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# Prairie Water Policy Symposium Winnipeg, September 22-23

## Meeting Notes

November 9, 2005

*The Prairie Water Policy Symposium is a project of the International Institute for Sustainable Development – Sustainable Natural Resources Management Program*

# Notes on a Prairie Water Policy Symposium

***September 22-23, 2005 – Winnipeg, MB***

## Contents

# Welcome

### *Bill Glanville, Vice President and COO, IISD*

Glanville welcomed symposium participants and provided background on IISD. He noted that the symposium represents the embodiment of a revitalized Sustainable Natural Resources Program at IISD.

### *Hank Venema, Director, Sustainable Natural Resources Management, IISD*

Venema provided a global overview on water resource use undertaken by the Millennium Ecosystem Assessment (MEA). He highlighted a key finding which notes "the intense vulnerability of the two billion people living in dryland agricultural ecosystems to the loss of…**get full quote**" He also noted the fact that Canadian Prairie agriculture uses 50% of the country's water resources. Manitoba agricultural losses due to flooding in 2005 will exceed $2B. Many trends identified by the MEA are happening on the Prairies. The MEA also noted the strong connection between human well being and ecosystem function, raising important implications for Prairie sustainability. MEA recognized the "Adapting Mosaic" of decentralized, local environmental governance (i.e. at the watershed level) as the most likely scenario toward sustainability.

All Prairie provinces have recognized the importance of watershed planning, but many challenges remain. Actual implementation will require more resources and political support in facilitating local self organization to make watershed management and stewardship a reality.

# Friday Morning Session: Biophysical Challenges

### *Bill Rannie, Chair, Department of Geography, U of W*

Rannie provided an overview of the history of Prairie Hydroclimate in the 19$^{th}$ Century and earlier, noting that the Red River freeze up period began approximately 12 days earlier and ended 12 days later. The frost free period was similarly shorter. Red River flooding was very significant, and summer flooding was common throughout the 1800s.

In 1858, Palliser encountered extensive water problems on the eastern Prairies before going on to experience extensive drought further west. The flows of many Prairie rivers also appear to have been much higher than today. During the 1800s, sediment cores from Devils Lake and Moon Lake in North Dakota indicate very high volumes, indicative of a very wet environment during that period.

Rannie noted how sensitive all North American Prairie regions are to precipitation and water flow. The original Prairie environment contained far more wetland areas, most of which have since been drained for agricultural development, particularly in the Red River Basin. Whether increases in the effective drainage of these areas contribute significantly to increased drainage is open for debate.

He also cited Henry Hind's 1858 account of severe algal growth on Lake of the Woods and Lake Winnipeg, noting that serious natural water quality problems were evident prior to human-caused degradation.

Commentators noted that Lake Winnipeg's algal population has become much less diverse over the past century, comprising an almost totally blue-green population today and indicating a very likely significant human impact.

### *Dave Kiely, Manager, National Water Supply Expansion Program, AAFC-PFRA*

Kiely reviewed water supply challenges across the Prairies and the importance of the resource in terms of agricultural, community, industrial, and hydro-electric development. The formation of PFRA in 1935 was a response to severe Prairie drought. Today the organization plays a key role in irrigation development and community water supply.

He reviewed conditions of the 2001-02 Prairie drought and its national impacts, accounting for nearly $6B in national losses, primarily in Alberta and Saskatchewan.

PFRA works with individual farmers for on-farm domestic and stock watering systems, and continues to explore larger project such as the Gardiner Dam – with a view toward increased water supply security. In 1972, PFRA played a key role in evaluating a comprehensive series of possible storage and diversion projects throughout the Saskatchewan-Nelson Basin; some of these projects are being considered today, such as the Meridian Dam. Increased population growth in some areas, particularly Alberta, will continue to place pressure on the resource – renewing calls for increased water management through diversions, storage, and conservation. Increased cooperation and integration of economic, social, and physical concerns will be required to develop and apply new solutions.

Comments from the floor raised the issue of economic valuation of the Meridian Dam (deemed uneconomic); accounting for the economic value of instream flow; and future sustainability challenges associated with irrigation as the major Prairie water use (can we develop a better adaptation solution?)

### *Harvey Thorleifson, Director, Minnesota Geological Survey*

Thorleifson noted the importance of groundwater supplies across the Prairies, particularly for community drinking water. Its importance as a water supply reserve does allow it to be drawn down during drought periods. However, the timeframe for sustainability must account for the fact that different aquifers are recharged over different periods – ranging from days to thousands of years.

Groundwater supplies are typically not given the attention of other sources, given their relative invisibility. Fortunately, the Prairie Provinces have devoted substantial effort toward groundwater mapping and the determination of sustainability estimates. Mapping technology has been improving rapidly, and its application has moved forward in some

jurisdictions such as Ontario (in response to Walkerton), but many have a long way to go and this requires a high level of cooperation (e.g. Winnipeg's groundwater recharge area reaches down to Mount Rushmore, SD, involving up to 5 km of sedimentary rock).

