



Fraser Basin Council  
1257 – 409 Granville Street  
Vancouver, BC V6C 1T2  
Ph: (604) 605-3450 Fx: (604) 605-3459  
Email: [info@fraserbasin.bc.ca](mailto:info@fraserbasin.bc.ca)  
[www.fraserbasin.bc.ca](http://www.fraserbasin.bc.ca)

[www.fraserbasin.bc.ca](http://www.fraserbasin.bc.ca)

# State of the Basin Address

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Presented by:

Iona Campagnolo  
Chair, Fraser Basin Council

PowerPoint Presentation by **Bob Purdy**

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7551 Westminster Highway  
Richmond, BC V6X 1A3  
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*Based on research by:  
Ben Parfitt,  
The Directors and Co-ordinators of the Fraser Basin Council,  
and many friends of the Fraser*

WELCOME, Co-evolutionists, Sustainers, Visionaries, Capital “C” Citizens and all people of courage to the State of the Basin, 2000:

Historically Rivers are metaphors for life, so it is my honour to convene this second State of the Fraser Basin Conference on behalf of a great River, its 13 major tributaries, it's uncounted small rivers, streams, creeks, marshes, bogs, swamps, sloughs, and water-ways, and its wonderful Plume swirling out into the Pacific along with all its lands, mountains, forests, grasslands, valleys, ranches, farms, cities, towns, communities, homes, streets, avenues, blocks and by-ways. Together, this vast eco-system forms the life-giving Fraser Basin, home today to 2.7M British Columbians, and projected home in the next two decades of 3.8 M inhabitants, all of whom are the target for this State of the Basin address!

Since time immemorial, this Canadian Heritage River, of so many names, that we now call the Fraser, with its domain, has served its people. It has slaked our thirst, fed our hunger, fueled our machines, cleansed our bodies, guided us in our travels, inspired our spirits and our cultures, enriched our heritage, and poured its riches into our pockets to give us the robust co-habitation, we enjoy within its boundaries, set out as they are, by time and Mother Nature. If this life-giving partnership with the River is to continue as far into tomorrow as it has into the past, the Basin that has sustained human life through at least the past ten thousand centuries now asks each one of us to return the favour!

As I begin this State of the Basin address, it is important that I describe a few essentials of the Fraser Basin Council. Executive Director David Marshall will provide you more the specific duties of this Conference shortly. The Council is a broadly representative and equal partnership of all “Four Orders” of Canadian Government with Private and Civil Society Sectors who work together through dialogue and co operative decision making, seeking common ground as a foundation for working toward Sustainability. The Council has no legal authority and is not a River Authority, by choice. The power and the tools to bring about a sustainable society already exist but are broadly distributed across many jurisdictions of governments, private and individual sectors. Bringing these many elements together, working as a facilitator, catalyst, a jurisdictional and conflict resolution agent and a sustainability educator, the Council co ordinates action towards an integration of social, environmental and economic sustainability.

Without any doubt we are in a time when new demands are being made on our duty as citizens. What is a citizen in today's context? According to (Mark Kingwell) the author of “The World We Want”, where once societies were founded on blood, ethnicity, region, religion or political formulation, today's citizens are increasingly called to action. The World Trade Organization protests and those that followed are symptoms of a public demanding inclusion in decision-making. Facilitating inclusive, co operative decision-making is the work of the Fraser Basin Council.

We commence this special tour of the Basin, facing the Pacific, standing high up on one of Mother Nature's great Land Bridges. From here, we can see the "genesis" of four Great River systems streaming in every direction. At the beginnings of all these great Rivers seems a good place to stop for a moment and express our collective "thank you" to them for their bounty.

Moving south and bearing east is the once mighty Columbia, to which we owe our particular thanks for powering our lives. A recent World Commission on Dams, launched by Nelson Mandela, reports that 1/3 of the World relies on water-generated power and that it is possible to retain the benefits, while dramatically reducing the ill effects of dams. The Fraser as you know, is protected from dams on its main stem. (Thanks mainly to the Columbia!) The knowledge that dams can be rendered less damaging is the basis of work being facilitated by the Council with British Columbia, Alcan, the Nechako Watershed Council and many others to enhance the Nechako River downstream from 1952's Kenny Dam.

Still on the Land Bridge, we can see the Murray River heading North over the Continental Divide enroute to the Peace. Just beyond, the Parsnip sets forth for a rendezvous with the Finlay and history laden fur-trade routes. While wandering uncertainly to the West, bearing South, is the ice-blue trickle that will merge into its only settling site at Moose Lake and then soon become that familiar golden brown current we all know as the "mighty" Fraser. Although I doubt he could have imagined such a site from his McGill University offices, in Montreal, I like to think that Marshall McLuhan might have had this remarkable place in mind when he said: "there are no passengers on Space Ship Earth, we are all crew".

