

**Lake Diefenbaker Consultation Meeting – Government Sector
 July 24, 2012 @ 10:00 a.m.
 T.C. Douglas Building, 3475 Albert Street, Regina**

Facilitators: Kent Gustavson, Dazawray Landrie-Parker
Saskatchewan Watershed Authority (SWA): Robin Tod, Heather Davies, Terry Hanley
 (Observer)

Name	Agency
Ron Dolter	Ministry of Energy and Resources
Jason Drury	Ministry of Agriculture
Megan Garner	Prairie Province Water Board
Shaun Gray	SaskPower
Vincent Harper	Fisheries and Oceans Canada
Peter Heal	Ministry of Highways and Infrastructure
Jeff Hovdebo	Fisheries and Oceans Canada
Leigh Johnson	Aboriginal Affairs and Northern Development Canada
Len Kowalko	Ministry of Government Relations
John Linsley	Ministry of Agriculture
Jackie Lukey	Fisheries and Oceans Canada
Jennifer Merkowsky	Ministry of Environment
Michael Mitchell	Enterprise Saskatchewan
Kelly Neuert	Ministry of Environment
Ingrid Newton	SaskWater
Chris Potter	Ministry of Parks, Culture and Sport - Saskatchewan Parks Service
Norm Simaluk	Ministry of Government Relations - First Nations, Métis and Northern Affairs
Terry Storey	Ministry of Highways and Infrastructure
Ingrid Thorsteinson	Transport Canada- Navigable Waters Protection Program
Dale Tomasiewicz	Agriculture and Agri-Food Canada - Canada Saskatchewan Irrigation Development Centre
Lorne Veitch	Ministry of Agriculture

Meeting called to order at 10:00 a.m.

Kent Gustavson opened the meeting and introduced Robin Tod, Heather Davis and Dazawray Landrie-Parker to the participants. The participants were asked to introduce themselves and their respective agency.

Kent went through the timeline for the process and he discussed the sectoral meetings to the participants. The role of Rescan Environmental was outlined as the consultant would report back

to the groups collectively what is said in each of these sessions. Information will be used to develop a draft Reservoir Operating Plan which will be submitted to the provincial Cabinet for final approval.

Summary notes from each session will be posted on the SWA website. Information collected today will supplement the responses to the questionnaire. Participants were requested to complete the questionnaire as this survey is an important tool used to collect feedback.

Kent reviewed the agenda for the meeting and highlighted the first step of brainstorming to get ideas flowing from the group. He also went over the basic principles for discussion during the meeting.

Challenges

- Participants noted that there are opposing interests for the operation of the reservoir. Some users want high water levels, some want lower water levels; you cannot please everyone.
- Lack of information for Fisheries and Oceans Canada on what are the optimum levels for fish populations. Specific species are impacted such as low water levels in the spring for northern pike spawning habitat. Later in the summer, high water levels impact the Piping Plovers. The conflicting needs of species and the need to fully understand the impacts of setting specific reservoir operating levels for both terrestrial and aquatic species.
- There is a need for baseline understanding of what information is available in terms of biophysical and ecological data.
- As Saskatchewan continues to grow both in population and the economy there will be increased pressures on the Lake Diefenbaker reservoir. The greatest pressure will likely be from industrial and municipal demands for water supply.
- Ensuring that treaty and First Nation rights are respected in the management of the system. First Nations and Métis must be adequately consulted in the review process.
- Accurate and timely water level forecasts would be beneficial. This would assist Highways and Infrastructure to plan at ferry crossings and reduce their workload. For example, Highways and Infrastructure would not have to dredge sandbars at ferry crossings if the staff knew that water levels would increase imminently during the operating season.
- Question about how broad in scope the reservoir operating plan will be in relation to land use around the reservoir. Land use is an issue and opportunities exist for private and public sector development. Existing municipalities on Lake Diefenbaker need some clear direction on future development around the lake. Competing land use interests for the reservoir.
- The competing needs of optimizing power production versus optimizing environmental benefits.
- Importance of having safe building elevations set around Lake Diefenbaker, especially if adjacent municipalities will manage the Reservoir Development Areas.