Thorleifson highlighted Manitoba's progress in 3D groundwater mapping on a regional scale – which has permitted some impressive forecasting ability in identifying future water well challenges over the coming decades. This level of detail appears to be unique in North America, with the technology now being applied further south in the Red River Basin (Fargo-Moorhead).

Comments focused on questions related to economic analysis of the value of groundwater; issues surrounding coalbed methane extraction in Alberta (raising the importance of temporal changes in groundwater); the possibilities of using non-potable water for industrial use (and the need to map the hydrogeochemical landscape to create these possibilities); and the strengths and weaknesses of models as accurate predictions of the future (there is a need to ensure that model development is an iterative process with the goal of making the model increasingly reliable over time).

### *Roger Gibbins, President and CEO, Canada West Foundation*

Gibbins raised the issue of water supply variability, with a focus on the larger urban centres on the Prairies. He noted that most Canadians do not seem to grasp the significance of Canada's water challenges.

Prairie urbanization has increased rapidly within a relatively short period of time. The region's large cities are not major users; their supply systems appear to work well, are very cost effective (even profitable in many cases), and very responsive to supply challenges (e.g. effective conservation). Water is not a major concern for most urbanites.

Why are water issues creeping upward in the public policy agenda? The spectre of climate change is providing an element of concern, if not the threat for action. Concerns about drought are intimately linked with climate change. The major forces of urban growth are really "suburban" and "ex-urban," providing a regional focus for urban planning. Watershed planning and management frameworks are in their infancy, and political boundaries do not match these.

Canada's Prairie cities' political influence will continue to grow. How can we mobilize the urban electorate to support provincial water policy (recognizing that water is not a major concern in these areas)? The clear arguments must be brought home to urbanites, and likely the best means by which to do so will be through promoting the esthetic importance of sustainable Prairie environments.

Questions focused on how urbanites will be made to care about water concerns (this will likely have to focus on the esthetic aspects of Prairie sustainability, compared to the economic or physical aspects); a suggestion that urban centres do in fact cause more water problems than we think (the linkage between urban centres and agricultural production areas has become increasingly weak, compared to the past – making it more

difficult for urbanites to connect to rural water and other issues; it was also suggested that the economic linkages may well be more important than the esthetic linkages (these are often long-term issues, while most consumers are more readily focused on short-term costs. as they discount the future).

### *Kevin Cash, Chief, Ecological Sciences Division, Environment Canada-Prairie and Northern Region*

Cash provided a constitutional overview on water quality and the role of his department. Water is not mentioned specifically in Canada's constitution, resulting in shared federal and provincial responsibility for the resource.

The Northwest Irrigation Act (1894) identified that water is a crown resource, and the 1930 Natural Resource Transfer Agreement saw most water responsibilities transferred to the provinces. The Prairie Provinces Water Board was established in 1948 as a federal-provincial partnership with water allocation and quality responsibilities along the interprovincial boundaries between AB-SK and SK-MB.

In 1992, Schedule E to the PPWB Master Agreement on Apportionment was established to address interprovincial water quality issues, in recognition of the PPWB's mandated responsibilities in this regard. PPWB partners conduct detailed water quality monitoring at several sites along the AB-SK and SK-MB boundaries.

The International Joint Commission, established under the 1909 Canada-U.S. Boundary Waters Treaty is another effective organization. The International Red River Board of the IJC focuses on water quality issues in the Red River Basin. In 1969, water quality objectives were established for the basin; these were further supported in 1989 with the identification of water quality alert levels. The Board has also committed to restoring Lake Winnipeg water quality to 1970 levels, a major step is support of international watershed-based cooperation.

A "Federal Action Plan: Recovering Sustainability in the Lake Winnipeg Watershed" is now under development, with a focus on better understanding the lake's ecological science and what contributes to its quality. There is a need for understanding and accepting the natural variability of the lake ecosystem; "stabilization" in resource management is always problematic, although this is of course difficult for a hydroelectric reservoir (which Lake Winnipeg ultimately is).

Comments addressed concerns over attempting to manage nature and a lack of focus on the "precautionary principle;" concerns over use of the term "competition" as part of Environment Canada's policy framework (it is intended to refer to the challenges of competing uses in addition to the realities of international economic competition); a question regarding total nitrogen contributions from contributing rivers (there is a need to focus on "bio-available" nitrogen); the meaning of "ecological integrity" for Lake Winnipeg; and the possibility for broadening public participation in the PPWB and the IJC's International Red River Board.

### *Sue Lowell, Director, Sustainability Strategy, Suncor Energy*

Lowell outlined the range of consumptive water uses in Alberta, with the bulk of these requirements utilized by the agriculture sector, thermal power generation, and municipal use. Alberta's Water For Life strategy was developed from 2001 to 2003, involving an extensive public consultation process. The oil and gas sector utilizes approximately 4% of the province's water consumption and is committed to the strategy and is working to design and manage its projects in support of strategy goals. The main focus of the strategy is shifting provincial policy and planning from the concept of "water" management to watershed management.

