

Montana – Alberta: St Mary & Milk Rivers Water Management Initiative

**Joint Initiative Team Meeting #12
February 23-24, 2010, Lethbridge, AB**

Montana	Alberta
Anne Yates – Department of Natural Resources and Conservation (co-Chair)	Robert Harrison – Alberta Environment (co-Chair)
Dustin de Yong - Office of the Lt. Governor	Ken Miller – Milk River
Randy Reed – Milk River irrigator	Tom Gilchrist – Milk River
Dave Peterson – City of Havre	Gerry Perry – Oldman River (day 1 only)
Harold "Jiggs" Main – Ft. Belknap Tribe (1/2 day)	Duncan Lloyd – Oldman River
Paul Azevedo – DNRC (Secretariat)	Tim Toth – AB Environment (Secretariat)
Larry Dolan – DNRC Technical Team	

Regrets – Brent Paterson – AB Agriculture & Rural Development; Don Wilson – Blackfeet Tribe; Sal Figliuzzi – AB Tech. Team Lead

Observers – none

Purpose of Phase 2 Joint Initiative Team

To explore and evaluate options for improving both Montana's and Alberta's access to the shared water of the St. Mary and Milk Rivers, and to make joint recommendation(s) on preferred options to both governments for their consideration and approval.

Meeting Objective(s)

- Understand completed new model runs
- Understand implications of potential Options
- Discuss Options that have potential to become recommendations

DRAFT Notes

Day 1 – Feb. 23 – 1:00 p.m. – 5:00 p.m. Scenic Room

1. Welcome; Administration – Robert; Anne; Tim, Paul

Robert welcomed the Joint Team. It was noted that the large amount of communications (e-mail, phone calls and in-person meetings) among members, the Secretariat and the co-Chairs since last meeting greatly helps move the initiative forward.

Robert and Anne agreed to change the agenda to accommodate Team needs. Discussion on the International Watershed Group (item 6) will be delayed until the Joint Team develops more detail about the shape and form of specific recommendations. The co-Chairs and Secretariat will meet at the end of Day 2 to outline components of the final recommendations report. However, ultimately, the entire JIT Team participated in this task.

Meeting dates – Joint Team agreed to reschedule March meeting from March 23-24 to April 15-16 in Helena, MT, and will provide current information to both AB and MT governmental dignitaries. The last meeting planned for this stage of the Initiative will be held June 2-3 in Lethbridge.

Paul reported that Notes of JIT#11 were not able to be completed for this meeting, but he will send them out for review at the next meeting. Paul reviewed the Action items from JIT#11:

- co-Chairs drafted and sent a letter requesting the IJC clarify the terms and meaning of the 1921 Order
- AB updated the Options summary sheets and sent them to MT for review
- Actions #5-8 will be addressed in this meeting through the technical presentation and discussion. The action (#10) requesting blending potential alternative options (for the Credit System and the 1921 Modified Order) to create various combinations has not been attempted. The Technical Team said it may be beyond the capabilities of the current model to analyze these combination alternatives.

Communications

Alberta – Robert gave an update on the Initiative to the Milk River Watershed Council Canada; by their questions, the irrigators present were very interested. Letter from co-Chairs to the IJC – the Secretariat copied the letter to other AB technical support personnel. AB Milk River reps received a preliminary draft report of the Milk R. in-stream flow needs study. AB St. Mary reps have been asked about status of the Initiative and they briefed the St. Mary River Irrigation District Board Chair. The draft terms of reference for Milk River’s integrated watershed management plan appears on the MRWCC website:

http://www.milkriverwatershedcouncil.ca/sites/default/files/assets/Terms_of_Reference2_Feb_1_2010.pdf.

Upcoming: the AB Team has an April meeting with ministers of AENV, and AARD to get their direction on the Initiative.

Montana – MT did not have formal briefings with its Executive since the last JIT meeting, but has advised the Executive that there may be challenges in developing joint recommendations. MT’s (legislative) Water Policy Interim Committee meets on March 10-11 and has requested an update on the Initiative.

2. Option: Annual Credit-based system – Larry and Robert

The technical presentations are for everyone to understand what has been modelled. As Sal is away, Larry will present the information while Robert will provide any context, if that is required.

