CBT Water Symposium
Selkirk College
May 21-22, 2008

Neil Muth (CEO CBT) Welcome remarks.
Lots of communities signing on to Climate Change Charter [including Rossland] but almost none have capability to implement necessary changes. Kindy got provincial grants so regional districts can devise climate change mitigation strategies. CBT is starting to work on affordable housing issues. "Columbia Basin Water Network" formed as a resource for community groups and governments to share resources, ideas and expertise.

Kindy Gosal:
Coordinator is Chris Beers from Revelstoke. Hope by end of meeting to have formalized membership and steering committee. Been informally operating for 3 years.
Some ideas being or to be developed:

1. More access to web tools and maps
2. website to share knowledge
3. access to experts via bulletin board (failed effort)
4. develop educational workshops (water quality seminar, 4 pilot projects now)
5. reduce footprint for group meetings: carpool, bring own cups and water, travel offset (donated $ to Selkirk to establish ride website)

Chris Beers:
Each group represented give brief overview of what they do:
Bill Green- 1st nations interests
Kathy Moore- Citizens for Responsible Development- working on issues in Rossland pertaining to the protection of the quality and quantity of water from pressures of development.
Enviro Canada- Aisha water quality and measurement
Serge Zibin- IHA quality of drinking water, he is coordinator for source management and source protection.
Jim Duncan- monitoring watershed; quantity and quality. His area may grow to 30-50k and need to know if the water is sufficient (Cranbrook?) Continuing to educate re water.
Heather: Lake Windemere: community education programs; pesticide reduction.
Dwayne Boyer- MOE Nelson. Water stewardship, licensing, flooding
Paul MOE environmental protection
Don Nash- Regional District of Central Kootenay : Habitat, waste and water protection
Chris Grey & Paul Sneed- Selkirk geo-spatial technologies
Jennifer Yeow- Slocan River Streamkeepers- monitoring and measuring
Cindy Hall- Land Conservancy- Enviro initiatives, grants, tech support for groups; ideas, workshops and outreach. What happens on the land effects the water.
Bonnie- Councilor from New Denver- Well water, considering boundary expansion, biggest issue is water. How to protect water and work with neighbors.
LeeAnne Unger- West Kootenay Eco-Society hydro project, dozens of water licenses submitted, network with other groups.

Wildsights – education, enviro field trips for kids, wants to network with other educ groups.
Leeann Walker Wildsight conservation Elk River; Urban infill issues. Citizen science groups- how to work with in gov and regulatory framework.
Rachal- Wildsights Upper Columbia Pesticide reduction Golden and Inveremere effects of pesticides; edu campaign
David Quinn- Wildsights- Y2Y Regional council Habitat focus; healthy communities
Jim Smith Community Assoc. dying lake, gathering info to save it.
Grey White (retired Kaslo Forester) working on forest management; public edu disappointed there aren't more forestry people in attendance.
Cheryl Olson- Battle with logging company- they won and developer went elsewhere.
Hillary Elliot - Slocan Lakes Stewards- community volunteer- formed society so they could get funding.
Bob Jamieson- works with lots of NGOs concerned about wetlands systems
Stephan Martinea- Slocan valley watershed protection., community forest management of 80 creeks and domestic watersheds. Concerned about fire interface management.
Hans Schrier and Sandra Brown- teach integrated management. Research 12 watersheds selected for study on impact of pine beetle and fire on watersheds. Help with community information.
[Note: Wally (CBT) said grant request for Rossland golf course was turned down]

Break out sessions:

- Monitoring
- Managing development
- Outreach and education
- Working with Local gov

Managing Development
What are Columbia Basin Watershed Network priorities for managing develop? What is appropriate?
Commercial, residential and recreation
Fire interface, forestry/ logging
Concept: what can a watershed sustain? # of people that can reasonably be sustained – consider climate change.
Definition of watershed?
Effects on quality and quantity from deforestation
(Baltimore: have law that says if cut 25% or more trees must replace elsewhere (nearby)
Timing of water flows
Community watershed- more restrictions than if domestic watershed by law.
Mining might get more popular as price of gold (and other minerals) rises- could be an issue in Rossland.
How to deal with development at the whim of developer – city is reactive not proactive.
Healthy communites need economic development too need to insure the impacts on enviromnet are minimized and determine who really benefits in the long term.