Water use in the oil and gas industry is under public scrutiny. The industry is increasing its use of non-potable water and recycling vs. using fresh, high quality water for oilfield injection and traditional flooding techniques used in oil and gas recovery. Use of freshwater from the Athabaska River watershed (in oilsands projects) is also declining.

The oil and gas industry is represented on the Alberta Water Council, and has been active in exploring issues, trends, and solutions in water use, including Alberta's emerging coalbed methane sector.

Commentators questioned the apparent "shared governance" partnership of industry and government in water planning, management, and stewardship (how can the public be assured that our resources are being protected?) It was also suggested that the proprietary nature of the oil and gas industry's geologic database could be very useful in assisting with better understanding Prairie groundwater issues (seems like a logical opportunity which could be explored). Additional concerns were expressed as to how best to keep politicians accountable for water management decisions; monitoring and measurement gaps in Alberta's Water For Life strategy were also noted.

### *Hank Venema, Director, Sustainable Natural Resources Management, IISD*

Venema explained IISD's approach in analyzing Prairie water data in terms of water use and water quality stresses – resulting in the geographic identification of apparent "hot spots," primarily in Manitoba's Red River Basin and central Alberta. The Census of Agriculture was used as the primary data source, with additional support from Ducks Unlimited Canada. The work builds upon earlier work by AAFC-PFRA and the Saskatchewan Watershed Authority.

All data sets are relative, having been normalized for population, scale, and other factors. Local application of soil and water conservation practices and municipal water conservation programs has also been included, although wetland conservation data was not included in the analysis.

Of note was the apparent finding (based on this data set), that most soil and water conservation practices are in fact not occurring in the hot spot areas facing the greatest waters supply and water quality stresses.

Questions focused on why soil and water conservation practices have not been taken up significantly in these areas (shelterbelts and grassed waterways are not used in eastern Alberta due to the realities of irrigation infrastructure and dryland agriculture); MB is targeting its agricultural conservation efforts in areas of greatest need and appreciates the inclusion of management practices in the data analysis; interest in the growth of zero-tillage was raised (available from the Canadian Census of Agriculture); and a suggestion was made for including data on the presence of more conservation agencies and activity on the landscape.

## Thursday Afternoon Session: Watershed Governance

### *Ian Campbell, Senior Project Director, Policy Research Initiative*

Campbell reported on water policy research conducted by the Federal Privy Council Office, Policy Research Initiative (PRI). Project areas include: water demand management, pollution control (water quality trading between municipalities and farmers), integrated landscape and watershed management, and watershed governance.

The PRI plays a research role in exploring emerging concepts which may be considered for future program activity by other arms of government.

### *Susan Lamb, CEO, Meewasin Valley Authority*

Lamb reviewed statistics regarding the Saskatchewan River Basin, focusing on the role of the Meewasin Valley Authority (MVA). The MVA is a partnership involving the provincial government, the City of Saskatoon, and the University of Saskatchewan and manages 60km of interpretative trails and related facilities with a focus on conservation, development, and education.

Five year sub-plans are developed to guide medium-term activities in partnership with numerous organizations and individuals. The MVA also employs comprehensive planning steps in all projects with a strong focus on public education, financial accountability, and performance management. The MVA owes much of its success to broad community support for its 100 year management plan, which is "politician proof."

Comments focused on a question as to whether the MVA has ever been challenged by a proposed riverbank development (yes); the process by which the organization's 100 year plan was created (a need identified by leading politicians and the university); challenges associated with the management of recreational lands (responsibilities are clearly defined before agreements are struck); the role of science in MVA activities (major partnerships with university); and the extent to which the MVA is willing to fund upstream watershed management, given that it has captured the interest and financial resources of many urbanites who enjoy the river's esthetic and other values (MVA is a major partner in the Partners FOR the Saskatchewan River Basin).

### *Darren Swanson, Project Manager, Measurement and Indicators, IISD*

Swanson provided an overview of the symposium's background research paper (see http://www.iisd.org/natres/water/pwps_background.asp), based on four case studies in

Prairie water policy (AB, SK, MB, and the Prairie Provinces Water Board). Provincial water policy and the history of the PPWB was reviewed in light of Integrated Water Resource Management principles articulated by the Global Water Partnership, following earlier U.N. work (Dublin Principles)

Policy innovations in all Prairie Provinces were highlighted. All provinces have articulated clear water strategies with each differing slightly in focus. Alberta and Saskatchewan have strong performance management systems in place, while Manitoba has a legislated commitment for watershed planning, and an existing provincial-municipal funding program (conservation districts). Management solutions will take time to be implemented across the Prairies, although Alberta's three leading watershed councils for the Bow, Oldman, and North Saskatchewan Rivers have independently made substantial progress toward state of watershed reporting and comprehensive planning.