Today, sustainability is everyone's work. It is not something that can be put off while we play golf, take holidays or make money, it is work that links all the generations, yesterday's, today's and tomorrow's. This new Century, though only a scant year old, is already hailed as the Age of Alliances. In everything from business mergers to environmental actions it has suddenly become a time of multi-dimensional partnerships and co-operation instead of adversarialism. We now understand that words like "Convergence" don't just apply to conjoining media giants, nor does "Integration" mean just seismic shifts in high technology. Building a consciousness capable of accepting that each element of sustainability is integrated within every other element of sustainability is the beginning of Understanding Sustainability.

I invite you to read the annual reports of some of BC's largest corporations, if you haven't already done so. They speak a whole new vocabulary of social and environmental inclusion in their economic bottom lines. Emanating from the recent BC Business Summit there is an uncommon pledge from Business to work with First Nations, the Province and the Federal Government to resolve outstanding land claims in BC, recognizing that primary responsibility for settlement lies with governments. This is a new voice in our province. It is talking about ever more accurate and multi-dimensional cost-accounting, allowing us eventually to draw on the interest of our precious resources, instead of on its principle.

How about spending some time reading the publications of British Columbia's and the World's largest environmental organizations? There is a change in tone in language here too, that once addressed the environment as if it were entirely separated from the world of living human beings. Jim Fulton, of the David Suzuki Foundation explains it this way: "We are encouraging the blending of the Bio-Sphere with the Ethno-sphere".  
People and Environment!

Would any of us who knew the past BC "Bulls of the Woods" have imagined it possible that in this time, a Champagne salute would be exchanged between a giant forest company and an equally giant environmental movement on reaching a co operative decision on forest management? Could we have foreseen a time when First Nations, Federal and Provincial Fisheries would agree to stop the threatened extinction of Sturgeon on the Lower Fraser by ceasing to catch them? There is change in our world and progressive resource usage is profitable resource usage.

Have you ever known a time in BC's history when the sheer numbers of people working to improve our society has been as great? Volunteers and paid professionals, amateurs and mighty experts, "Teams of Rivals", all making heroic efforts to move away from yesterday's devastating "Winner take all and Losers have none" Society, to a Sustainable "All have some", ethos?

As I began to prepare this talk for you, I sifted through "five pounds of paper" (oops! 2 Kilos, or so) bulging with statistics on the economy, loaded with environmental data, but curiously sparse when it came to details of the social component of sustainability. So, (although I hate to confess it), this is not a pretty speech! It is not definitive, nor is it even intended to be comprehensive, but it is rendered with as little value judgement as an impartial, transpartisan, non-political organization can make it without indicators to guide its objectivity. It will be published in conjunction with in the Conference Report, Sponsored by Health Canada and the National Round Table. This is intended only as a sampling of indications on the State of the Basin, today, referencing some of its social, environmental and economic sustainability essentials. My first responsibility of this Conference is to tell you and all Basin residents a few blunt truths about the Fraser Basin. I will try to do so as clearly and as coolly as the River itself might do, if it were to speak to us in any of its ten remaining languages from the slopes of its Mount Robson home.

One of the great Challenges of sustaining this Basin, rests on our eventual ability to bind its two solitudes into a single, integrated Basin culture. There really are two Fraser Basins at the heart of our common sustainability challenge. They are the Lower Mainland and the rest of the Fraser Basin.

Beginning with the economy, outside the Lower Mainland, but with its environmental and social components as part of the consideration: Incomes remain dependent on two sectors of the economy: forestry and the public sector. When one of these sectors is in trouble, the other is impacted and then the whole region suffers. In the forestry sector, the range of importance to the economy of communities ranges from a low of five per cent in Chilliwack to a high of 46 per cent in Vanderhoof. In the public sector, which includes education, health, justice, other public and governmental services, the range is from a low of 16 per cent in the North Thompson to a high of 31 per cent in Chilliwack.

Interestingly, public sector jobs are mainly in the Provincial Government although some are from the Federal too, and are directly or indirectly tied to the fortunes of resource industries like forestry. There are a few notable cases where a third sector composed of Mining and Agriculture stimulates a regional economy. Mining in Ashcroft and Agriculture in the Matsqui-Abbotsford join with a 16% contribution from Tourism to bring a welcome diversification of the economy.

