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ALBERTA WILDERNESS

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\$1,000,000,000+ Meridian Dam Proposal Returns

There are three major grassland areas remaining in Canada. One of them could end up under water. Alberta's Minister of the Environment, Lorne Taylor, appears able and willing to overlook issues in health care, education and poverty to spend one billion dollars on the Meridian Dam irrigation project, in order to benefit approximately fifty farms. Amongst these farms, support of the project is not even unanimous.

"What you have here is a clash of fundamental values," says AWA president, Cliff Wallis. "The government values business and agriculture over the environment. Alberta lets business take care of business everywhere except when it comes to agriculture. There is nothing else the government subsidizes as heavily."

A \$100,000 feasibility study is underway, 75% of which is to be paid by Alberta, the rest by Saskatchewan, to be completed by the end of the year. The consultants were not chosen through public tender, ostensibly to save time. There will be up to six stakeholder meetings in which the public can participate. The dam is being promoted primarily by a group called the Meridian Water Resources Association based in Medicine Hat, with support from individuals and local governments in both provinces.

Mark Cooper works with communication in Lorne Taylor's Edmonton office. When asked what comes after the feasibility study he stressed, "This is just a **pre-**feasibility study, we are looking at the conceptual stage with cost benefit analysis, environmental issues and legislative requirements."

When asked how many farms they anticipate the dam benefiting he responded "That is not yet determined; it would be part of the cost analysis." He went on to conclude, "There has been talk of this dam for years and it's time to make a decision one way or the other by laying everything on the table and moving ahead."

Indeed, it was first proposed as part of a Prairie Provinces water management plan in 1972 and would have cost around \$111 million. That rose to \$300 million by 1985 when the proposal resurfaced. Then there was a proposal for a June 1997 pre-feasibility study by the Meridian Dam Association out of Medicine Hat that was apparently never followed up on. Within two months of Lorne Taylor being appointed to the environment he okayed another study. The two proposals are strikingly similar. But today the dam is expected to cost about a billion dollars.

Walter Dybvig, vice-president of the provincial water management agency, Sask Water, has stated that the Saskatchewan government does not consider it to be a practical project. "It is very expensive, has the potential to create significant environmental impacts and would have a very negative effect on the availability of water in Lake Diefenbaker", the reservoir created by the Gardner dam in 1967 for irrigation. They are waiting for the results of the feasibility study.

CFB Suffield is also concerned about the Dam and its associated reservoir because of its live ammunition training. Although the public is currently allowed to travel the South Saskatchewan River, they are not allowed to stop on military land. The creation of a lake might make it harder to ensure the public's safety.

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CFB Suffield is under the jurisdiction of the federal government. The federal government can intervene in the Meridian Dam decision because it will flood federal land and interfere with a navigable waterway that crosses provincial boundaries. River flows have been reduced in recent years to close to the minimum 42.5 cubic metres per second that Alberta is required to send downstream to Saskatchewan under a 1959 federal agreement (Saskatoon Star Phoenix, May 28, 2001).

What We Stand To Lose

The proposed site of the Meridian Dam is on the South Saskatchewan River valley near the Alberta-Saskatchewan border (see map). The dam will create a reservoir 150 kms long and a kilometer wide backing up water almost to Medicine Hat. The reservoir will submerge two long coulees within the Prairie Coulees Natural Area and part of the proposed Suffield National Wildlife Area.

Biologist Gary Trottier says, "There's going to be major, major impacts on the natural resources of that river valley over and above the loss of the scenic situation." Stephan Legault adds, "The South Saskatchewan is the best example of a canyon ecosystem we have. Currently, 95% of the prairie ecosystem in Canada is gone, this will destroy another large part."

"The South Saskatchewan River valley has a very narrow floodplain, there are not extensive cottonwood forests as there are along some other rivers in Alberta, but those thin bands of cottonwoods are very rich in terms of supporting biological communities, "says Dr. Stewart Rood, a river researcher at the University of Lethbridge who has studied the effects of dams on rivers.

"What may be most distinctive about that river valley," adds Rood, " is not the floodplain woodlands but instead a number of springfed woodlands and wetlands along the south banks. There, water from distant sand hills weeps out and supports some very rich patches of wetland and riparian areas. These are relatively distinctive, they're very uncommon and they're quite rich in terms of biodiversity. So we have a type of ecological zone in the South Saskatchewan canyon that is quite unusual. Relative to their value, it's hard to know how to evaluate plants, wildlife, aesthetics and recreation, and all these are typically undervalued in a traditional benefit-cost analysis."

The South Saskatchewan canyon currently provides a nesting area for rare birds of prey including Prairie Falcons, Hawks and Golden Eagles. Additionally it is a feeding area for American White Pelicans and is key Mule Deer and Antelope habitat. Of huge importance is the fact it has the largest and highest density of over wintering areas for large snakes in Alberta and possibly Canada. It is also home to several endangered animal species such as burrowing owls, the Great Plains toad and swift foxes.