Comments focused on the need to include the advanced, integrated environmental monitoring and management progress in the corporate sector, municipalities, and in many U.S. organizations (this was not addressed in the IISD report but represents a valuable information source); concerns over the withdrawal of federal research funding and concerns over industry-led water management planning in Saskatchewan (the Saskatchewan AgriVision Corporation has proposed a 50 year water management vision for the province to increase value-added agricultural development, although the Saskatchewan Watershed Authority has the legislative responsibility for water management in the province).

### *Merrell-Ann Phare, Executive Director/Legal Counsel, Centre for Indigenous Environmental Resources*

Phare noted that Indigenous people did not relinquish their water rights during the treaty process (taken from the U.S. Winters Doctrine, as this issue has never come before the Federal Court of Canada).

The Piikani First Nation case in Alberta (settled out of court in 2002) was based on the Winters Doctrine. Oldman River dam construction resulted in a $64M comprehensive settlement for the Piikani people, setting a powerful precedent.

The 1938 Constitution Act clarified that the 1930 Natural Resources Transfer Agreement included water responsibilities and ownership for the provinces, creating another level of complexity. Manitoba's view of Indigenous rights is not clear. Ontario is currently in a legal battle with Canada over the determination of Indigenous water rights, known as the "headland to headland" case.

While dated (1987), the Federal Water Policy outlines a number of pledges in support of meaningful consultation with Indigenous people, although application of the Policy itself, and implementation of its pledges do not appear to have been a high priority.

Indigenous people have a different long-term vision of what sustainability in water management/stewardship really means. There is a lack of research, monitoring, and

policy-making tools at the local level. Treaties do not follow watershed boundaries, and there is a lack of NGO supports for Indigenous communities around water. There is a need for understanding that both First Nations and Métis people have water rights which need to be addressed.

Federal and provincial jurisdictional cooperation issues need to be clarified, and Indigenous people must be involved at every level in watershed management. Several successful watershed management successes are in place across Canada. Each usually involves the formal participation of Indigenous people at the outset.

Comments covered issues including: initiatives where Indigenous participation ceased when these people decided to consult with government only (this has happened in other cases where it seemed unclear whether Indigenous participation was meaningful or recognized the water rights of Indigenous people); and a recognition of the value Indigenous participation in Saskatchewan's watershed planning processes, although sustaining this participation has been difficult, often due to time and financial limitations.

### *Phil Adkins, Acting Manager, Ag Water Directorate, AAFC-PFRA*

Adkins reviewed water governance issues in Canada, noting that 22 federal departments have some degree of water responsibility. Numerous provincial departments and agencies, municipalities, and NGOs all have a role to play. A new federal water policy is in development.

Climate and a series of complex institutional arrangements govern most water issues on the Prairies (e.g. Alberta irrigation use accounts for 60% of all irrigation in Canada).

The Prairie Provinces Water Board represents an effective approach to managing Prairie water between the provinces since 1948. Flexibility embodied within the PPWB's 1969 Master Agreement on Apportionment has proven to be make the MAA an effective interprovincial water management and allocation tool. Three PPWB committees provide scientific and technical support (hydrology, water quality, groundwater).

Canada, particularly through Environment Canada, has made strong international commitments to lead on the implementation of Integrated Water Resource Management. In terms of the Prairies, there is a real need to integrate the interests of agriculture and water management/environment.

Comments involved possibilities associated with Natural Resources Canada's development of a water atlas of information; concerns regarding the privatization of drainage responsibilities (Edmonton is considering a proposal from Epcor); the fundamental question of incorporating the carrying capacity concept in watershed planning (some watersheds and aquifers are clearly over-allocated and the negative results will be clear in the future). The federal government's commitment to a new water policy was also questioned, particularly in terms of the strong role for the private sector which appears to be developing. Thinking behind the Prairie Provinces Water Board's decision to terminate the mandate of its Committee on Instream Flow Needs was

questioned (this was an ad hoc committee, and its initial terms of reference had been completed; the PPWB is currently planning an IFN workshop).

### *Lance Yohe, Executive Director, Red River Basin Commission*

Yohe provided an overview of the Red River Basin physiographic history, and progress since the 1960s on improving local and government cooperation and consultation in basin water management across the international boundary and between two U.S. states.

The Red River Basin Commission (RRBC) has evolved as a charitable organization over the past 23 years involving local governments, provincial/state, federal, Indigenous, and other citizen appointees. The RRBC has drafted a Natural Resources Framework Plan (NRFP) in an attempt to coordinate basin management among dozens of organizations with overlapping and competing responsibilities. The NRFP contains 13 goals, numerous objectives, and an evolving "action agenda."

Comments focused on questions regarding the RRBC's success in supporting local governments with tangible watershed management projects (RRBC's greatest value appears to be in making the linkages between organizations with needs and those with means); limiting floodplain development; concerns associated with having economic interests supporting the RRBC's education program; and the organization's challenges in dealing with Devils Lake (RRBC operates primarily by consensus and does not have full partnership agreement or a formal position on this issue).