Issues Matrix

Issue	Reservoir Value/Service	Frequency	Seasonality	Severity	Trend	Competing values	Comments
Low flows and high flows cause increased sand and sediment at water intake in downstream communities. City of Saskatoon and Town of Outlook have problems at their intakes due to influence of sand.	Municipal water supply	During years of drought	Late summer/fall	Infrequent but increased costs for the municipalities such as pump replacement. This also costs municipalities more as they need to do more treatment to potable water.	Stayed the same.	Hydro-electric power - Low flow in fall when SaskPower is stockpiling water for winter.	Communities used to get better monthly flow information. Communities don't get as much info from SWA as they used to.
Low flow and high flows overwhelmed intakes with silt and sand and caused pumps to be burnt out. Siltation also causes problems for SaskWater including Wakaw water supply upstream.	Municipal water supply	Infrequent	Not applicable	Costly for maintenance and equipment.		Bridge construction project in Saskatoon. The extra works in Saskatoon altered flow and deposition regime for river. City has built a coffer dam which built up sand and silt.	
Ferry service unable to operate in extremely low or high water.	Ferry service	Annually	Low water early in the year, high water late June.				Low water results dredging for ferry crossing. The ferry system has five downstream ferry sites with an average of 140, 000 vehicles and more than 200, 000 passengers. Dredging can cost approximately \$200,000 per dredge. Highways and Infrastructure would like to see

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							fewer extremes with higher water levels in spring, lower in fall. Transportation is important and high value. The cost of not being able to use ferries: important for agricultural producers, economy and communities such as St. Laurent. For example, Clarkboro ferry has approximately 400 vehicles per day. The Ministry would like better forecasting of flows. Comments that erosion/sediment load would be lower if flows were more stable.
Parks Service is interested in less fluctuation in water levels. Variation of water levels cause shoreline erosion; mostly high water levels. When no beaches are available at high water levels, the use of parks is decreased. Another issue is that the water treatment plant for Saskatchewan Landing Provincial Park is under threat for erosion with potential for a costly replacement.	Beaches, irrigation and tourism	Variable - when levels high it is more frequent, not as much an issue when waters are low.	Summer	Costly to armour shoreline and facilities.	Frequent-cyclical, fairly frequent in the past few years.		Need to armour facilities during high flows to reduce erosion. Participants would like to see a cost benefit analysis for different sectors with the potential to find a middle ground that reservoir could operate. As noted, the undercutting of banks will likely cause Sask Landing water treatment plant to be moved which will be costly.
Impact upon irrigation pump sites in terms of access to water and sedimentation which is caused by variability of flow. Similar comment for SaskWater as the Saskatoon Southeast Water Supply (SSEWS) requires a constant supply of water with the same situation for Buffalo Pound Lake.	Variability of flow causing increased sedimentation.	Variable - when flows are changing between low and high.	Summer	Catastrophic for pump operator. Situation depends on pump site; some cases quite severe. For example, the production of high value crops south of	Fluctuates with rivers cyclical flow from high to low.	Water storage capability of Lake Diefenbaker. SSEWS system requires flow from Lake Diefenbaker. Inconsistency of downstream flows comes at	Consistency of flow for downstream users may Variation in flows cause problems in pump intakes. However, maintenance of consistent flows will affect hydropower production and flood protection. The economic impact is that low lake levels make it more expensive to pump water while high water levels are not as costly to pump water. The cost variability is \$100,000 to \$200,000. SSEWS was

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				Saskatoon is a major economic issue.		the expense of downstream users.	not designed for full supply level (FSL).
Possible shoreline erosion around lake for oil and gas well sites. Comments noted that issue is somewhat dealt with by setbacks from water bodies. Long term erosion on the banks may be an issue in the future.	Oil and gas development	Potential future concern, currently no problem.				Current allocations	Water supplies for the oil and gas wells come from Lake Diefenbaker during drought years.
Potash mining – What would be the impact for subsidence on the potash mines from mining in the vicinity of Lake Diefenbaker?	Mineral development						
Water supplies for potash mines will result in increased pressures on water allocation and usage. If the plan is directed at current uses, how will we deal with the future allocations for potash mines?	Potash mines are major users of water. Impacts on recreational development, economic development and industrial development.	Future increasing water demands				Current allocations	<ul style="list-style-type: none"> Plan needs to include future industrial development and future water allocations. Need to understand each sectors issues and allocations. Subsequent work is to get systems perspective of the water resource. Is part of this exercise to understand the ideals and tradeoffs for each sector? SWA staff indicated that each sector has opportunity to discuss their issues with the object of bringing all information together to understand tradeoffs and balances of water levels and sectors. SWA needs to work at prioritizing demands and determining future water allocation demands. SWA needs