Greater Vancouver's economic story is very different. The big generators of economic activity in the GVRD are in the number of people employed. With business-service industries leading, there is also a vigorous construction and wholesale trade but forestry and logging account for only point three per cent of employment. Contrary to common belief, though, forestry related and wood manufacturing enterprises, including lumber, panel board, shake & shingle, pulp and paper contribute substantially to Greater Vancouver's economy, on approximately the same seven percent level as does the much vaunted and more glamorous movie making and entertainment production. The Provincial Information, Science and Technology Agency reports that BC had 52,000 jobs in high technology in 1999 with a predicted 44% increase expected this year.

With nearly 2M people, Vancouver's sheer size and diversity provides economic protection not enjoyed outside its boundaries. Take the closure of the Eburne Sawmill in south Vancouver in 1998. Two hundred people lost their jobs, but the economy moved along as if nothing had happened. People who lost their jobs either took early retirement, found work at other mills in the region, or got jobs in other sectors of the economy as diverse as BC Transit and eco-tourism. Now, compare that in human terms to a sawmill closing in Williams Lake, in the early 90's. Most of the union workers left town and took advantage of opportunities out of the province. The Cariboo just didn't provide the kind of high paying jobs once enjoyed at the Sawmill, so along with transplanted workers and their families, the community and the Basin suffered.

Forestry, like other primary resource concerns in the Basin is encouraged to move from “gut-wrenching”, “roller-coaster”, shifts and turns, "booms and busts" that are not sustainable, toward a more sustainable, stabilized "wood institution". It is not Black Magic! Some causes of failure have been identified as insufficient investment both initially and throughout the life of the venture and continued production of single-focus, low-value commodities. This equation can be adjusted by substituting appropriate financing of ventures and the production of lower-cost, higher value goods and products for maximum marketability in the global bazaar.

University of BC Commerce Professor Michael Goldberg put it this way in 1998:

*“The broadest, most overarching vision I would propose is developing a series of products and services, and ultimately whole economic sectors, that reposition themselves wherever possible, to no longer rely on being price takers, producing relatively homogeneous products and services”.*

"To "De-academicize" Dr. Goldberg just a bit: the message is not longer: "Location, Location, Location". But, "Diversify" and "Integrate, Integrate, Integrate"!

The University of Northern British Columbia is a case in point. Planned and developed from the ground up in the darkest days of the early 90's recession and opened in 1994, the University is today one of the larger employers in Northern BC, with an annual budget of \$31M, of which wages and salaries consume \$20M. The Annual McLean's Magazine University Survey registers the respect of the academic community for UNBC as one of Canada's outstanding undergraduate Universities. In addition to diversifying the economy, the “University of the North” is advancing the thinking, skills and the capacity to overcome some of the historic regional disparity that has so long beset the region and that is still reflected in many parts of the Basin. With a combined full-time and part-time workforce of 450 people, there are presently 3,400 full time equivalent students enrolled in classes located across the north from Ft. St. John to the Nass River to Prince Rupert, in partnership with Regional Colleges.

Prince George has the second largest concentration of forest industry manufacturing next to Vancouver, but a recent announcement suggests that at least one value-added mill and possibly two operated by CANFOR there, may soon close. If the public and governments expect companies to meet their expectations, they are known to require open access to U. S. Markets. Similarly forestry is often in the hands of large, non-national corporations, rendering local decision making more problematic. In spite of a successful calculation to diversify its economy by establishing the University, a shock in the forest sector is still felt more acutely outside the Lower Mainland than inside it. If this is the case in Prince George, you can easily imagine the devastation experienced in Takla Landing when their ONLY industry leaves the community.

Recent changes in timber supply area operations in the Northern Interior were undertaken without consulting affected First Nations. The result is a lack of certainty that is coupled with anxiety at examples of overcutting. There is also understandable regret that the "Duty to Consult" as directed by the Supreme Court of Canada's in their 1997 Delgamuukw judgement was ignored. Some dialogue between the parties might open the door to more co operative and mutually sustainable solutions. For example, there are those who believe that Forest Tenure Reform may be a critical step on the path to a more sustainable forestry institution.

\*The State of the Basin is better sustained by ever more diversified local economies based on higher value production. Lessening the disparity between urban and non-urban communities depends on development of a sustainable culture with an informed and Basin-wide consciousness of all the forces that govern the lives of all Basin based communities.

Now let's move our binoculars onto the SOCIAL COMPONENTS of sustainability in the Basin, keeping the economic reality of the Basin in mind, and knowing that the environment is with us as we do. In the economy, a hard line exists between the Lower Mainland and the rest of the Basin. When it comes to the social component of sustainability the division is somewhat less apparent. Let's start with a brief look at life expectancy, infant mortality, health care. The picture is somewhat more diverse, but overall conditions reflect some of the same issues.