AB suggested changing the name of the Annual Balance option to Credit-Based Option. Robert explained that under a true annual balancing system the upstream jurisdiction could build up a deficit as long as the water was paid back by the end of the balance period. The current LOI functions as a deficit system. The Option being discussed requires each jurisdiction to first build a credit and then draw on that credit later in the water year. Each country can accumulate credits (subject to some constraints) for water they are entitled to, but can not access before water flows across the border. The benefit of a credit-based system is that it eliminates the risk of a jurisdiction being unable to repay any deficit it had incurred. By starting credit accumulation on November 1st, by spring, irrigators will have an indication of how much water they have in credit (the “surpluses”) that they can draw upon prior to the runoff peak. Additional surplus could be accumulated during the runoff peak that could then be drawn on later in the irrigation season when natural flows drop. Credits would be reset to zero on October 31st.

MT accepted Robert’s explanation and requested this option be named Annual Credit-Based System (to maximize credit accumulations, the water year Nov.1– Oct. 31 was assumed).

Larry presented (slide #10) Montana's Annual Balancing/Credit-Based System proposal. Under this proposal, the U.S. is allowed to accumulate and draw on a single-fill credit that is capped at 32,000 ac.ft. on the U.S. St. Mary R., while respecting IFN requirements. Alberta is allowed to accumulate and draw on a single-fill credit that is capped at 16,000 ac.ft. on the Canadian Milk R., where credits are drawn from U.S. Milk R. natural flow, with a maximum of 4,000 ac. ft. of credit being drawn from U.S. diversions. The AB Milk R. would continue to irrigate its existing acreage and shortages would be shared in dry years.

MT's summary proposal for the Annual Credit-Based System is to be modelled under the following variations:

- a) 650 cfs canal + modified Sherburne
- b) 850 cfs canal + modified Sherburne
- c) 850 cfs canal + modified Sherburne and Lower St Mary Lake
- d) 850 cfs canal + modified Sherburne and large AB-only Milk R storage
- e) 850 cfs canal + modified Sherburne with Lower St Mary Lake and large AB-only Milk R. storage

Larry advised that the Technical team is investigating if the proposed credit system can be modelled with the current model.

There was discussion on how MT arrived at a 32,000 ac.ft. single fill cap. Larry said the original concept by Montana was to use a 25,000 ac.ft. floating cap. The floating cap concept is that of a refillable bucket with a maximum capacity of 25,000 ac.ft. However, because the current model could not handle these computations, it was decided to use a fixed cap. MT calculated that a 32,000 ac.ft. single-fill cap would deliver similar benefits to a 25,000 ac.ft. floating cap.

(Slide 13) Robert explained AB's interpretation of MT's Annual Credit-Based System proposal. Under current international convention, ownership of water is lost after water crosses an international border. Under the proposed credit system, some of the water continues to retain its country-of-ownership identification after it crosses the border. This credited (paper) water is subsequently exchanged for access to some of the downstream country's flow entitlement at a later period. This supports the Joint Team's goal that MT moves toward accessing 100% of its share of the St. Mary R. and continues to receive its share of the Milk R., and that AB moves toward accessing 100% of its share of the Milk R. while continuing to receive its share of the St. Mary R.

There was considerable discussion on whether or not the downstream jurisdiction had to put the surplus flows to "use" in order for the upstream jurisdiction to get a credit. Could water used by one jurisdiction to generate hydropower, meet IFN requirements, or meet other allocation requirements generate a credit for the other jurisdiction? It was agreed to keep the analysis simple – for the purpose of modelling, water that crosses the border will be available to be used as a credit for the upstream jurisdiction, but the annual credit should be capped.

Summary proposal for Montana:

St. Mary R.

- All surplus flows are credited to MT when they cross the border, to a 32,000 ac.ft. cap (total),
- U.S. can draw on that credit from Canadian St. Mary entitlements provided Canadian IFN requirements (currently at an assumed level) are met,
- U.S. can deliver less than Canada's entitlement when drawing on credit,

- Credits are reset to zero on October 31st.

Milk R.