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							a better understanding of optimization of water management.
Recreational development with pressure from users to sell Crown land below the take line. The public questions the current take line due to the interest in owning waterfront property.	Crown land regulations, recreational development, tourism	Future increasing demands			Increasing		Agricultural users lease lands from Ministry of Agriculture.
Water withdrawal from SESWS reservoirs could result in low water levels with potential for fish die-off in the winter.	Water supply for fishery in SESWS reservoirs.					Current allocations	
Flexibility of hydropower supply. Determination of the optimal cost-benefit between SaskPower and other users. SaskPower has a good idea of the economic benefit of power generation.	Water needs/uses	Weekly flexibility	Ongoing	Environmental and economic aspects. The use of hydropower generation depends on cost of natural gas. In addition, an understanding that burning coal produces hydrocarbon and increased greenhouse gases.	What has impinged on flexibility? High and low flows affect flexibility (extremes).	Environmental and economic impact.	<ul style="list-style-type: none"> SaskPower does their budgeting in June of the year. SaskPower looks to optimize power generation based upon median flow. Decisions are made in SaskPower on a weekly basis to determine options for power generation. What information is needed to better manage hydroelectric power? SaskPower has had a good relationship with SWA in the past. Needs to remain flexible to meet power generation needs.
Lack of ecological base flows downstream of dam. Lake management has the capability to set an ecological base flow downstream.	Downstream habitat	Can be hourly /daily at any moment. Potentially	Year-round	Most important during spawning periods of fish.	Reduced pike populations		Northern pike are less present in the reservoir due to low water levels in the coulees. Lower water levels in the spring and getting higher later in the season also impact fish species downstream. Recommendation to

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		yearly and could impact any species of fish.					optimize flow regimes; optimize for all species.
Walleye spawn camp at Coteau Bay on Lake Diefenbaker for collection of walleye eggs. If water levels are high, it is difficult to set nets and collect eggs. When spillway is not open walleye are not there.	Walleye spawn camp	Yearly	Spring - within a three week period	This site is the only location for a province wide walleye stocking program.	During high water years	Walleye camp is better when water levels are low. Northern pike reproduce when water levels are high.	
Saskatchewan has to meet the apportionment obligation to pass 50% of the water downstream to Manitoba.	Apportionment requirements	Multiple years. Drought year or increased allocation results in reduced water quantity.		The apportionment would be an issue in a drought year due to the existing users.		Increased demand on system for allocation and/or increased drought years	Saskatchewan has always met the apportionment requirement. The apportionment is not just from Lake Diefenbaker but from the whole Saskatchewan River system.
Valuable to have accurate water level/flow forecasting.	Need for information for decision-making.	Problems occur with significant changes between low and high water levels (e.g. big rainfall or snowfall melt in Alberta)					Valuable for Highways and Transportation to have a more accurate forecast for decision making.
Loss of reserve and traditional lands along river due to shoreline	Reserve lands and traditional	High water years are		Loss of land use and revenue.	High water years;	Hydroelectric power	Loss of land use and potential revenue as some of the flooded land

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erosion. Issues have been evident in the Qu'Appelle River system. Erosion and deposition for communities from high water/high flows.	lands including Cumberland Delta.	associated with erosion and deposition events.			increasing with economic development.	generation.	is farmland and is rented out by First Nations.
Traditional uses and lands of First Nations and Métis	Traditional uses of river, wetlands and adjacent lands.						Recreational development and potential impacts on traditional land and uses.
Increasing demand on water allocation for Buffalo Pound Lake as the system is supplied from Lake Diefenbaker.	Buffalo Pound water treatment plant operations						SWA staff noted that the Qu'Appelle River management plan would be a separate arrangement but the allocation to the Qu'Appelle River is within the Lake Diefenbaker plan.
Request for increased flows on Qu'Appelle River to reduce the algae blooms on Buffalo Pound Lake. A request has been made to Ministry of Environment and SWA on this topic.							Increasing demands for additional water quantity to increase dilution in Buffalo Pound Lake for better water quality.
Hyper-saturation of oxygen in waters downstream from Gardiner Dam and the impact on fisheries.							
Fluctuating lake levels.	Water quality			Prolonged drought could result in significant nutrient releases. Release of phosphorus from sediment when water levels are extremely low.			It was noted that algae buildup affects the ferry cables.

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Failure for optimization of systems	Current allocation and maintaining fisheries.						More important to focus on optimization within parameters for fisheries. The process is not concerned with setting parameters while the emphasis upon setting lake levels.

Question: What is the number and what are the locations of the hydrometric monitoring stations along Lake Diefenbaker and the South Saskatchewan River system?