The BC average for death by natural causes is 38.4 per 1000. So if it is your wish to "die with your boots on", I suggest you locate yourself as close as possible to the health care services you need for your personal sustainability. When it comes to suicide and homicide, the provincial average is 6.4 per 1000, with Vancouver lowest at 4.7 and the Cariboo at 7.7, with 8.4 registered in the Thompson.

Accidental death statistics reveal that for men, the figures show a similar curve. With Squamish Lillooet at 30.2 per 1000 and Bulkley Nechako at 32.7 where as the provincial average is 17.8. High-risk sport may account for some of the Squamish Lillooet figure, but in the rest of the Basin the figures suggest linkage with availability of services. For women the figures range from 4.2 in Vancouver to 15 in the Cariboo. Men are more than twice as likely to die in accidents than women, everywhere in the Basin. A lower life expectancy still exists for First Nations people in all parts of the Basin. There is some excellent work being carried out by some Basin Friendship Centres on this issue, but overall the issue remains to be appropriately addressed by the whole Basin Community.

Birth is generally a sunnier topic, however, when it comes to infant mortality, the Basin demonstrates a differential again. With a BC average of 4.2 per 1000: the range across the Basin goes from a high of 7.4 in Bulkley-Nechako to a low of 2.9 in Squamish Lillooet. The issue of infant mortality in First Nations remains a Basin-wide challenge for action by all the components of our society.

Birth Rates among teen mothers, aged 15 to 19 varies from an average of 10.2 in the Lower Mainland to 28 and 30 per 1000 in other Basin centres.

If such statistics were the only ones used to gauge human well being: rural and sub-urban life might be portrayed as a risk to human sustainability. However, recent "Quality of Life" surveys led by Professor Alex Michalos at UNBC indicate a compensatory high quality of life satisfaction associated with non-urban living, exceeding that experienced by urban dwellers. Such findings may explain in part, Vancouver's attraction for "Toronto Refugees". It's all relative, after all! (If you lived in New York, Toronto might attract you).

Recent confrontations between the BC Medical Association, triggered by the withdrawal of services by rural doctors in some BC communities has helped to highlight the disparity of medical services in the province. Generally speaking, there are more doctors and nurses per capita in major urban centres than in more rural ones. This can be explained in part by the centrifugal force of the Vancouver/Richmond Health Region with its larger population requiring more health care professionals and specialists, and partly because more of those professionals generally prefer the urban environment. With a ratio of 45.15 active physicians in Vancouver/Richmond per 10,000 population in 1999, across the Basin, the numbers ranged from 10.85 in the Cariboo to 15.27 in the Thompson.

Now let's let's check out those hardiest of indicators concerning the social dimension of a sustainable society: alcohol consumption, education and (E. I.) unemployment.

Alcohol consumption figures vary markedly in the Basin. With an average BC consumption of 57 litres per capita and an expenditure of \$391.00 annually on alcohol, the Basin registers a low of 44 litres consumed and \$282 spent annually in the Fraser Valley, up to 129 litres consumed, and \$853 spent in Squamish Lillooet. (A resort area, I hasten to add!)

In BC as a whole, and reflected across the Basin some 29.4 per cent of residents 15 years of age and older have either a college degree or a trades certificate or diploma. A further 13.6 per cent of the population has a University degree or diploma.

With the exception of the Greater Vancouver Regional District, all regions within the Fraser Basin are above the provincial average when it comes to the percentage of residents aged 19 to 64 receiving employment insurance benefits. The province-wide average is 3.3 per cent, in Vancouver the number is 2.7%, comparing favourably to major Vancouver Island sites.

Now let's move from a social to an ENVIRONMENTAL CONSIDERATION of our humanness. I am talking about sewage treatment and disposal. A man (on his way for some golfing) told me not very long ago that in his opinion, "the Fraser River is a Sewer and it's Estuary is a Septic Tank". "What are we going to do about it"? I asked. "That's for others to do" he assured me, "maybe the next Generation can figure it out". I think all us know whose job it is, and that NOW is the time to act! Yes, when our population was small, and the "solution was dilution", such risks were taken, but it's a rare occurrence today. There are 90 municipal sewage treatment plants in the Fraser Basin and almost all of them provide secondary treatment capability.

To illustrate the challenges presented by the constantly growing Fraser Basin family and discharges of sewage, let me tell you a "Tale of Three Cities", one evolved, one evolving and one working very hard TO evolve on the topic of sewage treatment. I speak of Merritt, Vancouver and Vanderhoof.