CBWN- objectives:
Information on water quality and quantity impacts from deforestation
Mentoring by groups with more experience
Navigating plans and sample plans: OCPs. Regional plans
Access to professionals: experts, lawyers to support advocacy groups (with no money)
Proposal to council; peer review- will be independent for develop proposal- deve pays bond for fees. City selects experts. Only problem is that most hydrologists in BC work for industry at some point so have bias in favor of develop so can get future work.
Hard to get the needs of the community balanced against devel interest.
Mike T is working on terms of reference for the contract- has someone good in mind.

Citizens often don't have a chance to get involved until it is too late in the process to have meaningful input.
Used to be good referral process between agencies but it has broken down. Onus on is public to do own monitoring.

Need best practices guideline for CB watershed- something all groups and cities and regional districts could sign on to. Local and specific.

Invermere_ land use planning different issues; 2 gov bodies in conflict but now agree- situation is desperate so must work together. Gov didn't have the capacity but now volunteer groups are filling in the gaps- monitoring and gathering other data.

Gov agencies are directed from the top: directive to double tourism w/in 10 years means agencies rewarded for any tourist related approvals. Bias in favor of devel.
Agencies don't communicate well with each other.

"Coordinated Resource Management Groups" used to be prevalent. Now just Yahk and Argenta still have one. Group of all stakeholders meets to discuss plans and ideas and work together to solve issues. Could be resurrected. Ministry of forests Dale Andrews Nelson was in charge. Has stewardship job.

OCP can be powerful. Don't underestimate the power of the plan. Need resource of good OCP language on watershed protection. Meant to guide for 5 years but often longer.

Slocan got $100k from CBT to create a Landscape Level Plan- mapping all wildlife corridors, tourism, communities, businesses, environmental aspects, water. Big job.

Create seminars on mediation and community empowerment. How to work with gov, industry, public groups.

"CRMP" (?) develop relationships, know the right questions to ask.

What mechanisms to buy up IPC's? potable water rights may be secured but what about energy rights? Apply for licenses and have to have develp plan too.

(?) cities have only so many days to respond to applications (?) didnt get that.

Suggested Actions:

1. Best practices
2. workshops mediation and community empowerment
3. list of experts and key questions

{{Cradle to Cradle- book recommended.}}

Summary of all break out groups:

1) Working with Local Gov- Shirley Campbell
What can the CBWN do to support local gov?
More communication: listen more, talk less.
Education- use educators, schools and children to get message out. Events, local media.
Consultant seminar groups, meet with all stake holders- concentrated and issue specific.

Enhanced empowerment for all groups.
Trained facilitator how best to help members to dev message, focus issues formulate strategies share actions with all other stakeholders

2) Education- Gerry
focus on kids and adults.
Dev standard curriculum for schools in basin. Involve all groups for field trips- kids get it- will teach their parents.

Adults (out of school) experirential. Talk about oppties., positive and negative impacts of actions. Need full circle: interpret. Assess, restore.

Turf issues among groups- need to work together.

3) IPPs Dave Quinn
Policy is unclear – needs to be changed with public input. Free for all on licenses at the present time- no limits on # allocated per creek. 40 year license granted.
CBWN objectives:

1. Help people understand process; simplified flow chart
2. Map exists, update it with existing power generators and applied for apps and wind generators.
3. database by date and what is happening on each application and license
4. citizens guide to IPPs- resources and tools “watershed watch” put one together but needs to be created in CB format
5. Unclear public process- no standards or fines laid out for violators. May require change in watershed law.

4) Managing Development- Chris Beer
What’s appropriate and how to make it sustainable?

Development is piecemeal- hard to track and assess.
Objectives:

1. more info on quality and quantity of water in deforested areas.
2. Mentoring by groups with more experience
3. coordinate planning- scale: local or regional
4. Access to technical, legal, facilities
5. getting advance notice of projects/
6. Improved participation in OCPs
7. Id what is capacity of given area or watershed.
8. get developer to understand priorities of community. (not just economic benefit)

Actions:

1. Best practice to CB (endorsed by all groups)
2. workshops on mediation & empowerment
3. develop list of experts (legal, technical; West coast environmental law)
4. develop list of questions

Smart growth workshops- carbon footprint, make use of local expertise

5) Monitoring -Jim Duncan
Volunteers and paid monitors will be noticed by politicians. Protocol developed by environ Canada- important to do it long term- build renewal into project- so it continues.
Collaboration of lots of groups and gov. (Fed, MOE, Natl parks, prov parks, IHA)
Local, lay public systematic monitoring= power.
CBWN- actions and objectives:

1. Set up scholarship to fund training and travel

Monitoring- why bother?
Enviro Canada- Aisha and Sheena – totally supports monitoring

Water quality management looks at chemistry and bugs.
Things to consider:
What is objective? How will it be used?
If scientifically defensible must have protocols and plan
Site selection is important. Upstream and down stream
Protocols, standards and field sheets
QA/OC plan use certified lab.
Frequency: monthly is best, annually for CABIN
Project length: at least 10 years
Parameters, data management and storage

CBT is hosting website to store data. Very cool- collecting for whole basin.
Can test for PH, conductivity, turbidity, dissolved salts, temperature, bacteria, etc

Hans and Sandra tag team presentation:
Need electricity and water footprint- carbon is almost impossible to actually determine.
Climate change and land use change- both are most important to consider now.

Blue water: ground water, infiltration., percolation., runoff
Green water: evap., rain in trees, storage
Virtual water: water required to produce a crop or product

Water demands: food production will have massive increases. Energy production: 3 barrels of water required to produce 1 barrel of oil. Alberta does not give out anymore water licenses at all.
Challenges: pollutants of all types

Impacts on quality and quantity: agriculture, urbanization, recreation, forestry
Gov agencied don't collaborate- separate entities.

Change in climate here- warmer, earlier melt, accelerated glacial melt, change in streamflows.
Change in temperature in this area: impact on water, hugely variable, very uncertain.

Higher elevations are warming faster; due to carbon dioxide not dissipating. Jan and march warming faster than other months. Earlier peak flows, longer dry spells. Happening all over the NW trends are very clear. Droughts will come again.

What does it mean? More and bigger reservoirs? Not necessarily- we've learned from mistakes of past dams.

Landuse: need to manage green and blue water, decrease the chemical load, demand management. Water shortage and increased demand, erosion issues.

Watershed: Inventory and determine the sensitive areas in watershed.- critical habitat, riparian zones, cultural things. Consider the portion of the area that could be impacted and decide how much to protect; baseline it, zone it. Take a proactive approach to planning. High priority to community.

Top area is ESA 1- aquifer, permanent water courses, wetlands,. Undisturbed areas with high species diversity.

ESA assessment; transparency, prevention is cheaper than rehabilitation. Look at cumulative effects. Enviro degradation can be slow and non-linear.

EIS- looks to the impact of a specific project
ESA- is more general; looks at whole area- do it before a project is proposed. Often but not always requires a large team of experts and volunteers (students)

Langley example:
Considered:
Abiotic- geo hazards, sensitive aquifer
Biotic- fish habitat. Natural vegetation. Birds and wildlife
Cultural- landscape character and historic sites

ESA has discouraged a lot of develop in sensitive areas; resulted in moratorium on building. Work with planners and city

Headwater protection is important- best if can be kept forested.
Aquifers- once contaminated almost impossible to clean up.
Glaco-flurial- easily polluted.
Can tell from drainage pattern what the underlying geology is.
{{ determine info about our aquifer- was it mapped? Is it contained? Probably not due to all the mining activity. Hans says be worried about it}}

Results of pine beetle and fire impacts on watershed will be posted:
www.landfood.UBC.CA/swe/projects/mpb/index.html

Day 2
Bill Green- Watershed Planning-
Planning for resource allocation,($), conservation and restoration- to empower and enable collaborative action with local gov and citizen groups, forestry and educators.
Can't take a hardline approach because have no power; have to work collaboratively and through persuasion.

Kindy: take a look at all the values in the watershed- economic, social, environmental, cultural consider them all; can't focus entirely on environmental issues. Scope of management is defined by the problem. Planning is the tool to solve issues. The IPP battles for instance are an example of fighting one off fights, need cohesive plan and proper regulation. Could use the over all approach to manage untouched watersheds

Bill: Problem is that no one has the energy to create plans for untouched areas- only comes up as an issue when there is a threat to it; planning in advance just won't happen as a practical matter. MoE and DFO have a guide:"watershed based fish sustainability plan" The Elk Flathead ecosystem stewardship framework (Ktunaxa Nations Council) has very restrictive rules: No development or in places allowed, it is very restrictive.

Can you even attach $ value to things like forests and water? Univ de Austral, in Chile has done so.

Political drivers & factors:
Ivor (from IHA) Health concerns are the #1 socio-economic. Environmental issues rank #5. Economic-cultural – fish are a cultural value- they have instrinsic value- not just what their price on the food market. 1st nations are the champions of cultural values but they are too overwhelmed to come to an event like this (all bands were invited) There is a shift in political climate: they are small in numbers but have political clout.

