers who use too much fertilizer, homeowners who water their lawns every day, cities and counties that approve housing in riparian zones. And look at how shallow the river is here, he adds. Why is it like that? Is it the gravel companies upstream? The city's own silt?

It's useless to point the finger at any one of these groups, he argues. "We're looking for someone to blame, [yet] everyone on this watershed is responsible for what is happening to it," he says.

“We have met the enemy, and he is us.”

Right now, he says, the people in the Sturgeon watershed are like 10 farmers on a common field. Each has the potential to wreck the commons, but no one is talking to each other to see how they can preserve it. The only way to break this tragedy of the commons, he says, is to work together as a commons.

No one can solve the problems we’ve identified in this story on their own. One farmer, one oil driller, one miner or one homeowner — each has the power to despoil the Sturgeon, but none individually has the power to protect it. The river doesn’t stop at the edge of their properties, and blithely ignores the jurisdictional boundaries of their governments.

This story is a list of problems in search of a solution, and that solution will by necessity require change in the way Albertans think about water in their lives. No matter what plans and policies the provincial government makes, it will not win the fight to save its waters unless it can change the hearts and minds of ordinary people. Hard choices and hard work lie ahead for Albertans if they want a future for the Sturgeon and a life forever blessed with water. Making those choices and doing that work is beyond anyone, but perhaps not beyond everyone — together, as a community. Implementing an initiative like Water for Life will mean living a life of water, one where people re-examine how they use their rivers and think and plan for the future.

In this chapter, we will briefly examine the policy, research, and financial resources the province has committed to implement Water for Life. We’ll then look around the next bend of Water for Life at the strategy’s ultimate goals, and how Albertans will have to live lives of water if they want to protect their rivers in the future.

Managing the Sturgeon, End to End

Water for Life has a lot of potential, but that's all it has right now: potential. If the province buys water licenses and takes the lead in water stewardship, it could guarantee reliable water supplies for its farms and factories. If it reconsiders its licensing system and slows down industrial growth, it can have its massive surpluses without sacrificing its environment. And if it fully funds upgrades to its water systems and continues to lead its communities towards greater water efficiency, it will forever have clean, safe water in its taps.

Realizing this potential requires political will, will that is supposed to be mobilized by the watershed planning and advisory councils. These trans-governmental forums are designed to bring people together, share resources, and create common solutions to watershed problems. Under the leadership of the Provincial Watershed Council (appointed in 2004), these groups will supposedly feature representatives from all parties in each watershed, and will hopefully create management plans detailing how each basin will use its water in a sustainable fashion.¹ Details are vague at this point, but judging from similar laws in other jurisdictions (such as Ontario's Clean Water Act), the plans would involve a full and continuous assessment of watershed conditions, a strategy for dealing with water problems in the area, and a water budget that establishes who gets what water. The councils will then hand over the plans to the province for implementation into law. There are three watershed councils in operation as of this writing (the Bow/South Saskatchewan, the North Saskatchewan (represented by the NSWA), and the Oldman), with eight more planned over the course of Water for Life.

Making the councils watershed-based makes them more accountable to residents of the watershed, say Water for Life observers, and should give the councils better knowledge of each watershed's specific environmental problems, economic resources, and political dynamics. It

should also give local residents more of a stake in water conservation plans, since they will have helped make them.

The councils have one glaring flaw: they have no power to enforce their decisions. The councils don't have the authority or the manpower to take over enforcement of environmental regulations, Tracy Scott of the NSWA explains. Instead, he says, they rely on peer pressure, public exposure and consensus decision making to push watershed inhabitants to act. Municipalities can implement decisions through bylaws, he notes, and the councils can also call in Alberta Environment for enforcement action when needed. In the end, though, the councils' power will come from the people it represents. "If the average citizen begins to understand some of these [environmental] issues and realizes that, 'Y'know, that [illegal] wetland drainage is going to hurt our water quality,' they're gonna start holding their authorities' feet to the fire and pushing their MLAs and MPs to get some enforcement." Note that it is the provincial government that has legally responsibility for the protection of Alberta's waters under Water for Life.²

Still, several persons interviewed, including Tracy Scott and David Schindler, hoped the councils would one day have enforcement powers on par with those of the Ontario Conservation Authorities, which can pass bylaws and levy fines. Water for Life spokespersons Kate Rich and Rob Harrison say this could happen, but not in the near future.