With 8,000 people, Merritt has had secondary sewage treatment since 1963 and uses an "activated sludge plant" where microbes dutifully consume solid wastes as Merritt considers tertiary treatment to remove remaining phosphorous from the effluent stream. Bio-solids produced are used as soil enhancement on the nearby River Ranch. The eventually doubly processed waste water collection site is set back 100 meters from the river, so that soil acts as a final natural filter before its eventual re-release into the river.

Then there is Vancouver, the Queen City of our Province and our Basin. Combined Sewer Overflows (CSO's) discharges stand at 24 billion litres annually, most of which occur in Vancouver Harbour, the Fraser River, English Bay and False Creek. Vancouver is working to significantly reduce its discharge of raw untreated sewage from these CSO's. With an annual sewage production of 416 billion litres, enough to fill 860 Olympic sized swimming pools every day, ongoing planning in regard to upgrading the Iona Island Plant is in process. Inter-agency co operation, similar to that realized at both Annacis and Lulu sites, is essential now for a positive outcome at Iona. (I'm sure you agree as I do, that is just a super name for a Sewage Treatment Plant!)

But, Vancouver and its GVRD partners have spectacularly upgraded sewage treatment at both its Annacis and Lulu Island sites to secondary treatment, with an investment at Annacis of \$650M and at Lulu of \$124M for modern sewage management

Vanderhoof is a picturesque community, about an hour's drive west of Prince George, that daily produces some 1,576 cubic metres of sewage, which is pumped into two settling ponds or lagoons (facultative cells) and aerated before release. The community has two plans to upgrade its sewage treatment system. Neither has yet been either approved, or funded. However the first would be to improve the secondary treatment and the second would use secondary treatment, spraying the resulting treated sewage onto nearby agricultural lands. Both plans are before the Province now and have a high priority in terms of next April's Federal Infrastructure Funding potential.

Downriver, at the confluence of the Nechako and the Fraser, Prince George has built "State of the Art" treatment facilities. It draws 15 billion litres of potable water per year from wells adjacent to the Nechako and Fraser Rivers, discharging 11.8 billion litres of treated wastewater back to the Fraser.

When it comes to solid waste management (garbage disposal), with composting, recycling and re-use options, the picture is as diversified in application through out the Basin as is sewage treatment. In an important Memorandum of Agreement between the Cariboo Regional District in Quesnel and Williams Lake, the intent is to look at specific services in waste management. In the Canadian context, Quebec leads the country with waste generated at 1.21 tonnes per capita per annum. BC emerges smelling perhaps 30% "like a Rose" with a low per capita rate at 0.90 tonnes. That is more than 3/4 of a tonne of Garbage per person, per year. British Columbia leads the nation at 32% recovery, while Alberta scrapes bottom at 17%, even with its spectacularly successful composting program in Edmonton. Although our province leads, we are far from sustainable in solid waste disposal and management.

Now lets take a look at DRINKING WATER in the Fraser Basin and the treatment chain. People in the business of providing clean drinking water to residents, and those who have studied this important health and environmental issue generally agree that the best way to provide clean water is to embrace the idea of a sustainable "treatment chain". The treatment chain begins at the water source itself and includes those watershed lands around water supplies. It moves on to the treatment facilities, and then beyond treatment to distribution systems that carries the treated water to residences and businesses.

There are two sources of drinking water – surface sources (including lakes, reservoirs, rivers and streams), and ground-water (wells and aquifers). There are more ways for surface water to become polluted than there are for ground water to be so, but once contaminated ground water tends to remain so for decades. Surface water is exposed to air and is vulnerable to land use degradation.

But ground water sources in BC are vulnerable too, since BC stands alone in having no enforceable, comprehensive ground water regulations. Under safe drinking water regulations, B. C. DOES regulate construction, maintenance and protection of Community water wells. This is one of the reasons that the Fraser Basin Council is working with farmers and government agencies in the Fraser Valley to address nutrient management (Manure) issues surrounding the protection of ground water and surface water to allay any lurking "specters" of potential "Walkertons West".

Greater Vancouver residents use water at a rate of 560 liters of potable water each, every day. With regard to surface water, Vancouver has what almost no other jurisdiction enjoys, long-term control over its watershed lands, with a 999-year lease to watershed lands surrounding the Capilano, Seymour and Coquitlam watersheds. But, a couple of decades ago, industrial logging activity was permitted in the watershed areas, which coupled with natural erosion resulting from heavy rainfall results in periodic landslides and consequent turbid or cloudy drinking water. In periods of heavy runoff, wildlife feces can also be a factor in turbid water. Once thought benign, recent evidence has emerged indicating possible hazardous effects on human health associated with turbid water. Although yet to be definitively proven, some 7,500 visits to Doctors and 85 Hospital admissions for adults and 183 for children over the most recent six-year period are now being attributed at least in part, to turbid water.