## Symposium Dinner

### *Terry Duguid and Norm Brandson, Co-Chairs, Lake Winnipeg Implementation Committee*

Duguid and Brandon reported on their work together to help the federal and provincial governments better understand how they might implement lasting solutions to addressing Lake Winnipeg water quality.

There are many examples of progress throughout the Lake Winnipeg watershed, but resources, more political support, private help, and the commitment of all Manitobans (and ultimately, all watershed residents) will be required. In many cases, we know the "what," we just need to figure out the "how." The Lake Winnipeg Stewardship Board's report is one starting point, and there others which all need to be considered. An advisory committee comprised of several stakeholders is assisting Duguid and Brandson; their report should be ready later this year.

Comments from the floor centred on the opportunity for Prairie water policy efforts to work in partnership with First Nation communities – to help release significant federal support for watershed management solutions – through the recognition of First Nation water rights across the Prairies.

# Friday Morning Session: Integrating Best Practices

### *Rick Findlay, Director, Water Programme, Pollution Probe*

Findlay reviewed the origins and activities of Pollution Probe, highlighting recent work on a primer on watershed management communications and a comprehensive report on children and the environment.

### *Hon. Steve Ashton, Minister of Manitoba Water Stewardship*

Minister Ashton provided some background on water issues in Manitoba, noting the challenge of variability (every water system in the province is currently experiencing record flow levels, while Prairie drought has been a major challenge in recent years). Manitobans are Canada's highest water users.

Manitoba has responded to the challenge of drinking water quality through the creation of the Office of Drinking Water and passage of the Water Protection Act and its focus on watershed-based planning. Standards and regulations are also being strengthened, particularly in the application of tough licensing requirements and support to assist the province's communities in improving sewage treatment.

Manitoba is also focusing on site-specific strategies (e.g. Lake Winnipeg). The province understands the challenges associated with making real progress on nutrient reduction, and is taking an incremental approach working in partnership with farmers, the City of Winnipeg, and upstream neighbours in the U.S.

Ashton challenged the group to ensure that we leave water in better quality for future generations than it exists today.

Commentators concerns over Devils Lake water quality; the future of irrigated agriculture on the Prairies; and the need for Manitoba Water Stewardship to fully incorporate responsibilities for wastewater treatment (instead of another department handling it).

### *Hon. David Forbes, Minister of Environment and Minister responsible for the Saskatchewan Watershed Authority*

Minister Forbes reviewed the origins of the province's Safe Drinking Water Strategy, which has guided Saskatchewan Environment policy for the past three years.

Saskatchewan felt a multi-department approach was required for its key cross-government Safe Drinking Water Strategy (SDWS) – delivered through SK Environment, SaskWater, and the SK Watershed Authority. Several additional departments are involved in all aspects of strategy delivery. There is a strong regulatory approach and focus on source water protection planning through community-based watershed planning.

Saskatchewan has an open accountability framework for measuring progress on the strategy (like every department). The SDWS is also reviewed by an interdepartmental

review process at the deputy minister level. Public awareness has been strengthened through a water quality information website.

The province is beginning to implement its comprehensive "Green and Prosperous" strategy, in which water plays a major role. A model for state of watershed reporting (with watershed indicators) will be released soon.

Commentators noted a question regarding the relative strength of water/environment departments vs. agriculture, given that both Manitoba and Saskatchewan support the growth of industrial agriculture; concerns regarding source water protection and the fact that both Manitoba and Saskatchewan depend heavily on upstream sources beyond their boundaries in Alberta, and these are under pressure.

### *Beverly Yee, Assistance Deputy Minister, Environmental Assurance, Alberta Environment*

Yee noted the province's Water For Life (W4L) strategy is in its second year of implementation, with significant funding commitments now occurring. W4L was developed in the face of serious water allocation questions, and growing demands in many industrial sectors.

Like other provinces, Alberta has struggled with improving interdepartmental cooperation and decision-making. A systems approach guides strategy implementation, in which expected outcomes are clear. There is a shared government-wide vision for the strategy and a place-based approach in which planning decisions are largely made within the watershed. A comprehensive consultation process was intended to ensure that all Albertans can support the strategy.

W4L represents a shift from process to outcomes, from "water" management to watershed management, and a move to watershed governance. To date, Alberta has assessed and ranked all water supply systems through a risk analysis. The Province is now exploring the definition of healthy aquatic ecosystems. Challenges remain in terms of storage expansion in southern Alberta (the public will not accept it, despite strong interest from the agriculture sector).

Alberta has outlined three shared governance partnership levels. All strategy coordination is reviewed by the Alberta Water Council (multi-stakeholder); Watershed Planning Councils develop regional basin management plans and provide state of watershed reports; and Watershed Stewardship Groups will undertake management and monitoring at the local level.

The province is working to improve water use efficiency by 30% from 2005 levels to 2015. Some industrial sectors have suggested this target is too ambitious. The Alberta Water Council is exploring science questions around water value and pricing.