Although lacking in legal teeth, the councils do act as much-needed forums for Albertans to discuss the future of their province. "Albertans should be figuring out right now what kind of province they want because it can't continue to grow at the same rate it has been," warns Henry Vaux Jr., an international water policy expert at the University of Berkely, California. "You have to decide if you want a Los Angeles-style urban area between Calgary and Edmonton, or [if] you

want to focus on agriculture to help feed an increasingly hungry world and protecting the natural resources.”³

“Can we [afford to be] pouring a precious commodity called water on hay?” asks Lorne Fitch of Cows and Fish, voicing just one of the many water-related policy questions facing Alberta. Should farmers grow water-intensive crops like potatoes and sugar beets in the water-scarce south, especially since most of them and the water they contain are being exported out of the province? Should homeowners water their lawns all day with tap water, or should they use rainwater or treated sewage instead?

Each watershed has different problems and resources, and will answer these questions in different ways. The Water for Life Strategy should eventually create a council for every watershed in the province to answer those questions. If local residents have their way, one of those watersheds will be the Sturgeon.

In June 2005, a group of about 50 environmentalists, including many of the people interviewed in this story, proposed the creation of a Sturgeon Watershed Advisory Council, designed to help the people of the Sturgeon pool their resources to protect their rivers. The council was still in the preliminary stages as of this writing, but seems to have the support of many Sturgeon residents and the NSWA.

“We’re asking the 10 farmers to come into a room,” Belley says, referring to the metaphorical tragedy of the commons. “We’re saying, ‘Let’s look for solutions together.’”

“I have seen with my own eyes kids jumping off the trestle bridge [in St. Albert] into the water,” he says. “What will it take for us to swim in the Sturgeon River again? What will it take for us to see abundant schools of fish in there?”

The Search for Answers

A few blocks upstream, one person is searching for an answer to that question.

Dave Burkhart sweeps through the man-high grass by the Big Lake Environment Support Society (BLESS) Summer Nature Shelter on the banks of the Sturgeon. He's looking for signs of an experiment BLESS started in the spring.

He finds one at last: a slender willow frond, just a foot high, marked with a yellow tag. A tiny green shoot sticks out of it, showing that it has taken root.

The frond is part of the River Edge Enhancement Project (REEP), a joint project between BLESS and the City of St. Albert to restore natural vegetation to the riverbank in the city.

The frond was part of an experiment to see what kinds of plants they should use. Results were mixed, Burkhart says; half the fronds died, but since some survived, the experiment suggests that REEP could take root.

A tree-filled riparian zone would reduce soil erosion and fertilizer runoff, increase shade, and enhance fish and wildlife habitat in the river, Burkhart says. City Council agreed to fund some of the project in fall 2005, and planned to plant a small demonstration garden in summer 2006 to continue the experiment.

REEP is just one example of some of the basic research Albertans need to do in order to make Water for Life work, and that the watershed councils will hopefully co-ordinate. Effective water management needs to be backed by hard science, and right now the province's backup has some huge holes in it. Scientists think the province have more groundwater than surface water, for example, but don't know where it is, how quickly it's disappearing, or what's affecting it.⁴ Alberta Environment has just 300 test wells to monitor the province's entire groundwater supply, about half the number Manitoba has.⁵ The NSW report identifies similar gaps in the province's

knowledge of freshwater fish, plant life, land use, cattle density, and water quality — in fact, Alberta Environment and Environment Canada have a mere five stations monitoring water quality in the entire North Saskatchewan basin.⁶