Thanks to the undeveloped status of their watershed lands, McBride and Valemount can boast pristine water from lands not subjected to damaging forest practices or road building. However McBride was on a boil water advisory for some ten years and Valemount had a waterborne outbreak of Giardiasis in 1996. Both communities are now challenged to exercise positive leadership on these watershed lands, since the Ministry of Forests reports them in line for forestry development. McBride's and Valemount's watersheds are designated "community watersheds" under BC's Forest Practices Code, offering them a degree of protection on surface waterbodies, but such designation does not preclude development.

Industrial use of water can reach major proportions. For example, the City of Quesnel uses 2.65 billion litres of water annually for an average of 857.18 litres per person, per day. The Cariboo Pulp and Paper Mill, Quesnel's largest industrial water user, can draw up to 133.9 billion litres of water per year from the Quesnel River, one of 13 major tributaries of the Fraser.

Abbotsford's main water supply is from Norrish Creek, in the hills behind Mission, supplying some 160K residents in Mission and Abbotsford. An industrial logging site over the years, the work in the woods continues today by Canadian Forest Products. In an effort to deal with turbid water and possible threats of pathogens such as Giardia and Cryptosporidium, the Fraser Valley Regional District is considering an expenditure of up to \$21M to install slow-sand filters and membrane filters at its water treatment facilities. Filters can dramatically reduce toxic chemicals otherwise used to "treat" water.

Clean water means healthy people and healthy wildlife and healthy water life. It's time to turn our attention for a moment to the spiritual heart of our Province, our cultural icon for life in this favoured Fraser Basin: Genus Oncorhynchus, the Salmon. Salmon have sustained Aboriginal Peoples in this Basin for more than 10 millennia. In all that time, they have devised a complex system of "pass-throughs", allowing all to share fairly in the ultimate harvest: from those who sustain the life-cycles of the Salmon as tiny "fry" in interior lakes and streams, to those who nurture them in the Rivers on their way to and from the sea, to the Ocean harvesters. Inevitably, the land and water shapes all of us and teaches us how to sustain it. There remains so much more to learn from such long habitation within the Basin, when it comes to Salmon management.

We are all aware of the importance of the Fraser to the continuance of the life cycle of Salmon, less of us may appreciate the role of the Salmon in sustaining the continuance of all life in the Basin. If it is not beyond the great Chinook to overcome every barrier in its path and swim up the Fraser more than a thousand kilometers from the Ocean to spawn. Surely it is not beyond our combined competence to see that it can continue to do so forever!

Hope is the wettest place in the Basin with an annual snow and rainfall rate of 1,915 millimeters. Some of the most critically important habitat for Salmon is located just below Hope and out to Georgia Strait, south to the Canada/US Border and north to the uppermost tributaries of the Pitt, Lillooet and Stave Rivers. From Hope to the Sea, you will find 80% of the Fraser Basin's Chinook, 90% of Chum, 65% of Coho and 80% of Pinks with a significant numbers of Sockeye.

Primary threats to Salmon include urban sprawl and the diversion of water for hydroelectric purposes. Several dams on tributaries of the Fraser River have had a negative impact on salmon. The combined storage capacity behind seven dams operated by BC Hydro in the Fraser Basin is 1.87 trillion litres, or five times the average daily flow of the Fraser River. While a water-use planning process is under way, the Water Comptroller of BC has issued BC Hydro EIGHT "interim minimum flow orders" for the protection of Salmon on the Allouette, Stave, Coquitlam, Bridge and Cheakamus Rivers. These orders have resulted at a cost of foregone revenues to BC Hydro of \$7.3M. BC Hydro has also assisted in improving conditions for Salmon with gravel replacement and gravel engineering on the lower reaches of the River.

Based on river monitoring information from the Coquihalla and Coquitlam Rivers, findings note that physical stability of habitat improvement projects is not comparable to that expected from river engineering. It appears to be more cost-efficient to allocate funds to avoid disturbing the river in the first place as the best means of establishing fish habitat.

Some water bodies that once supported major salmon populations have been rendered inaccessible to salmon by dams. First Nations and Aboriginal Peoples, for whom these stocks were traditional healthy fishing areas, are seeking restoration through fish ladder construction around the dams in question. Possible funding for this construction is being sought through the Provincial Government's Coastal Fish and Wildlife Restoration Fund. The BC Fish Protection Act's Streamside Protection Directive when completed, will be a major adjunct and tool in the ongoing task of protecting salmon stocks.