The river has great potential for eco-tourism. "In my own view," says Stewart Rood, " the South Saskatchewan valley has many similarities to the Upper Missouri River valley that has become an international focus for extended canoe tripping. People come from across the continent to paddle the Upper Missouri in Montana. In my view, the landscape of the South Saskatchewan is as impressive and the river trip is as desirable."

Benefits versus Costs

The Meridian Dam is expected to irrigate up to 160,000 hectares, create a lake-based recreation industry in the area and provide up to 325 megawatts of power. In comparison, the Revelstoke Dam provides 2000 megawatts of power. However, in order to increase profits, Revelstoke buys power from Alberta

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thermal electric plants at night, when demand is low and the price is cheaper, and sells it again at a higher cost. They can save the water stored in the reservoirs for when they really need it or can sell it for a higher price.

Irrigation projects can be politically expedient to promote. They not only provide water to farms but also generate a large amount of short-term employment through engineering and construction. This dam will benefit the constituents of Lorne Taylor's dusty Cypress/Medicine Hat riding. Some locals believe it will help save the rural communities in the area. However, the actual value of dams is highly controversial, partly because the benefits and costs are difficult to measure and are not measured accurately. Cliff Wallis believes "Irrigation encourages the government subsidy of unsustainable programs in agriculture."

Stewart Rood says it's difficult to know the actual cost of agriculture subsidies because so many costs are never factored in and there are many layers of subsidies. At the least, the Provincial Government pays for the cost of the dams, and most of the cost of the canals. "The argument for this is that the beneficiaries of irrigation are really not solely the farmers and irrigation groups argue that the benefits are not even principally the farmers. Irrigation enables higher intensity agriculture than dryland farming, it employs more people, and there are more spin-offs in terms of value-added food processing. Irrigation does, clearly, stimulate the economy at various levels."

However, there is a downside to irrigation that is not factored in to benefit-cost analyses. Dr. C. Fred Bentley is the former Dean of Agriculture from the University of Alberta and has considerable overseas experience with irrigation projects. "The worldwide results of irrigation were disappointing," he says. "On a world basis, of all land ever irrigated about 25% has been significantly impaired, reducing agricultural yields by 50% or more. In many cases it is impractical to reclaim this land."

Bentley has found there are two potential problems associated with irrigation. "The first is when the application of water exceeds what plants take up. The water table rises over time, unless adequate drainage has been factored in, and crops cannot produce. The second problem is an increase in salinity which occurs when salt content grows due to constant evaporation and, in some cases, the product can be reduced by up to 100%."

Bentley told the Edmonton Journal (Feb. 13, 2001) the "plan to irrigate a huge area in east central Alberta is doomed because land is unsuitable for irrigation farming. Land consists of solonetzic soil, which is a dense soil layer below the surface that resists rooting by cereal and forage crops.

Dr. Shirley Bray, who researched the effects of salinity on plant growth at the University of Calgary says, "Salinity problems are common in arid and semi-arid regions. They are usually human generated and can ultimately render the soil unsuitable for agriculture. Irrigation may make some of the very dry region of southeastern Alberta bloom, but for how long? For example, water flowing into the Aral Sea Basin in Central Asia has been used for irrigation for more than 30 years. In that time, the sea has dried up significantly, leaving millions of people with a desert in place of a sea, and the irrigated soil is becoming progressively saltier and infertile. In this very dry year one can see many fields on the prairies with salt lying on the surface."

Some question whether farmers need to change their way of thinking regarding what types of crops they plant. "Alfalfa, pasture crops, potatoes and sugar beets use the most water. Potatoes and sugar beets are shallow rooted and therefore need constant watering, especially on coarser soils," writes Debby Gregorash, (Encompass Magazine, May/June 2001).

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And how expensive will the irrigation water be from a very expensive dam? Comparisons with the Oldman Dam are inevitable. Norm Conrad, a lawyer who studied the Oldman Dam, roughly calculated that if the Oldman Dam cost \$500 million and provides water for less than 40,500 hectares, this is at a capital cost of about \$12,500 per hectare. Farmers in the Western Irrigation District currently pay between \$40 and \$45 per hectare per year.

However, Stewart Rood emphasizes that each dam is different. "My guess is that the cost relative to water, and particularly delivery of water, will be much more for the Meridian than for the Oldman. The big difference is that the Oldman allows for the water to be stored in the foothills and then subsequently flows by gravity down slope to the sites of irrigation.

"In contrast, the Meridian will basically fill up a fairly deep valley and any irrigation in Alberta would be above that valley. Consequently, the Meridian water would have to be pumped. This is an expensive process and it's a continuing, perpetual expense. Every single time a farmer wants to irrigate costly energy will be consumed to raise water. One can imagine that there will be some energy subsidies to facilitate this water pumping and there's going to be subsidies upon subsidies and layers upon layers of subsidies. It will be very difficult for either the farmer, or society more broadly, to determine at what point this is economical or non-economical."