The Bow, North Saskatchewan, and Oldman councils have all completed comprehensive environmental assessments of their watersheds, giving them the baseline data they'll need to create water management plans. The Bow basin council has assembled a draft water management plan based on this data, and should have it finished in the next few years.⁷

Alberta's watershed councils are also fleshing out their knowledge of wetlands and riparian zones (the sponges and filters of watersheds). The province is currently working on a wetlands inventory and management strategy, and should have both ready in a few years. Tracy Scott of the NSWA applauds this. Currently, he explains, the province does not have a comprehensive map of its existing wetlands, or any idea of how much wetland it has lost to development. Evidence suggests that the province has already lost an immense amount; one study found that Calgary had eliminated 90 per cent of all wetlands that existed in its boundaries before settlement in just over a century.⁸

The Search for Cash

This research will need a lot of money, and Lorne Fitch of Cows and Fish says he's not convinced the province will spend it. "Success comes in dollars, and I haven't seen much evidence of a volume of money being put into [Water for Life] to make it functional."

As discussed, watershed management won't come cheap; Alberta needs hundreds of millions of dollars to upgrade its water systems alone, and more on top of that to buy land and compensate farmers and industrialists to protect its river ecosystems.

The province claims it will spend about \$1 billion on Water for Life over the next decade. According to spokesperson Kate Rich, the province has spent about \$18 million so far, and has budgeted about \$80 million for 2005–06 (most of which will go towards regional water systems). She adds that this is in addition to funds the government is already directing towards water management (such as the daily operations of Alberta Environment). A chunk of this money (about \$8 million) went towards the Alberta Ingenuity Centre for Water Research, a partnership between the universities of Calgary, Lethbridge and Alberta designed to bring together the

A billion. . . is that a lot?

It's hard to say, since we don't know the extent of Alberta's water problems yet, and there aren't many programs we can compare it to.

The most comparable case is probably New York City. It budgeted about U.S. \$1.5 billion over 10 years to manage its water from the Catskill Mountains. About a quarter of that (about \$250 million) went towards buying land from farmers to protect riparian zones, and another quarter went towards public education, partnerships with environmental groups and upgrades to water systems (Winfield and Benevides 18–20; World Water Assessment Programme 178, Postel and Richter 174).

On one hand, New York is much smaller than Alberta, implying that the province is not spending enough. On the other, New York has about three times more people than Alberta, suggesting that Alberta is spending too much.

A billion dollars isn't a huge chunk of Alberta's wealth, but it is still a significant one.

province's top minds to do the research on watersheds, water ecology, drinking water, and economics.⁹

Seeking the Right Price

Increasingly, those top scholars are saying that economics will play a critical role in resolving the province's water crisis.

Here's a quick economics lesson. The world, as we've mentioned, has a finite supply of water and an infinite demand for it. According to economic theory, supply falls as demand rises, and to regulate both, you set a price. Ideally, you want to set your price at the exact point where demand and supply intersect; any higher, and you have excess supply (bad, if you want maximum

productivity); any lower, and you have excess demand (also bad, due to shortages).

Economists say the world has a water crisis because it has set the price of water too low, creating excess demand and water shortages. Indeed, traditionally, most people say water should not have a price at all; it should be “free.” Unfortunately, since people use prices to judge value, saying that water is “free” implies that there is no cost to using or abusing it — “priceless” means “worthless.” Surprising as it sounds, some of the greenest people and groups out there, including Postel, Schindler, and the United Nations, say that the best way to protect the world’s priceless water resources is to put a price on water.

The technical term is “full-cost accounting,” explains Christine Brown, an economist and councillor for the City of St. Albert. It’s a simple concept: the money you pay to use a unit of water should cover all the costs society incurred in producing that unit for you.

When you pay your water bill, you’re not paying the full cost for your water. The utility excludes many costs incurred by the government, the company, other people and the environment in producing your water, so it subsidizes your water use.