Requires strong leadership if you want progress start with key groups- local champion is required and organizational leadership. Try for multistake holder buy in but takes lots of time.

Gerry: Need mediators who understand local issues and local players (brought in outside mediator from Vanc and was a total waste of money.
If possible, start with "green light issues and green light people"- those easy issues that appeal to a broad range of people- have some successes.

Kimberly: felt very isolated in fight, didn't have coalition or know of other groups (like these attending symposium). Sharing lessons would be helpful. Need systematic and long term monitoring. Sheree: what does that entail? What does government do and what should citizens do? Jennifer Yeow offered to give advise later.
Fraser Basin Council has good ideas.

Part 2- Short course on integrated water management- Hans Schrier
Groups need to start monitoring. Australia and NZ have great Land Care program- they sponsor groups to support program (Maybe CBT could do that)

Agricultural:
Monitoring is a big issue. Look at the agriculture, animals and carrying capacity of the land (ability of plants to process runoff) should be in balance. Any excess ends up in the water.

Denmark – 7.5m between every ditch in ag areas. In Canada, no such barrier. Should spread manure as soon as harvested crop- shouldn't do it past Oct 15th- but no strong regs here. Need to revise how we deal with dead animals too. Carcasses rot into water courses.

Regional pictures of agric nutrients-
Sandra Brown
Despite the best efforts, the voluntary best practices are not working. Been in place for 10-15 years- there has been no decline of pollutants in ag water. Only way to get results would be to legislate solutions and enforce them: require set backs, buffer zones., settling ponds, proper handling of manure etc.

Audience comment: make the statement that we won't buy food from people who don't have a proper agri-farm plan. Buy local. Have the CBWN align itself with the food security group- collaborate.

Urbanization- Hans
Massive shift in water management. We focus on the blue water not the green water. Rainfall runoffs vary- rain falls then the runoff happens later. In the urbanized world the run off happens faster and more intensely beccuase water just flows across impervious paved and built surfaces. In the natural work the curve is lower and less intense and the run off occurs more slowly as water permeates into the ground. There is much more species diversity in natural flow- don't get washed away. To maintain bio-diversty less than 10% of newly developed land should be impervious- the rest needs to allow water to run naturally into the ground or plants. Any new deve will have huge impacts.

Site	Traditional approach	New/innovative approach
Local	drain and remove	retain on site,
Neighborhood	drain and remove	store and delay, use trees and plans
Watershed	storm drains, channel flow	maintain natural area, settling ponds, natural creek flow

Site ideas:
Local: green roofs, harvest roof water, minimize impervious surfaces, containment tanks, rain barrels. Use rain water for gardens and washing

Subdivisions/neighborhoods: use rock pits and sand to filter water in neighborhood, detention ponds, rock channels. Delay and filter on site, smaller roads, no curbs, no gutters, swales, ponds. Build wetlands to store and filter water, use pervious pavement ideas,create parking lots with swales, Use hammerhead cul de sacs- not round or with islands.

Watershed: manage flooding with flood areas, not damming, bigger buffer zones needed. 60-70 meters (only 30 now required) New materials like pervious paving (concrete and rubber tires allows water to flow through- not impacted by frost or snow. But needs to be cleaned by street cleaner to prevent clogging) Wetland stormwater management in urban areas may require solar powered water circulation pump to prevent stagnation and mosquitoes. Diversity of plant life is essential.

Stormwater quality management: source control, non- point source pollutants, control demand, need to consider water for environmental services not just humans (consider the needs of fish, animals, forests and plants too). Huge cumulative effects of pollutants must be considered.

www.waterbucket.bc.ca

Recreation
Biggest demand on water in mtn communities is when there is the least available. (tourists, retirement migrants, amenity migrants, health migrants and regular residents. North Americans use the most water of anyone on the planet.
Massive water usage at ski resorts: snowmaking, huge waters consumption to create inefficient snow. Snow line is retreating to 1300 meters- 30% of all ski resorts in Europe are now unsustainable. Go as high as possible. Any glacially fed rivers will be dramatically effected. Requires massive conservation effort.

Okanagon: 600% increase in golf courses. 3 of them use recycled water. 147 dams on the Columbia in BC now. Golf and wine making are water intensive. Write to Tiger and suggest he support irrigating of the putting green only- make it more environmentally sound and challenging too!
Would be easy for us to cut usage by 30% if we were willing to conserve.