Future challenges will focus on how to monitor, validate, and report on results. Building watershed planning and management capacity at the local and regional levels needs to develop quickly.

Comments questioned how Alberta's W4L strategy will address water use by the oil and gas industry (increased conservation and less use of fresh water); pricing models; and what policy tools can be shared across the Prairies,

### *Brook Harker, Manager, Watershed Evaluation of BMPs, AAFC-PFRA*

Harker noted that AAFC has spent several hundred million dollars on the implementation of beneficial management practices (BMPs) in recent years. However, to date very little watershed-based evaluation of BMP effectiveness has occurred.

The WEBs program is a national initiative under the APF, in partnership with the provincial governments, Ducks Unlimited Canada, and local partners. Water quality is the dominant indicator for assessment within seven micro watersheds. There is also a strong dialogue with the USDA's Conservation Effects Assessment Project (CEAP), although CEAP watersheds are typically much larger and as such may be difficult to attribute water quality improvements to particular BMPs.

Manitoba's South Tobacco Creek is the flagship watershed, owing to a strong history of agricultural producer partnerships and at least 12 years of solid data. At this site, seven BMPs are being applied and evaluated in terms of their environmental and economic impact on one farmer's operation.

Comments covered areas including: the process for determining which BMPs were applied in each watershed (based largely on local issues); whether any WEBs locations focused on organic agriculture (not at this time); and degree to which soil conservation practices are part of WEBs (a strong component).

### *Tim Marta, Associate Director, AAFC-PFRA Environmental Policy Bureau*

Marta outlined a tri-national policy review initiative (Canada, USA, Mexico) on Environmentally Sustainable Agriculture and Water Quality, a good example of taking action and implementing real action beyond the initial agreement. IISD is assisting with coordination and facilitation between the three countries.

Three tri-national working groups are working in the following areas: policy instruments (lead: Mexico), program delivery (lead: Canada), research and information (lead: USA). All countries have agreed that working group activity will be consistent in terms of information collection, synthesis/analysis, and dissemination of results.

Project results are targeted for presentation at the World Water Forum in Mexico City (March 2006). The overall impact benefit will focus on helping to put BMPs into practice with a focus on building capacity in developing countries, while demonstrating how IWRM can be put into practice as a sustainable development solution.

Comments focused on the definition of "environmentally sustainable agriculture;" the growth of hog barns across the Prairies and the world; how to learn from other global progress (e.g. Australia); and how this program complements OECD reporting on agriculture and the environment (a direct connection).

### *Jim Robinson, Associate Professor, University of Waterloo*

Robinson has spent several years in Canberra and Melbourne, and today spends four months per year in Australia. Droughts are common in this highly urbanized county with the highest per capita water storage capacity on the planet (and water use is third highest behind the USA and Canada).

Agriculture is a significant land use in the SE and SW. Climate change appears to be causing serious water challenges; more rain is now falling on the ocean vs. the land.

The City of Goulburn encountered a severe water shortage in May 2005 and undertook heavy conservation measures and consideration of new sources, including using treated sewage water. Sydney's water supply comes from the same water catchment; its reservoir is currently less than 40% full (one year's supply). A desalination plant is being considered. A statewide water corporation manages supply for Western Australia, although a standard statewide pricing policy is problematic (water is shipped up to 600km in one case).

Melbourne has developed a 50 year water supply plan with a heavy water conservation component (and no new dams). Full cost water pricing is expected to be in place soon. Dramatically re-thinking subdivision design towards water conservation is a key factor.

Comments focused on how Canada could make better connections with Australia's strong water, environment, and research experience (environmental organizations and the national government are much stronger than in Canada, CSIRO has a presence in every major centre instead of only the capital). Other questions addressed the severe drinking water challenges being faced by Adelaide due to upstream agricultural use in the Murray-Darling Basin; the role of groundwater (it is typically saline); the important role of eco-tourism; and the impact of agricultural water use.

## Lunch Presentation

### *Lloyd Axworthy, President, University of Winnipeg*

Axworthy suggested Canada's water policy debate is lacking a meaningful narrative for political action. There is no clear rationale or direction for politicians to find real solutions. Until the challenge and its solutions become clear, there will be no fundamental policy transformations; what is the political "tipping point" for watershed management solutions or saving Lake Winnipeg?

Prairie watersheds are crying out for a cooperative mechanism. The IJC does provide an approach which, until recently (Devils Lake), appeared to work very well. International cooperation is based on a series of progressive steps aimed at avoiding conflict

(anticipation, prevention, dialogue, etc.), but ultimately a clear dispute resolution mechanism is required. The historically important and effective role of the IJC appears now to have been devalued by our U.S. neighbours.

There will be serious future international challenges over water; there are already between the USA and Mexico. We need to be building on successful partnerships, not breaking them down by not supporting them.

How can we expect our international partners to work with us if we can't work with our provincial neighbours on a long-term cooperative Prairie water strategy or a national water strategy? Perhaps the Prairies need to look at this as the foundation for a new era of Prairie regional cooperation.