Say, for example, you buy 100 litres of water to wash your car. In doing so, you don’t compensate your neighbour, even though she doesn’t have those 100 litres for her car now that you’ve taken it, nor do you pay for polluting the water with soap and dirt (unless you break a pollution law), even though you’ve made the water unfit for human use, contributed to algae blooms in local lakes, and probably reduced fish habitat. Nor do you have to pay for

The cost of cheap water

When utilities charge less than the full cost of their water, they don’t get the money they need to keep their delivery systems running smoothly.

The National Roundtable on the Environment and the Economy (an independent federal advisory board) says that Canadians will have a water maintenance debt of about \$70–90 billion by 2016 (Brandes and Ferguson, *Flushing*, 22).

wear-and-tear on the sewer system or investments in purification systems to clean the water when it returns to the treatment plant. All you actually pay for is what the water company decided to charge for delivering the water to your door, and (as discussed below) that price is often set artificially low.

When the price is wrong, people don't treat water right, and waste it in extravagant ways. Canadians waste a tremendous amount of water. Canada ranks 28th out of 29 in terms of water withdrawn for all purposes among OECD¹⁰ nations — only the Americans take more.¹¹ Even if you cut out everything but domestic use, Canadians are still just as bad, using an average of 335 litres per person per day for domestic purposes, more than the U.S., Australia, Japan, Belgium, Denmark, France, and the U.K. Canadians also flush about a third of that water down the toilet (four times more than rest of the world).¹² And Canada has been getting worse over the years; its overall water use shot up 26 per cent from 1980–2001. In contrast, Sweden, Denmark, Poland, and the U.S. all cut their use over that same period.¹³

How much for a cubic meter?	
According to Alberta Environment. . .	
A cubic meter of costs
Water (in Edmonton)	\$1.14 (per cubic meter)
Coca Cola	\$700 (at \$0.25 a can)
Skim milk	\$880 (at \$0.88 a litre)
Tim Horton's coffee	\$3,800 (at \$1.14 a cup)
Gasoline	\$700 (at \$0.70 a litre)
Bottled water	\$2,000 (at \$2.00 a litre)

“We’re the cheapest in the world right now,” in terms of price per litre, says water expert Kevin Hall, professor of environmental engineering and head of the Centre for Water and the Environment at Queen’s University, Ont. In Canada, he notes, a cubic meter

of water costs about 40 cents. “That’s like 2,000 bottles of Dasani,” he notes, referring to the bottled-water brand. In Europe, it’s about six dollars. “What’s wrong with that picture?” he asks.

The cost of commercial water in Alberta also makes for a strange picture: it's free. Currently, notes Alan Hingston of Alberta Environment, it costs zero dollars to divert any amount of water in Alberta. The government charges about \$90 in administrative fees for a license to divert up to 63 million litres of water, he says, but nothing for the water itself.¹⁴ Nor does it charge for what's done to that water: you can inject it underground for thousands of years or fill it full of urban and agricultural pollutants, and as long as you don't break the law, you can harm the environment for free.

Giving people a free ride on pollution subsidizes their water use, encouraging waste and inefficiency, say people like Maurice Strong (a member of the World Water Commission). There are all sorts of water-saving technologies out there, Strong argues, but they're expensive, and people won't buy them unless water is also expensive.¹⁵

People also lose a tremendous amount of money to water waste. The ecological services provided by the world's rivers are believed to be worth about \$16–54 trillion a year (roughly equal to the world's total economic output in the mid-'90s), yet the world attaches almost no penalty to water uses that threaten those services.¹⁶

If people charged a proper price for water, economists say, they'd save a lot of it. Slapping a bigger price tag on water will help people better gauge the value of what they use and how they use it. For example, most Sturgeon residents pay about \$1.14 for a cubic meter of water, according to EPCOR, or more than twice the Canadian average. Not coincidentally, Sturgeon residents use less water — about 279 litres a day for food, drink and other chores, or about half the

Water-smart Edmonton

A study of 20 major Canadian cities by Brandes and Ferguson found that Edmonton was the fifth-most water-efficient city in the country, coming in behind Winnipeg, Iqaluit, Yellowknife, and Charlottetown. Calgary placed 15th, and St. John's was last (*Flushing 27–28*).