- All surplus flows are credited to AB when they cross the border, to a 16,000 ac.ft. cap (total),
- Canada can draw on credit from U.S Milk River flows as follows:
 - All U.S. Milk R. entitlement, depending on availability,
 - U.S. St. Mary R. diversions up to a 4,000 ac.ft. maximum, with volume reduced during dry years,
- Shortages are shared between jurisdictions,
- Canada can deliver less than U.S. entitlement when drawing on credit
- AB to continue irrigating existing acreages in Milk R. basin.

In the future it is likely that a minimum winter IFN flow will need to be released in Swiftcurrent Cr. (below Sherburne Reservoir). It may be about 15 cfs (30 ac.ft./day), and could amount to about 4,000-5,000 ac.ft. of U.S. share annually that is now being captured in Sherburne Reservoir during the winter. Under this proposal, this water could be accumulated as part of the U.S. annual credit.

This proposal trades access to Canadian St. Mary entitlement during the irrigation season for U.S. surplus winter and flood flows. The volume traded and benefiting the U.S. ranges from 15,572 ac.ft. (in the driest 11 years) to an average of about 25,557 ac.ft. over the simulated 45-year period. In return, Canada receives access to U.S. Milk R. entitlements and limited access to U.S. diversions, in exchange for Canadian surplus winter and flood flows on the Milk R. AB's analysis of MT's proposal indicates that AB's increase in access to Milk R. flows would range from about 1,520 to 9,519 ac. ft. annually and average about 3,340 ac.ft. per year, plus access to about 4,000 ac.ft of U.S. diversions. AB agreed that once its Milk R. surplus crossed the border, it was forfeited and became MT's water to use as they see fit. After access to the credit water, the average irrigation shortage on the Canadian Milk R. would be from 3 inches (average over 45 yrs) to 7.35 inches (in the 11 driest years), in comparison to the 8.2 inch deficit under current conditions. MT's proposal would allow Canada to continue to access 100% of its share on the St. Mary R.

Robert described AB's analysis of the Annual Credit-Based System, showing the timing and magnitude of the surpluses (credits) generated by the U.S. on the St. Mary R. with current infrastructure (Option #1a). It was noted that when an 850 cfs diversion canal and storage on Lower St. Mary Lake are built, MT will generate fewer credits because MT will be able to take more of its share. There was some discussion about the impact on AB of the U.S. building a 1000 cfs diversion canal. AB does not question MT's right to build an 850 cfs canal, but AB would have concerns with a 1,000 cfs canal because it may trigger an environmental impact assessment. MT noted that a 1000 cfs canal was proposed as part of the exploration of potential benefits of joint storage Option 8e.

Based on this, Alberta proposed an alternate Annual Credit system Option for MT to consider:

Credit-based – St Mary R.

- U.S. credit for surplus St. Mary R. flows is capped at 30,000 ac.ft.
- A minimum of 10,000 ac.ft. must be withdrawn from any accumulated credit prior to June 1, otherwise the remaining credit is reduced to what it would have been had 10,000 ac.ft. been withdrawn.
- The minimum U.S. access (credit) would be 8,000 ac.ft., even without surplus deliveries with which to accumulate credits (similar to current Letter of Intent).

Credit-based – Milk R.

- AB credit for Milk R. flows is capped at 15,000 ac.ft. AB believes size of cap is relatively unimportant because in most years there is very little natural flow after July to be able to draw against it.
- AB's credit is a percentage of the size of credit MT accumulates on the St. Mary R. AB.
- AB is guaranteed a minimum of 4,000 ac.ft. of U.S. St. Mary R. water in any year, regardless of credit accumulated, and then may take the lesser of accumulated Canadian Milk River surplus deliveries or 50% of the U.S. St. Mary R. credit to a max. of 10,000 ac.ft. (see table below). The sequence of withdrawal would be from: (1) the Canadian Milk R., (2) the U.S. Milk R., (3) diverted U.S. St. Mary R.

U.S. Credit on St. Mary R.	Canada Draws on Milk R.
>20,000 ac. ft.	10,000 ac. ft.
8,001 - 20,000 ac. ft.	50% of U.S. St. Mary credits accessed
0 - 8,000 ac. ft.	4,000 ac. ft.