Water diversions have put an especially heavy burden on Sturgeon, in the upper Fraser, which are at serious risk of extinction. Sturgeon numbers on the Nechako are down to an estimated 570 individual fish, and even with recovery plans now underway, the projected number of female Sturgeon shows a sharp decline with juvenile Sturgeon nearly non-existent. Ancient beyond our imaginings, predating the dinosaurs by 200,000 years, and having survived uncounted millennia, all Fraser Sturgeon are threatened and the Nechako White Sturgeon is on the verge of annihilation through our human needs and actions.

Sturgeon come late to maturity, beginning to reproduce anywhere from 25 to 50 year of age. They spawn on the downward curve of the freshet and in the Nechako there has not been a freshet since 1951. Even in the turgid life cycle of a Sturgeon, that is a long time to wait to mate! Just as the Aluminum Company of Canada has seen fit in agreement with Canada and BC to provide cooling flows in the Nechako to accommodate a modest return of once-mighty Salmon stocks: it is not beyond technical and human possibility in partnerships of people of good will, to restore to the Sturgeon an annual simulated freshet and with it, the historic conditions required for Sturgeon reproduction and sustainability. Scientists assure us that those long-suffering, silent, yet enduring Sturgeon of the Nechako will reproduce when they can enjoy conditions to foster the birth of their long-delayed next generation. It is no longer a "zero-sum game". Aluminum production and Sturgeon reproduction can co-exist. It is up to us to make it happen!

The risks to sustainability are known: consider climate change as an example, ending its second week of consideration as I speak, at a UN Conference in the Hague, where vacillation on Kyoto commitments and "horse-trading" for 'other country' credits with which to offset business as usual in North America continues. BC has put forward positive plans in renewable energy and alternative transportation initiatives. Impacts of climate change are known to include: extreme weather events, more frequent spring flooding and intense rainfalls, arid periods, forest fires and declining fish stocks, to name a few. But, whether the subject is climate change, water, health care, or genetically modified organisms and their labeling, a sustainable society demands that its citizens KNOW the risks, and act on their knowledge. It is to such citizens this conference speaks.

But for others, I have a few "Razzberries" to deliver today, on issues that are no longer in doubt, but where action is overdue:

Did you know that Britannia Mine puts the equivalent of a 45 gallon oil barrel full of copper and zinc into beautiful Howe Sound every day, creating a "DEAD ZONE" where Salmon Smolts die and NOT even Barnacles can live? Repeated efforts at "clean up" involving broadly representative public/private partnerships is presently "on the verge" of being mired in arcane litigation and contesting jurisdictions. To assure that this "worst point source pollution site in North America" is treated, remediated and re-claimed will take uncommon courage from governments, the private sector and people in general. Awareness is high among Britannia's residents, who as an aroused, articulate, informed and positive force for change are dedicated not only to clean-up but to controlling their own destinies.

\*The Fraser Valley is threatened with a devastating flood, as has happened previously in 1894 and 1948. First Nations communities in the area remain at particular risk, and have joined as partners in the Joint Program Committee (JPC), facilitated by the Fraser Basin Council. This JPC combines 5 Federal Departments, 4 Provincial Ministries, 4 Regional Districts, 17 local Governments, 3 First Nations, 2 Municipal groups, UBCM AND LMMA and 2 Port Authorities.

The work is done, agreement has been reached and action to mitigate the Flood Hazard of the Lower Fraser must now take place. Last year the volume of water passing through the Lower River at freshet was greater than in the Flood year of 1948 with only a protracted cool spring to save us. In a spirit of co-operation, plans, budgets and flood plain mapping needs are all clear now, to meet the eventual disastrous flooding that will come. Such a flood would displace some 300K people and cause damages in the billions of dollars, while disrupting major transportation and utility infrastructure and water supplies, with crops and livestock, which are all at heavy risk.

Action on all that work is now imperative by implementing an agreed three-way funding formula between the Federal, Provincial and Local Governments, sharing evenly the proposed costs of a five year Flood Hazard Mitigation Plan. At a \$100M, the flood mitigation plan represents a cost of some \$6M a year, for five years to each of the three partners. The choice is clear, pay now, or pay much more later! Canada has paid out in excess of \$3B for the Red River Flood, the Saguenay-Lac St. Jean Flood and the ice storm, more than was paid out in the previous 25 years of National Disasters! The Fraser keeps to a near-perfect time schedule; we forget that at our peril. I suggest this Flood Hazard Mitigation Plan be approved, funded and commenced before the 24<sup>th</sup> of May long weekend next Spring. (or else, the time will come when we all regret it!)

\*It's time to move on Air-Shed Management in the Fraser Valley. Sumas Two is not the only issue to be contended with, issues of urban transportation and urban automobiles are riding "high, wide and handsome" when it comes to the need for an ethics shift!