Canadian average.¹⁷ They're also charged on a volume rate (use more, pay more), not a flat one, and Environment Canada studies suggest that communities that charge a flat rate use 74 per cent more water than those that charge volume rates.¹⁸ Those same studies also suggest that water use goes down as the number of water meters goes up, suggesting that monitoring deters use.

Edmonton, for example, uses about 198 litres per head per day and has 100 per cent metering; Calgary uses about twice as much at 339 litres and has about half as much metering at 57 per cent.¹⁹

Unfortunately, Brown notes, a proper, full-cost price for water would probably be really, really high, possibly too high for most politicians to stomach. Researchers have yet to agree on how to calculate full-cost (what should you charge for habitat degradation, for example?), but one study estimates that the full cost of water would be about 16 to 55 per cent higher than what most jurisdictions currently charge for it, depending on how it was calculated, meaning that a typical water bill would almost double in size under a full-cost system.²⁰

The easiest way to charge the full cost of water, Brown says, would be to pick a target for water consumption and to raise the price until we hit that target. By setting a price, she says, you acknowledge that water actually has value and does need to be respected. The price set (and the amount of conservation achieved) would reflect the value placed on water, and help people make more rational decisions on its use. Other thinkers have suggested taxing certain uses of water (i.e. wasteful ones) more than others or tacking a per-litre charge onto every water license.

There does seem to be some support amongst Canadians for higher water prices; one survey found that 60 per cent of respondents in western Canada agreed that their government should charge them the full cost of water (although it did not investigate how respondents defined "full cost").²¹

Many Alberta communities have already recognized the costs of undercharging for water, and have started cutting back their use. Edmonton, for example, has saved about \$150 million in expansion costs to its water and sewer systems through widespread water education and higher-than-average water prices.²² Drumheller, famed for its dinosaur bones, spent \$220,000 on low-flow showerheads and saved \$2 million on water upgrades. Cochrane, a small southern town known for its ice cream, cut its consumption by 15 per cent using a similar strategy, eliminating its need to build a multimillion-dollar water pipeline.²³

The official provincial waterworks study found that there was immense potential for Albertans to improve their water efficiency. Tuscon, Arizona, it pointed out, actually uses less water than Lethbridge, Alberta, despite its drier climate. The study said a 16 per cent reduction in Alberta's overall water consumption would cut maintenance costs by about 16 per cent.²⁴

Technically, Hall says, Canadians don't have to reduce their water use. "From an engineering perspective, we're pretty smart," he says; we can treat, collect, and move enough water to suit even our most extravagant needs. "That's not the issue. It's a question of, one, should we do that, and two, who's going to pay for it?"

"We're custodians of all this water," he says. "Is it ours as Canadians to trash and pollute?"

A Life for Water

Everything about Water for Life, Belley says, is all about getting people to ask questions like that and to take another look at the place of water in their lives. "The [NSWA] is asking all of us, 'how can we be 10 per cent better?'" People need sand and salt on winter roads, he says as an example, but could use less of it (and save money) if they drove more safely and took the bus

to reduce traffic. “Yes, we need gravel, but do I really need a pad for my motor-home that’s 100 by 20 feet?”

Effective watershed management, he argues, does not come through a flood of legislation, but through the drip-by-drip process of individual change — people collecting rainwater for their lawns, cottagers learning about riparian zones from groups like Cows and Fish, and young children planting trees and painting yellow fish on sewer grates (advising people not to dump chemicals down them).

The ultimate goal of Water for Life is embedded in its name: having water for life means living a life of water, one where we treat it as we would life itself, which it is. The rapid development and wasteful practices we’ve seen in the last few chapters strongly suggest that we are not doing this. We are promoting our own economic growth at the expense of our water systems.