Robin indicated that he would obtain answer from hydrometric staff within SWA.

The meeting broke for lunch at 12:00 p.m. and reconvened at 12:30 p.m.

Issues Comments and Discussion

- On the recreation development issue, comments noted pressure to increase development close to or below the take line. The Ministry of Agriculture manages most of the land within the reservoir development areas.
- Discussion on fish habitat noted that water levels can change on an hourly level downstream on the river. Knowledge is not available on what should be the optimum flow for Saskatchewan River coming from the Lake Diefenbaker.
- Additional issue regarding the habitat on Lake Diefenbaker and the impact of lake levels on some species, e.g. northern pike have been declining in the reservoir possibly due to the loss of habitat with low water level.
- In relation to the walleye spawn camp, water levels have a direct impact on one of the Ministry of Environment programs as the area is used for supplying all of the fish hatchery needs and other demands for spawn.
- On the topic of failure of optimization, this aspect is related to the rate of change. In addition, prioritization needs to be determined in terms of economic or environmental flows. Comments that the prioritization will be different on a changing basis and will change daily, weekly or on a monthly basis.

The third part of the meeting focused on identifying the impact that flow; water levels; timing and other criteria had in relation to the identified issues and values associated with the Issues Matrix.

Criteria Matrix

Issue	Reservoir value/service	Flow needs	Water level needs	Timing of flows	Other criteria	Comments on rating
Low flow causes increased sand/sediment at water intake in downstream communities, such as Outlook and Saskatoon.	Water supply	3 - want stable flows	2 - want consistent water levels	1	Consistency and water quality issues	
Ferry service unable to operate in extremely low water levels/flows or high water level/flows.	Ferry service	3 - Flows range from 100 to 400 cubic metres per second (average daily discharge)	3 - Flow and water levels are intertwined.	1 - Timing is not as important as long as flow/water level is stable and the water level does not fluctuate too much daily.		
Fluctuations of water levels cause shoreline erosion; mostly high water levels.	Beaches/irrigation/tourism	2 - More important for downstream	3 - Flow and water levels are intertwined.	3 - Summer season is most important.		Fewer beaches results in fewer tourists. Once again it is the consistency/stability; drops in water elevation between high and low water levels. Water levels are also what keep beaches maintained. Attraction of beaches, user perspective, development issues, and safety issue

Issue	Reservoir value/service	Flow needs	Water level needs	Timing of flows	Other criteria	Comments on rating
Irrigation pumps - sedimentation	Variability of flow causing increased sedimentation.	3 - want stable flows	2 - want consistent water levels	1	Consistency	
Future water needs and allocations	Industrial development	3 - to meet future needs	3 - to meet future needs	3	This is an allocation issue.	Once developed and there they need flow and level. Important to have water in the spring for SSEWS canal.
Recreational development	Take line reservation		3 - Important in terms of reducing shoreline erosion and increasing slope stability.			Development pressure to redefine the line such that development can be closer to lake
Flexibility of hydroelectric power supply	Water needs/uses	3	3	3	Flexibility - to help save money	Timing and daily allocation
Lack of ecological base flows downstream of dam	Downstream habitat	3	3	3	Rate of change - hourly/daily/weekly	We currently do not know optimal flow should be downstream of Gardiner Dam.
If water levels are high it is difficult to set nets and collect walleye eggs. When spillway is not open walleye are not	Walleye spawn camp				Habitat availability	This Impacts stocking of other provincial water bodies. However, this may not be a problem with successful spawning within the lake; there is a need to further understand habitat availability.

Issue	Reservoir value/service	Flow needs	Water level needs	Timing of flows	Other criteria	Comments on rating
there.						
Saskatchewan needs to meet apportionment obligation to Manitoba (50% of water).	Apportionment requirement				Total volume/quantity	
Accurate water level/flow forecasting	Need for information for decision making					Importance for exchange/accuracy of information.
Loss of reserve and traditional lands along river due to shoreline erosion; erosion and deposition; and high water/high flows.	Reserve lands and traditional lands including Cumberland Delta. Traditional uses of rivers.	3 - Increased flow and increased erosion	3 - Increased erosion	2 -Timing of flow is important for rehabilitation of Cumberland and Delta.	Determining which First Nation and Métis communities should be involved and to what level of engagement in terms of operational decisions. Information on to what extent treaty and aboriginal rights could be impacted.	