# Policy Discussions

The following questions were derived from input received from participants via a survey conducted during the conference.

### *1. How to integrate ILOs and watershed management?*

Initial comments from the floor focused on means by which to change the industrial agriculture system to support the growth of organic production and other "sustainable" systems. The means by which to implement existing commercially available and economically viable technology (e.g. hog manure biodigesters) must be determined.

#### *Plenary comments*

- in order to integrate, all stakeholders need to be at the table as equal participants
- it is unclear what BMPs are in place/workable for ILOs; who pays?
- are these management systems efficient in terms of climate change?
- must integrate land use planning with watershed planning
- disconnect between opinions of NGOs, regulators, and science
- hog producers do have to get larger to compete; producers do care about the environment and most operate below the guidelines (80% do now), and the marginal operators are disappearing
- small is not always beautiful – many smaller producers winter their cattle along creekbeds, resulting in major nutrient loads with spring runoff (also a problem with winter spreading of manure – weak regulations)
- biodigesters will need to be affordable for smaller operations; energy markets must be developed (utilities may not purchase)
- need scientific monitoring to measure ecosystem-wide improvements on a watershed scale; focus on net improvement vs. net loss (determining appropriate indicators is a challenge)

- accepting the reality of carrying capacity (i.e. setting limits on ILOs in each watershed) must be a critical requirement, especially with respect to groundwater
- need a more specific question on this, given the challenge of different local, regional, and provincial approaches/guidelines
- have to accept the economic reality that agricultural producers need to use their land to make a living (and they make investments to do so); how to integrate water/environment policy in support of rural viability; regulations cannot be too complex or producers will be burdened
- what is the highest value product that can produced in a watershed (based on existing water resource availability or other environmental limits)?
- how to allow for the appropriate agricultural activities within different areas of a watershed (look at assimilative capacity of each watershed)

### *2. How to promote and cultivate participation of Aboriginal communities in watershed management?*

The lack of apparent Aboriginal participation at this session of the symposium was noted, while the importance and the potential associated with fully engaging First Nation and Métis communities was stressed.

### *Plenary Comments*

- Manitoba Water Stewardship has been exploring this question and has an idea to recognize Aboriginal communities alongside conservation districts or others as designated watershed planning authorities
- Alberta has realized that Aboriginal communities can be an excellent source of valuable watershed management information; there is a need to leave the legal questions behind and initiate the process; focus on “creating comfort” at the table
- we must clearly distinguish the complex negotiation aspects from communication; it quite amazing what a difference some words can make; there is also a need to clarify the jurisdictional obligations which may be related to indigenous people
- it is difficult to engage Aboriginal communities when they are dealing with many other higher priority social issues; there seem to be many barriers related to Aboriginal participation (need to address why, what costs, what level)
- Manitoba Water Stewardship has realized how important the spiritual nature of water as a life giving force is to Aboriginal people; understanding this is critical
- Aboriginal people need to be there at the beginning of the consultation process, and they should be approached first (protocol: letter, phone call, visit); offer an opportunity to provide information or engage youth in the emotional, physical, spiritual, and healing aspects of water
- First Nations are a separate level of government and need to be recognized as such (compared to stakeholders – Great Lakes process made this mistake); “vision” needs to be beyond 10 or 20 years – towards seven generations;

### *3. How can we promote watershed planning and monitoring as a universal social good to get the job done?*

A historical analogy was made connecting this contemporary challenge to that of rural telephone service and rural electrification.

### *Plenary Comments*

- when will we re-draw our political boundaries on watershed boundaries; if we are not ready to do this tomorrow, then when; if we are not ready to do this yet, perhaps Manitoba's conservation districts and others can assist in demonstrating an interim step of working across municipal boundaries on watersheds (CD funding formula is attractive; usually 3:1, provincial:local)
- perhaps planning (and voting) processes could be revised along watersheds – an inherent right to vote along watershed lines; watershed planning process should be just like we plan zoning – an inherent right (watershed vs. electoral district)
- Minnesota and North Dakota have watershed-based taxation powers across county lines; this can get complicated with respect to county-based voting blocs
- Saskatchewan has been working from the ground level up (municipalities, FNs, conservation groups, etc) – letting these people determine what the priorities are (in addition to shared knowledge base) – both for the provincial government and local bodies (funding for implementation will be a challenge)
- there is a real need for quality, standardized data, and mapping information; there is no consistency from watershed to watershed; perhaps this new federal water atlas will be of help; public access to data is another challenge
- it is critical to listen to the watershed communities and understand their needs in watershed planning (e.g. farm income is a key issue in rural communities)
- stable funding for innovative watershed projects (e.g. community-based watershed monitoring) is required
- need to showcase some successful watershed planning models
- stimulate positive action through incentives (e.g. tax-based rewards); negative action needs to end in a result or consequence
- need a clear indication of funding/support/commitment before implementation can really happen
- need a facilitation process – develop a framework, support staff, community leadership – need to build the community "buy in"

### *4. How best to incorporate innovative policies such as market mechanisms and international experiences in support of watershed management?*

We have heard about strong progress on ecosystem service payments, etc. in other jurisdictions in North America, as well as Australia and New Zealand. We need to learn from the best.