In our quest for better living standards, writes Sandra Postel, the nearest thing the water world has to a philosopher, we have come to view water as a resource there for the taking, rather than a living system that powers the natural world we depend on.²⁵ Managing water like this, she argues is “like cutting off the flow of blood to one part of the body in order to send it to another — the living entity suffers, and depending on where the diversion takes place, may not survive.”

She is one of the many scholars (including Schindler and de Villiers) calling on people to adopt a water ethic, a lifestyle that makes the protection of water ecosystems the central goal in all they do, and that values people and the natural world in equal measure.²⁶ Until people start treating water, lakes, and rivers as living things to be respected, rather than resources to be exploited, she argues, they will not be able to use them in a sustainable way. Postel says current water policies and licensing systems put human needs above ecosystem survival; if industries

need water, they divert more of it, without necessarily thinking of the consequences for the environment. The ecological disaster of the Aral Sea (drained to near-nothingness by irrigation diversions) is just one example of this, she says.

Postel argues that adopting a water ethic would mean protecting water whenever possible by doing all the good environmental practices identified in this work: preserving riparian zones, installing low-flow showerheads and not injecting water deep underground. On an individual level, this would mean people reducing their individual impact on their watersheds (e.g. showering for 10 minutes instead of 20).²⁷ On a government level, it could mean creating an “ecosystem support allocation,” a designated quantity and quality of water set aside for the environment that has priority over all other allocations except those for basic human needs.²⁸ She asserts that these changes would legally and symbolically put water and human life on equal footing, institutionalize the protection of our water ecosystems, and preserve our waters for the future.

Some Sturgeon residents have adopted Postel’s *Tao* of water, and have started changing their lives to protect the river. Roger Belley, for example, used to be a green-lawn guy. “When I lived in Morinville [north of St. Albert] I wanted the greenest, richest grass in the neighbourhood,” he says, and would throw on the sprinkler as soon as he got home from work. Years of working with and learning about the environment convinced him to change his ways. Today, he doesn’t water his lawn at all — he’s replaced it with natural vegetation that not only needs much less water, but also (in this writer’s opinion) looks a heck of a lot more interesting. It’s called xeriscaping, he says, and it’s catching on in North America.

Blodgett has gone further than most in adopting a water ethic. She says she sees herself not just as a resident of the Sturgeon, but as a part of the river itself. “I pretend I’m a molecule of

water or a fish,” she says, “and I imagine what’s happening to me when I’m in that river. I look at it from the inside.” That perspective has motivated her to become a more active citizen, one who questions local officials constantly and tries to hold them accountable for their actions. “You can’t be an environmentalist without being an activist,” she says, “since [what happens to the environment] affects our children.”

People like Belley and Blodgett are a rarity right now, but there are signs that the ethic of water is taking root in Alberta. The Oldman River Dam Advisory Committee (located in the South Saskatchewan basin), for example, monitors the operations of one of Alberta’s largest water diversion projects (the Oldman River Dam). It found that the protection of the Oldman River’s riparian and aquatic environments should be the dam’s top priority — a surprising conclusion, considering the dam’s original purpose was to support local farmers — and that in times of drought the dam’s water supply should go towards maintaining the river’s health before any license holders.²⁹ Water for Life itself promotes a water ethic by putting environmental protection on the same footing as economic growth and emphasizing that human success depends on watershed health.³⁰

Belley adds that he’s seeing more and more people coming to him and asking how they can help protect the Sturgeon. Recently, for example, he helped the St. Albert Fish and Game Association weed 70 bags of thistle out of the Sturgeon. The group had approached him to ask what they could do to protect fish habitat in the region.

“We are now talking about something called ‘Thistle Dismissal,’” Belley says, “where you may win \$1,000 if you produce a certain amount of thistle from our river. That is how determined these folks are to protect it.”