AB's summary proposal for the Annual Credit-Based System is to be modelled with the following variations:

- a) 650 cfs canal + modified Sherburne
- b) 850 cfs canal + modified Sherburne
- c) 850 cfs canal + modified Sherburne and Lower St Mary Lake
- d) 850 cfs canal + modified Sherburne and large AB-only Milk R storage
- e) 850 cfs canal + modified Sherburne with Lower St Mary Lake and large shared Milk R. storage

The minimum credit would be 8,000 ac.ft. for MT. Alberta would be allowed to divert a minimum of 4,000 ac.ft. from St. Mary R. water, which is similar to the current situation under the Letter of Intent. The details of future IFN flow in MT during fall and winter are unknown at this time and may affect this option.

The difference between the AB proposal and the MT 32K/16K proposal is 6000 ac. ft. of U.S. St. Mary diversions going to the Canadian Milk R. during the highest credit years. This option will be modelled in detail to determine the benefits and impacts.

ACTION: Larry will work with Laurent to model MT's proposal and AB's proposal for the Annual Credit-Based System.

3. Option: Modifications to 1921 Order – Larry, Anne, Robert

MT presented a modified version of their earlier proposal to revise the allocation formula of the 1921 Order. MT stated that the intent of revising the allocation formula is to:

1. Ensure that Canada receives at least the same volume of water from the St. Mary River that it is entitled to under the current 1921 allocation formula, and
2. Allow the U.S. to access a greater volume of the water from the St. Mary River to which it is entitled under the current 1921 Order allocation formula. MT would be willing to share a percentage of any potential gains with Milk River, AB.

AB's concern with the modified Order presented below was that, over the 45-year period on average Canada would be entitled to 19,120 ac.ft less from the St Mary R. than it gets currently

(15,552 ac.ft. less in the driest 11 years), while on the Milk R., Canada would receive 2282 ac.ft. more (45-yr. average) and zero ac.ft. more in the driest 11 years. MT acknowledged that their first proposal (Options 23a and 23b) reduced AB access to volume below 100% of their entitlement on the St. Mary R. The current revised proposal attempted to correct this by specifying that Canada, on an annual basis, will receive from the St Mary River at least the same annual volume that it would have received under the 1921 Order. The Technical Team has not had time to model the revised proposal, so potential gains and impacts are not known at this time.

MT's modified proposal affects flows between 666 and 1332 cfs, as follows:

	St. Mary R.			Milk R.	
	1 st 666 cfs	666-1332	>1333 cfs	1 st 666 cfs	>666 cfs
Canada	75% (current 75%)	35% (current 50%)	50% (current 50%)	25% (current 25%)	80% (current 50%)
U.S.	25% (current 25%)	65% (current 50%)	50% (current 50%)	75% (current 75%)	20% (current 50%)

Montana also requested the five variations that were requested to be run on the Annual Credit-Based System (top, page 3) also be run on the revised Modified 1921 Order (on the St. Mary R., AB receives 75% of 1st 666 cfs, AB receives 35% of 2nd 666 cfs; all flows above 1332 cfs are shared equally; on the Milk R., MT receives 75% of the 1st 666 cfs and 20% of all flows above 666 cfs), with the requirement that on the St. Mary R., AB continues to receive at least 100% of the total volume entitlement as under the current 1921 Order for all years.

The Joint Team discussed the revised proposal. The AB Team is open to looking at changes to the timing of when shares are taken, but not at a proposal to modify the proportion of shares, because AB does not believe the Team has the authority to do so. AB believes MT could make infrastructure changes prior to looking at changing the proportion of shares. AB is also concerned that this modification is of marginal benefit to AB Milk R. irrigators, because in most years there is very little natural flow above 666 cfs to draw on in the summer months.

MT disagreed with AB's interpretation of the terms of reference with respect to changing the share calculation. MT believes that what they are proposing is allowed within the terms of reference, but if AB did not want to discuss changes to the Order, MT was prepared to move on. MT reiterated that the intent with any potential modification to the 1921 Order is for MT to receive more water and be able to share any potential gains with Milk River, AB. MT also believes that if infrastructure is built, the Team could agree to re-open and review the operations and the intent of the Order. MT is willing to explore changes to the allocation formula in the 1921 Order with caps, with exploration of the impacts of potential infrastructure improvements and with triggers to reopen and review. MT also disagreed that the modified proposal is of marginal benefit to AB.