Kamloops, is the driest in the whole Basin with an annual rain and snowfall accounting for only 269 millimeters of precipitation annually. The North Shore of Shuswap Lake continues to be developed haphazardly, with out-zoning, building inspection or Regional District influence. Increasing saturation of the land base with sewage run-offs into the lake, remain a clear and present hazard to water quality in the area.

The Regional Debris Management Strategy requires continued engagement of its traditional partners and the enthusiastic participation of new ounces

Now, I have a few bouquets of sub-zero sustainable Canadian Explorer Roses for some Capital 'C' Citizens, Organizations, Agencies and groups"

\*To the gallant Fin Donnelly with his one-man sustainability, heroism in bringing a human heart and a new and more sustainable consciousness to the challenges of Fraser. Fin swam the full 1,377 Kms. of the River completely, not once, but twice, illustrating as none have ever done before him, his passion to sustain the River!

\*To Mayor Don Bell of the District of North Vancouver and Chief Leonard George of the T'sleil Watuth Burrard Band for meeting with each other regularly and working jointly to the betterment of their communities.

\*To the Kamloops Land and Resources Management Plan (LRMP) team of individuals, who have proved that well motivated people from all walks of life, working co operatively, through dialogue, can find the common ground on which to construct a superior management strategy. Being implemented the Kamloops LRMP is a model for those who would bring positive change to land use.

\*To the Vancouver Sun, Editor-in-Chief Neil Reynolds, Journalist Stephen Hume, Photographer Glenn Baglo for their November 1<sup>st</sup> supplement on the "Fate of the Fraser" being in your hands. Following on their excellent "Fate of the Strait" series, the Sun did more in its 12 Fraser pages to bring consciousness to the issues than might have been done with the cutting of thousands more trees for Reports or back-to-back symposia on the topic!

\*To the hundreds of Stewardship Advocates, Streamkeepers and Conservation groups that have been working particularly hard in the past decade toward a more sustainable Fraser Basin. The threat of "burn out" looms large among them and a society that wants their energies preserved has to seriously address greater relief, support and compensation for them.

\*To the Department of Fisheries and Oceans who has done just that with the provision of some 60 to 80 Stewardship Co ordinators into the system. (two of them in the Thompson, working with the Council)

\*To the City of Kamloops and the Kamloops Indian Band who share infrastructure and fire protection. To the Villages of Lillooet and the Cayoose and Lillooet Indian Bands who are working jointly to build a greenway connecting them together...and to the Thompson-Nicola Regional District and regional First Nations for setting a pattern of joint consultation and information sharing on a regular basis

\*To some of the Basin's "Goodfellas," of which there are many, a random sampling includes: Mark Angelo, Craig Orr, Bob Pasco, T. Buck Susuki, Clive Callaway, Annie Narcisse, Joseph Lin, Richard Bocking, Edward John, Alex Michalos, Rick Hansen, Tony Dorsey, Henry Klassen, Marvin Roseneau, and John Fraser.

\*To some of the "Good Gals" of the Basin, who have long been partners in sustainability: Vicki Husband, Joan Sawicki, Betty Ann Shore, Vivian Narcisse, Wendy Grant, Lucille Johnstone, Anne Martin, Diane Bailey, Moira Quail, Beth Johnson, Linda Cody, Linda Crompton and ZoAnne Morton

Nearly 25 years ago in 1977, some of those “fellas and gals” were present at a Fraser River Conference, where resolutions were made in support of Citizen involvement in the management of the River as being essential to its survival. They also fought for the designation of foreshore lands, protection of delta shores and made demands for the establishment of effluent standards. We are their inheritors and can not break faith with them, in exactly the same way as we are obligated to keep faith with those who will follow us in this magnificent Basin. It is to public and private citizens like this, that this Conference is directed, as well as to good and anonymous civil servants who work so hard to enact such directions and to those wise publicly elected people who have the courage to do “the Right Thing” (even when it is not popular) who all help to build the institutions of a Sustainable Society. To every such organization and individual, this is our Conference, this is our Basin, and this is our time.

If we are successful at this Conference, the next State-of-the-Basin Address, to be held November 22<sup>nd</sup> and 23<sup>rd</sup>, 2002, will feature an Address that reports on results measured against more objective Sustainability indicators refined here in the next day and a half together. As my valued Vice-Chair Roy Mussell, often says: “What can not be measured, can not be done”..(and we have much to do together.)

The Fraser flourished long before the human family joined it and could conceivably continue with out us, although it is unlikely that WE would long continue without it. Yet if you listen very carefully, you can hear the River and its Basin offering us a clear bargain: as long as we sustain it, it will sustain us!