Blodgett is similarly proud of the small army of volunteers that watch over the Sturgeon in St. Albert. Years ago, she recalls, she stood on the BLESS Observational Platform and saw that Big Lake was full of trash, some of it so covered with algae it looked almost alien. “So I said, ‘Okay, let’s play a game: what is that unidentified submerged object [USO, a play on UFO]?’” That joke spurred the creation of the Spruce Up the Sturgeon cleanup, which attracts about a hundred volunteers each year.

“There is something out there called, ‘community,’” she says, “and when it happens, it’s amazing.”

The Next Bend

The fate of Alberta’s waters lies largely in the hands of its people. Through their sewage, industries, and farms, they can drain and despoil them; through their technology, ingenuity, and conservation, they could save them.

Sturgeon residents can make the Sturgeon River ‘mighty’ once again, Blodgett says, but it will take time. She notes that after 40 years of cleanup people can now swim in parts of notoriously polluted lower Hudson River in New York, something that hasn’t been possible for almost 50 years.³¹

“If my father got fish back into the Thames River [in England] after the war, we can save this river,” she says.

How ‘mighty’ depends on how much time, money and effort residents put into it, and how much Mother Nature co-operates. By the early ‘80s, for example, unchecked economic growth had changed the Rhine River into the sewer of Europe. Agricultural and industrial effluent had killed off about 23 species of fish in the river, and oxygen levels were so low

biologists declared the river ecologically dead. The coup-de-grace came in 1986 when the waters literally ran red due to a massive chemical spill, one that obliterated the river's fish and made it undrinkable. But the Europeans sprang to action. United under the International Commission for the Protection of the Rhine, they created an international management plan for the whole river, restored wetlands, removed dams and slashed pollution however they could, spending billions in the process.³² Four years later, fish had returned to the river.

Residents will probably never see lake sturgeon in the Sturgeon again, say local scientists, unless natural flows in it rise dramatically, but they could see more of other fish and wildlife by protecting riparian zones, reducing withdrawals, better cleaning their wastewater and better educating people about the river's importance.³³ It could take millions of dollars. It could take years. But it could, given enough of both, work.

Lake sturgeons are actually a lot like the Sturgeon River: they're old, ugly as heck, and a vital part of the Sturgeon's heritage and environment. The fish are almost crocodilian in appearance, with tiny eyes, a big, flat long snout, and rows of shield-like plates covering their bodies.³⁴ Yet they're also capable of shows of great beauty, often rocketing right out of the water, the sun sparkling on their smooth skin.³⁵ It was the great numbers of them and other fish that drew settlers to the Sturgeon a century ago — indeed, since they live for over a hundred years, some of the sturgeon today may have witnessed those early days. Today, they are almost gone from Alberta due to pollution and over-fishing, but if Albertans change their ways, and take care of their waters, they may yet survive.

We can't say at this point what lies ahead for the sturgeon, the Sturgeon, or Water for Life — it's simply too early to tell. We don't know how much it will cost to restore Alberta's

watersheds, or how soon doing so will have an effect. But we do know the power of collective action.

Water for Life is not the solution to Alberta's water crisis — it is a call to arms to find one. It is a challenge to Albertans to recognize the fact that, for the first time in history, human activity is determining the fate of the world's water supply, rather than just nature.³⁶ Albertans have the money, technology, knowledge and manpower to protect their waters for future generations, and could use Water for Life as a forum and structure to channel them through. None of that will happen, however, unless they and the residents of the Sturgeon recognize the importance of water in their lives and to will their leaders and themselves to action.

Epilogue

Robert Lema wades out of the Sturgeon River, headed home. He reaches down into the toe-deep water and picks up what looks like a black skipping stone: a freshwater clam. It's been eaten, he notes, but it's a sign of life that was once here, and, perhaps, could come again.

“The river is part of my life,” he says. “People live here because of it.”

¹ Alberta, *Water for Life*, 15–19.

² *Ibid.*, 15.

³ Quoted in Grady Semmens, “Growth Threat to Water Supply: Alberta Must Choose Urban or Rural Future,” *Calgary Herald*, 15 July 2004, A1.