Use database system to create a template for community watersheds:

- Define the watershed
- Quality: sampling & monitoring , fish life analysis, Enviro Canada, metals, bacteria. Temperature.
- Land use: agric/residential/forestry/recreational. Buffer zones, and other regs
- Bio-physical setting: precipitation and hydrology
- Land water interaction
- Management challenges for each issue & options for repair
- Identify the issues and concerns; water supply, septic systems, % of impervious surfaces

Conclusions: Need summary of info to present, not just raw data, needs interpretation. Need to pull it all together with web based tools.

Ideally it would be great to get before and after data on watershed: before deve and after. Issues with mixed use land- urban and industrial. Have to update study regularly to keep it relevant.

Groundwater

Different from surface water, finds pathways underground. Lots of human activities impact the groundwater as it seeps into the aquifers- once polluted almost impossible to clean up again.
Confined or non-confined aquifers.
Aquifers have ranking based on how much used, how vulnerable and then prioritized.
Only about 50% of BC's aquifers have been mapped.
The wells database can be found at BC ministry of environment grant section. New water law, passed last year may have some significance.

Need well protection plan. Its pathetic that there is no groundwater legislation. No limits on how much water can be taken out. Golf courses will suck water from neighboring wells and aquifers.
Question: can you predict where underground water will flow by looking at the topography. No.
Need a drill record to determine where the water will flow. Need lots of drill holes.
Monitor level in wells, isotope assessments. Ground water flow can change directions too. Lots of engineering holes have been drilled but very few have been logged.

Community based approaches: (build fish ladders, rehabilitate streams etc)
Monitoring, rehabilitation, making things better.
Plan, contact land owners
Community groups actually doing the rehabilitation work
Need to highlight the positive actions community groups are doing.

Urban Watershed Management- working with communities

Have vision and persuade- can have a lot of success with innovative efforts.

Community groups need to be organized; use students to help with research and monitoring projects.

Create a learning alliance- include all stakeholders. Determine what info is already available, what are objectives and indicators, build baseline info.

Create a plan:
Identify the key issues, quantify resources, develop options., generate funds, take action.
Requires local individuals and groups as champions with dedication.

Virtual water- Hans
2/3rd of world population will have water issues in next couple of decades. Meat takes 15-70kg of water to process. In North America we consume the equivalent of 10k bottles of water per person, In Africa the number is 1760. We are huge guzzlers.
How to reduce water footprint?
Hans showed various foods with their water footprint calculated. Stunning. These figures don't even calculate transportation costs.

Webbased certificate in watershed management: 30 students each course.
www.IRES.UBC.CA/projects/ism
www.RMES.UBC.CA
Integrated management – Jan – Sept
Urban watershed management- Sept – Dec.

Hans will convert presentation to format for .ftp site and send to Ian or Chris.

Geospatial Info and the Watershed Network- Ian Parfitt and Chris Grey (Paul Sneed- coordinator)

Purpose: to use GIS to support the needs and goals of the people in the Columbia Basin

Interactive webbased mapping. Using regional district, various ministries, biodiversity atlas and CBWN groups (us) data

BCWN projects:
Phase 1: basin wide mapping
Phase 2: pilot projects and further internet development
Phase 3: Pilot groups: Mark creek and Joseph creek)

Assembled data; collected using GPS
Hardcopy maps for planning and public meetings
Adding layers
Management and storage of watershed groups geospatial data.

Pilots:
Group created a common wish list, coached by what was possible with GPS.

Wish list included: land ownership, land use, habitat, fish, ecosystem, forestry tenures, mineral tenures, vegetation, water licenses, riparian zones, recreational tenure.

Mapped to date: minerals, fish, forestry, water licenses, wildlife habitat, invasive plant species.
Group data: restoration sites, fish counts, monitoring sites, watershed boundaries, network connectivity, domestic watershed boundaries water licenses,

Land Resource Data Warehouse
Gathering data, prov gov provides data, regional districts have been good, local gov not very cooperative
Lack of standards in GPS data is challenging- more guidance or facilitation in interpreting and mapping specific data would be helpful.

Can have students train others to collect data.

Interactive map has been being built for last couple of years.
www.cbt.org/water/mapping.html
two versions: basic for school kids, and advanced- lots more features.
Applied research priorities: trends? Historic? Investigate permeable surfaces? Trends of landscape changes?

Come to lab and get the complete tour. Looking for help to advance CBWN interests and needs.