### *Plenary Comments*

- there is lots of international experience to learn from; start small with pilot innovations (see if its working before expansion); need to inform, educate, and build a base through existing watershed institutions (set goals, criteria, evaluation)
- there are at least 14 ecological service components being traded in separate systems right now; need to inform/educate and build a knowledge base
- how to grasp the concept of paying polluters (farmers or industrial operations) for water quality improvement; there is no universal agreement on this
- need to link other kinds of participation in the process (e.g. how to have large areas of relatively well off people in cities help pay for watershed management and stewardship solutions)
- need to monitor and evaluate all the way through; be flexible and make adjustments (adaptive management concept)
- don't accept trading water; it is a public good (key principle); polluters should pay, and those who pollute a lot should pay more
- look to the major water users/grassroots for solution ideas (e.g. informal water use rights trading arose at the community level with irrigators/municipalities in southern Alberta during the 2002 drought, without an institutional framework; government then built on this to provide a legislative framework to facilitate additional trading opportunities in a fully allocated basis (with a 10% allocation levy to support instream flow needs) – no lawyers yet
- how to include externalities in water pricing – for better allocation (currently priced below its management cost)
- how to achieve agreement regarding what practices should be regulated, which should have incentives, and which practices producers should be paying on their own (because they make economic sense)
- municipalities with sewage treatment plants should take responsibility for the water bodies they discharge into (not just the effluent)
- what are the motivational factors (including emotional drivers) for private landowners to make meaningful changes on the landscape; how to make these efforts economically sustainable for the long term; how to encourage landowners to undertake these changes on their own (EGS payments?)

- are tax credits or other incentives best? – seem to have a deep meaning for people; how to make these sustainable for the long-term; perhaps regulations are best? What is the right mix of mechanisms/instruments?
- need to look at full cost pricing of water – educate people
- find ways to reduce transaction costs of incentives; highlight opportunities for trading and EGS payments
- need research to understand the distributional implications of some instruments (not always a win-win situation; look at benefits and risks)
- need to develop institutional mechanisms for coordinating incentives to minimize unanticipated consequences; eliminate perverse incentives

### *5. How to address the disconnect between urban taxpayers and the ecosystem services they are receiving?*

Are esthetic values or economic realities the best means by which to engage urban consumers in helping to pay for largely rural land and water management?

### *Plenary Comments*

- we do not agree with the premise that urban consumers must be convinced to support watershed management on the basis of esthetic values – urbanites will pay for ecosystem services/externalities
- is more communication needed on rural landscapes and urban quality of life?
- urbanites will always pay for flood protection, and willingly put up higher levies at the expense of rural people
- how to engage youth on this
- is there a romantic view of the rural lifestyle and the services this landscape provides?
- urbanites will pay for water treatment (and may be willing to pay for source protection)
- the Prairies are 90% comprised of square parcels of privately held land; the individual decisions and aspirations of thousands of landowners has to be respected; the Prairies are not a park that needs a management plan
- farmers will challenge land use/environmental recommendations made from urbanites and urban politicians; urbanites do not understand the challenges rural landowners face
- urbanites may appreciate (and be connected to their cottage and lake), but perhaps not as well to their drinking water; water seems to connect Manitobans
- ecosystems are not an concept people easily understand, until they are gone; both rural people and urbanites are poor stewards of the water resource

### *6. How to harness the energies of youth and engage/educate young people in local initiatives for sustainable water management?*

This appears to be a substantial gap in water policy among the Prairie Provinces.

### *Plenary Comments*

- Envirothon is a successful North America-wide field experience program aimed at teaching students about human-environment interactions, with a strong focus on water (scholarships provided)
- the Minnesota River Watch program involves data collection by students who are trained in accordance with EPA protocols (easy to do – building beside a stream, donated instruments, lots of people)
- more interpretive centres would help (focus on natural capital, donated instruments, in-field/on-stream experience)
- CWRA Project WET has strong national uptake
- need a focus on teacher training and resources
- what is the purpose of engaging youth (to what end?)

### *7. How to address the implementation gap – toward more effective integration of existing agencies and efforts?*

There are many positive steps being taken already, although many overlap or would benefit from greater cooperation with related initiatives.

### *Plenary Comments*

- there is a need for more transparency in the process (why are discussions limited to certain stakeholders?)
- we need a common vision and agreement on the relative roles being played
- water must remain a common property resource (how to ensure?)
- is there a lack of financial resources in support of water issues?
- funding will come if the underlying principles and vision are in place
- there is a challenge in reconciling federal and provincial indicators (communities need standardized data and interpretation tools so they can develop strategies which work locally, to achieve objectives which are important locally)
- there are consistency problems at the highest levels of government (Prairie or national ministers responsible for water should meet regularly, like CCME)