⁴ Alberta Environment, *Water for Life: Facts and Information*, 9–12.

⁵ Andrew Nikiforuk, “Coal Bed Worries Addressed Slowly,” *Calgary Herald*, 10 March 2006, A24.

⁶ Aquality Environmental Consulting Ltd., 165–167.

⁷ Alberta Environment, *Report on the Implementation*, 44–46.

⁸ *Ibid.*, 22.

⁹ Alberta Environment, *Report on the Implementation*, 35.

- ¹⁰ Organization for Economic Co-Operation and Development, which includes most of the world's rich industrialized nations.
- ¹¹ David R. Boyd, *Canada vs. the OECD: An Environmental Comparison*, Victoria, B.C.: University of Victoria 2001, 14.
- ¹² Catley-Carlson, 212.
- ¹³ Boyd, 14.
- ¹⁴ According to Brooymans ("Oil and Water"), this fee rises incrementally based on volume, topping out at \$1,500 for 12.5 billion litres. Users are charged \$15 every subsequent 125 million litres withdrawn.
- ¹⁵ Quoted in de Villiers, 400–404.
- ¹⁶ Postel and Richter, 9.
- ¹⁷ Based on data for Sturgeon County, St. Albert, Gibbons, Bon Accord, Morinville, Legal, Bonnyville No. 87, Bonnyville, Barrhead, Westlock, Stony Plain, Spruce Grove, and Parkland County. Wilke, 11.
- ¹⁸ Environment Canada, *Municipal Water Use 2001 Statistics*, Ottawa, Ont.: Environment Canada 2004, 3–4.
- ¹⁹ Environment Canada, *Municipal (Water) Use Database*.
- ²⁰ Steven Renzetti and Joseph Kushner, "Full Cost Accounting for Water Supply and Sewage Treatment: Concepts and Case Application," *Canadian Water Resources Journal* 29.1 (2004): 19.
- ²¹ Robert Roach, Vien Huynh, and Sarah Dobson, "Drop by Drop: Urban Water Conservation in Western Canada," *Western Cities Project Report* 29 (February 2004), 6–8.
- ²² *Ibid.*, 8.
- ²³ Brandes and Ferguson, *Future In Every Drop*, 4.
- ²⁴ Drachenberg and Suthaker, *Waterworks Facility Assessment Report*, 5–10 and 5–11. They report that Albertans use 450 litres of water per person per day overall, an estimate which includes commercial and domestic use.
- ²⁵ Postel, *The Last Oasis*, 19. de Villiers describes Postel as "the nearest thing in the water world to a philosopher" (4). Barbara Ward (author of *Only One Earth*, 1917-1981) could also be considered a water philosopher.
- ²⁶ *Ibid.*, 184–185.
- ²⁷ *Ibid.*, 189.
- ²⁸ Postel and Richter 37–38.
- ²⁹ Oldman River Dam Environmental Advisory Committee, *Final Recommendations*, Lethbridge, Alta.: Oldman River Dam Environmental Advisory Committee 2001, 4–7.
- ³⁰ Alberta, *Water for Life*, 6.
- ³¹ Lisa W. Foderaro, "Come On In, The Hudson's Fine," *New York Times*, 30 July 2005, B1.
- ³² de Villiers, 91–94.
- ³³ Summarized from interviews with Thorsten Hebben (Alberta Environment limnologist), David Schindler, and Dan Stoker (biologist with BLESS).

³⁴ Suzanne Earle, *Alberta Wildlife Status Report 54: State of the Lake Sturgeon (Acipenser fulvescens) in Alberta*, Edmonton, Alta.: Alberta Sustainable Resource Development 2002.

³⁵ Nelson and Paetz, 102–103.

³⁶ I.A. Shiklomanov, “Introduction,” *World Water Resources at the Beginning of the 21st Century*, I.A. Shiklomanov and John C. Rodda, eds., Cambridge, U.K.: Cambridge University Press 2003, xi.