Issue	Reservoir value/service	Flow needs	Water level needs	Timing of flows	Other criteria	Comments on rating
Increasing demand on water allocation.	Buffalo Pound water treatment plant capacity	3 - to meet future needs	3 - to meet future needs	3	This is really an allocation issue and water quality issue.	Level depends on cycle of drought/flood events.
Fluctuating lake levels	Water quality	3 – Flow is important for total dissolved gas, oxygen and turbidity.	3	3	High flows result in increased turbidity	Draw downs of reservoir in spring reduce potential spawning area. Low levels also change water quality
Failure of optimization of systems	Current allocations and maintaining fisheries	3	3	3	Rate of change - hourly/daily /weekly	Flow needs, water level needs, timing of flows and rate of change are important. Need for prioritization in relation to allocation. Flow and legality can be part of decision making for allocation. Use versus allocation and flexibility of prioritization are also important.
Fluctuating Lake levels to protect wildlife habitat along shoreline (i.e., Piping plover)	Wildlife habitat (Piping Plover)	3	3	3		
High water levels	Spawning habitat in lake	3	3	3	Water quality (Oxygen and temperature) concern if flow levels are too low	Timing is most important to have higher levels in spring for spawning

*Comments from participants who voted yellow or red.

Traffic Card Voting

Issue	Green	Yellow	Red	Comments
Low flow causes increased sand/sediment at water intake in downstream communities, such as Outlook and Saskatoon	4	4	10	Issue doesn't apply, but is still important as a downstream user.
Ferry service unable to operate in extremely low or high water level or flow	2	7	8	Ministry of Environment had to drop everything and issue an aquatic habitat protection permit yesterday. Water levels impact travel/flexibility around lake and affects tourism.
Fluctuations of water levels causes shoreline erosion - mostly high water levels	4 1/2	7	6	Erosion is a problem if wave action eats away at pump stations, ferry sites. Water levels may affect fish habitat and regulatory requirements.
Irrigation/ pumps - sedimentation	4	4	10	Irrigators also receive water off of SSEWS system.
Future water needs and allocations	6	10	2	
Recreational development	4	3	8	Future potential for development and concern
Flexibility of hydropower supply	9	4	7	
Lack of ecological base flows downstream of dam	4	2	10	Traditional lands, First Nations/ Métis want minimum flow limits for a different reason.
If water levels are high it is difficult to set nets and collect walleye eggs - when spillway is not open walleye are not there	1	1	14	Broader than walleye
SK needs to meet apportionment obligation for MB	4	5	7	
Accurate water level/flow forecasting	5	7	3	
Loss of reserve and traditional lands along river due to shoreline erosion - erosion and deposition - high water/high flow	4	4	9	Impact of erosion along system
Increasing demand on water allocation	11	2	7	
Fluctuating lake levels	6	9	3	
Failure of optimization of systems	11	3	5	
Fluctuating Lake levels to protect wildlife habitat along shoreline (i.e., Piping plover)	4	4	9	Concerns may change over time
High water levels	1	5	11	

Future goals, direction and advice

1. Importance of a list of priorities and flexibility of priorities
2. Understanding that there are trade-offs necessary in the process
3. Water is a potential constraint in future growth; both economic and population. Requirement to factor in constraints on growth and prioritization needs in the reservoir operating plan. Recognize that this is a very complex system due to weather conditions. Constraint on growth is based on prioritization.
4. Constraints of the infrastructure as the Upper Qu'Appelle water conveyance channel needs to be upgraded to increase dilution and increase allocation from system.
5. Drought will be a constraint for water allocation.

Question - How did the Authority select the First Nation and Métis Locals to be included in this process?

Robin indicated that the Authority selected First Nations had land on or within two kilometres of South Saskatchewan and the Saskatchewan River. Métis Locals contacted will be those that are in the vicinity of the two rivers.

Question - Is there flexibility for additional First Nations to be involved if they would like to be included?

Robin mentioned we would do individual meetings with each of the First Nations and regional meetings with the Métis Locals.

Discussion continued about power generation. One metre reduction in the full supply level would result in three to five million dollar reduction in revenues for SaskPower. A reduction in the flows by one cubic meter would result in a reduction of \$500,000 to \$750,000 in the power generation. SaskPower would like flexibility in the management of Lake Diefenbaker.

Comments indicated that the Water for Life project in Alberta looks at social, economic and environmental factors.

The Ministry of Agriculture Irrigation Branch is looking for 500 cubic decameters of water to expand irrigation. This amount would increase the irrigation allocation to 20% of Lake Diefenbaker water.

The meeting adjourned at 1:50 p.m.