Based on this, the following runs to be made include:

Revised Modified Order (Can.:U.S.— 35:65% on St. Mary R. and 80:20% on Milk R.), with the modified Sherburne filling curve:

- i. 650 cfs canal + modified Sherburne
- ii. 850 cfs canal + modified Sherburne
- iii. 850 cfs canal + modified Sherburne and Lower St. Mary Lake
- iv. 850 cfs canal + modified Sherburne and Lower St. Mary Lake and large AB-only Milk R. storage
- v. 1000 cfs canal + modified Sherburne

- vi. 650 cfs canal with credit for surplus deliveries (caps to be determined after running option (i) above plus input from Team leads)

These runs are to determine how much additional St. Mary R. water MT can access and still ensure that AB receives at least 100% of the total volume entitlement provided under the current 1921 Order for all years.

ACTION: MT is to determine how much U.S. St. Mary R. water Milk River, AB would be allowed to access under the Revised Order option after information received from technical team.

ACTION: Technical Team will complete model runs for Revised Modified Order options.

The Joint Team discussed the budget and resource implications to each jurisdiction if the project extends into mid-summer.

Day 2 – Feb. 23 – 8:00 a.m. – 1:30 p.m. Scenic Room

4. Option: Shared storage – Larry, Robert

Larry reviewed the shared storage option. As Fresno Reservoir storage volume decreases, the benefits of MT sharing upstream storage in AB could increase.

ACTION: The Tech. Team will model a distant future baseline condition that assumes 50,000 ac.ft. capacity Fresno Reservoir.

The shared storage options can then be compared to this baseline to examine the potential benefits of shared storage when Fresno Reservoir storage declines further. The details of the required runs will be determined by the Technical Team.

Sharing storage would allow MT to carry over a portion of flows from wetter years. The model indicates a small benefit of about 11,000 ac. ft. on the Milk R.; the benefit is greatest in the second of two back-to-back dry years. AB would operate its storage on a year-to-year basis, plus carry over some volume from year-to-year.

Questions that arose: How long would it take to fill this storage? What operations and management flexibility could be applied? (*e.g.*, from whose water would IFN flow be drawn?). Comment: operations would have to respond to the time when the water was needed.

5. How do we move forward? – Larry, Robert

There was discussion that, with the previous model runs request, additional model runs and analysis will be needed before the Team can understand the implications and potential impacts on each jurisdiction.

The Joint Team discussed whether to model the 1000 cfs canal, especially for the Revised Modified 1921 Order. Since the U.S. Bureau of Reclamation will decide on the size of canal, modelling a 1000 cfs canal would provide information. AB will discuss this within the AB Team and determine if a 1000 cfs model run may be valuable to AB.

6. International Watershed Group – Anne, Robert

Postponed until the Joint Team develops more detail about the shape and form of specific recommendations.

7. What would potential recommendations look like? – Anne, Robert

The Joint Team discussed what is required to fully document the Initiative and produced the following:

1. Background Technical Information report (audience – anyone who is interested)
 - a. ...
2. Recommendations Report (audience: everyone)
 - a. Brief summary of Technical Summary Report (where people can find: model information, Technical Summary report, Technical Archive, Process report, etc.)
 - b. Team Involved
 - c. Why this Initiative was launched
 - d. List of Options* – short description statement
 - e. Maps
 - f. Brief process
 - g. Core recommendations* (short-term, long-term)
 - h. Fate of the Options
 - i. Summary of Criteria and Interests (numerical and narrative)
 - j. Costs
 - k. International Watershed Group – Framework (core response., etc.)
 - l. Communications, coordination
3. Technical Summary Report – (model description, hard analysis, model set-up, *etc.* done by Technical staff, plus the interpretation of that work – the Joint Team owns the interpretation component) (audience: technical people)
 - a. Description of model
 - i. How it works – schematic (so it can be reproduced)
 - b. How calibrated
 - c. Summary of data input
 - d. History of model
 - e. Technical Team – contact data
 - f. Location of technical archive information
4. Technical Archive – a clean archive of all the full set of model options (80-90) and all model output (about 30 pages for each run = electronic format, as it will be very large) (audience is Tech. team leads)
 - a. Calibration file
 - b. Model inputs (files)
 - c. Actual input data
 - d. Model code
 - e. Communication with other Technical Specialists (overview: who, when, topics)
5. Process report (meeting dates, agendas, Notes) (audience is for future project review)
 - a. Team members
 - b. Why initiative was undertaken
 - c. Meeting Notes from each meeting