The true cost of irrigation or a dam is very difficult to calculate, because many costs are generally not included, such as in-house costs. "What we really need," says Rood, " is something that might be equivalent to a forensic audit; when everything is said and done, going back to find out how much the Oldman Dam Project actually cost. The province considered that the construction of the Oldman Dam was approximately on-time and on-budget. And on-budget meant about 350 million, in dollars, at the time that the project was committed. But if one considers the actual inflated costs and all the peripheral expenses, including many that are in-house with provincial agencies, many unexpected legal costs, unanticipated mitigation and monitoring costs, environmental reviews, consultations and many other activities, my guess is that the real cost of the Oldman Dam was probably in the order of 600 million to a billion dollars.

"Relative to the Meridian Dam, all of those costs should be included. There's going to need to be a joint provincial-federal environmental assessment that should be comprehensive. That will cost money. There will be lots of people in provincial agencies in both Alberta and Saskatchewan that spend time on this; there will be lots of federal agencies spending time on the project. All of that time must be factored in to the cost of the overall project if you want a true analysis of what this thing costs.

"So if the Oldman Project comes in between 600 million and a billion, then the Meridian is going to come in well over a billion since many canals and additional irrigation infrastructure must also be constructed. It will be difficult, if not impossible, to actually sort through and find out how much the project fully costs. The original scoping review is budgeted at \$100,000. This is clearly insufficient to come up with a reasonable preliminary assessment."

One cost to be factored in is the cost of dealing with oil and gas facilities in the canyon that will be flooded. One company that was contacted, Alberta Energy Company, refused to comment on the Meridian Dam.

According to Stephen Legault, "The Alberta government should know from their own experiences with the

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Oldman River Dam that the days of dam building are over. If we are going to spend hundreds of thousands of dollars on a feasibility study, it should be on how we can get rid of dams, such as the Oldman River Dam, which flooded the prairie and foothill homes of many plants and animals. The river ecosystem downstream is changed, it has become a static ecosystem, the cottonwoods are dying and native fish habitat has been destroyed."

Cliff Wallis agrees. "There has not been a positive effect. It has blocked bull trout migration and there is no irrigation to the locals. The water is committed downstream to deal with downstream irrigation problems. There has been a loss of habitat and the replacement of a good fishery with a bad one."

According to Stewart Rood, "one of the biggest environmental costs was the conversion of the three river valleys into a reservoir. Those lands were flooded, not to produce a lake that is biologically productive and recreationally attractive, but to produce a reservoir with an extensive drawdown. It is biologically relatively barren and recreationally less desirable." However, the benefit of the Oldman Dam was that it mitigated some of the effects of the LNID weir that was built in the early 1920's.

The weir diverted much of the river water leaving the river valley downstream with a very meager flow of water. In combination with the high temperature of summer, "it had a severe negative impact on the aquatic ecosystem – the fisheries – and it also led to a chronic stress on the floodplain vegetation, "says Rood. "The cottonwoods downstream from the LNID weir were declining in recent decades." The Oldman Dam improved conditions downstream from the weir by allowing for storage of water during the spring peak flow period and enabling more regular release through the summer, benefiting downstream communities of Fort Macleod and Lethbridge. This situation is not comparable to the South Saskatchewan River or the Meridian Dam.

Karen Bray, a fish biologist in Revelstoke, who studies the impact of dams on fisheries, says "the creation of a reservoir leads to an initial boom in productivity as nutrients are leached out of the soil, but this is followed by a crash when that ends. Nutrients coming in from the river system settle out in the reservoir and the final result is an oligotrophication. Dams can be migration blocks and inundate riverine and tributary habitat used for spawning and rearing. The whole ecology changes from a riverine to lacustrine system", with a subsequent change in species.

"Water temperatures are altered as most dams have a deep withdrawal and release very cold water," she continues. "Most reservoirs fluctuate dramatically and this can result in loss of riparian areas or the littoral zone depending on whether you are upstream or downstream of the dam." This can also create problems for recreationists. For example, in the Arrow Lakes, B.C., which are created by dams downstream from the Revelstoke Dam, Jillian Tamblyn has noted that landowners with waterfront property must have movable docks to cope with the annual changes in water levels.

What We Can Do

The pre-feasibility study is due to be completed by the end of this year, and once it's done it will be difficult, if not impossible, to stop the momentum if the decision made is to go forward. Now is the time for the federal government to create the Suffield National Wildlife Area. Now is the time for making known to our government, with no degree of uncertainty, that a dam of this magnitude is simply not acceptable. There can be no confusion. The obliteration of precious natural areas is too high a price to pay for some sugar beets and conservative votes.

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