- d. Joint Status Reports
- e. Terms of Reference
- f. Agenda
- g. Action items / Agreements
- h. List of communication with other Technical Specialists
- i. Result of process = report submitted to each jurisdiction

Each report will have a common introduction section that identifies what report it is and where to find the other reports.

ACTION: For each Report, the Secretariat will produce a proposed table of contents plus a couple of bullets describing the content of each section.

8. Meeting review and plan for next meeting – Robert and Anne

Next meeting: April 15th-16th in Helena, MT

Subsequent meeting: June 2nd-3rd – Lethbridge (Objective: did we get the report right?)

Start and end times will remain.

Instead of having internal government meetings to learn about model results, then subsequent Joint Team meetings for the same reason, the Joint Team requested a video/tele-conference call to hear technical results all at once. It was agreed to set up a video/tele-conference April 6th, between the jurisdiction teams.

ACTION item list, Agreements and Model run review:

1. **ACTION:** Larry will work with Laurent to model MT's proposal and AB's proposal for the Annual Credit-Based System.
2. **ACTION:** MT is to determine how much U.S. St. Mary R. water Milk River, AB would be allowed to access under the Revised Modified Order option after information received from technical team..
3. **ACTION:** Technical Team will complete model runs for Revised Modified Order options.
4. **ACTION:** The Tech. Team will model a distant future baseline condition that assumes 50,000 ac.ft. capacity Fresno Reservoir.
5. **ACTION:** For each Report, the Secretariat will produce a proposed table of contents plus a couple of bullets describing the content of each section.

AGREEMENTS:

1. It was agreed to approve meeting agenda.
2. It was agreed to reschedule March meeting from March 23-24 to April 15-16 in Helena, MT.
3. It was agreed to keep the analysis simple – for the purpose of modelling, water that crosses the border will be available to be used as a credit for the upstream jurisdiction, but the annual credit should be capped.
4. It was agreed to set up a video/tele-conference: April 6th, between the jurisdiction teams.

MODEL RUNS:

Revised Modified Order (Can.:U.S.— 35:65% on St. Mary R. and 80:20% on Milk R.), with the modified Sherburne filling curve:

- a) 650 cfs canal + modified Sherburne
- b) 850 cfs canal + modified Sherburne
- c) 850 cfs canal + modified Sherburne and Lower St. Mary Lake

- d) 850 cfs canal + modified Sherburne and Lower St. Mary Lake and large AB-only Milk R. storage
- e) 1000 cfs canal + modified Sherburne
- f) 650 cfs canal with credit for surplus deliveries (caps to be determined after running option (a) above plus input from Team leads)

MT's summary proposal for the Annual Credit-based System is to be modelled under the following variations:

- a) 650 cfs canal + modified Sherburne
- b) 850 cfs canal + modified Sherburne
- c) 850 cfs canal + modified Sherburne and Lower St Mary Lake
- d) 850 cfs canal + modified Sherburne and large AB-only Milk R storage
- e) 850 cfs canal + modified Sherburne with Lower St Mary Lake and large AB-only Milk R. storage

AB's summary proposal for the Annual Credit-Based System is to be modelled with the following variations:

- a) 650 cfs canal + modified Sherburne
- b) 850 cfs canal + modified Sherburne
- c) 850 cfs canal + modified Sherburne and Lower St Mary Lake
- d) 850 cfs canal + modified Sherburne and large AB-only Milk R storage
- e) 850 cfs canal + modified Sherburne with Lower St Mary Lake and large shared Milk R. storage

The meeting was adjourned at 2:15 p.m.