INTERNATIONAL
SOURIS RIVER
BOARD

CONSEIL
INTERNATIONAL
DE LA RIVIÈRE SOURIS

International Souris River Board
Boissevain Community Centre
420 S Railway Street, Boissevain, MB
(204) 534-6441
June 27, 2017

Final Minutes

Board Members:

Russell Boals, Garland Erbele, Frank Durbian, Nicole Armstrong, Mark Lee, Joe Goodwill, Scott Gangl, Dave Pattyson, Gregg Wiche, Debbie McMechan, Lorinda Haman, Shelly Weppler, David O'Connell, Jeff Woodward**.**

Via Conference Call: John-Mark Davies, Mark Gabriel, David Glatt.
Regrets – COL. Samuel Calkins, John Fahlman.

Attendees:
Judy DesHarnais, Camille Mageau, Wayne Jenkinson, Steve Robinson, Wanda McFadyen, Darin Schepp, Heather Husband, Dorothy Lindeman, Dan Jonasson, Ryan Ackerman, Bruce Davison, Chris Karkowski, G. Kirby, Steve Robinson, Girma Sahlu.

1. Introduction and Opening Remarks.

   Russell Boals opened the meeting at 8:45 a.m. Garland Erbele also extended his welcome wishes to all attendees. R. Boals invited Board members and other participants to introduce themselves.

2. Approval of Agenda.

   The agenda was approved as circulated.

   Motion: Shelly Weppler moved to accept the agenda as presented. Frank Durbian seconded the motion. **Carried**.

3. Approval of Minutes:

   a. February 23, 2017 Face-to-face Meeting Minutes

   Motion: David Pattyson moved to accept the minutes as presented. Gregg Wiche seconded the motion. **Carried.**

b. March 21, 2017 Conference Call Minutes

Motion: David O'Connell moved to accept the minutes as presented. Shelly Weppler seconded the motion. **Carried**.

c. April 5, 2017 Conference Call Minutes

Motion: Frank Durbian moved to accept the minutes as presented. Joe Goodwill seconded the motion. **Carried**.

d. April 19, 2017 Conference Call Minutes

Motion: Scott Gangl moved to accept the minutes as presented. Lorinda Haman seconded the motion. **Carried**.

4. Public Meeting Review

The following is a summary of observations and comments made by Board members and IJC staff regarding the Public Meeting:

- Most commented the Public Session was informative and they enjoyed the presentations. The information on water quality was useful.
- The public had opportunity to present their concerns and engage the Board in discussions. The IJC noted that the public involvement was good and commended the openness and inclusiveness of the Board. There was consensus the venue chosen, the International Peace Garden, was a nice location.
- Some Board agencies had opportunities to explain to the general public how water control structures, such as dams, operate during flood and non-flood operations. This was beneficial to educate the public about the various agencies in the basin and their roles in the management of water; including dams.
- There were a few public members who presented views on water management and expressed frustration in being downstream of everyone and that not enough attention had been given to flooding problems of hay lands in the lower portion of the Souris River Basin.
- Board and technical experts explained the additional causes for lowland flooding in the basin and the fact that there are uncontrolled areas downstream of the Rafferty and Alameda dams that contribute during wet periods. The flat nature of the landscape aggravates the flooding problem as water moves very slowly to downstream areas of the basin and takes a long period of time to drain. The explanation helped the public to understand how complex flooding issues are in the basin.
- Members of the public were also invited to attend the Assiniboine River Basin Initiative (ARBI) and the Souris River Joint Board (SRJB) meetings, which promote public involvement and engagement.
- Report from the Ducks Unlimited research is expected in winter 2018.
- Overall, the public meeting concluded with positive remarks and the desire to meet again in the future to discuss similar topics.

5. Determination of Natural Flow of the Souris River at Sherwood to May 31, 2017

Bruce Davison, Water Survey of Canada, reported the results of natural flows determined by Environment and Climate Change Canada for the period ending May 31, 2017. The total diversion in the Souris River basin was 103,798 dam^3. Recorded flow at Sherwood was 108,990 dam^3. The natural flow computed at Sherwood was 193,317 dam^3. The US share at 40% was 77,330 dam^3. The flow received by the US was 110,982 dam^3 which constitutes a surplus delivery of 33,652 dam^3.

The annual flow requirement / apportionment at Long Creek has also been met with an increase of 18,450 dam^3 between Western Crossing and Noonan

It was confirmed that the apportionment for this year would be a 60/40 split between Canada and the United States.

Motion: Gregg Wiche moved to accept the Natural Flow Computation to May 31, 2017. Frank Durbian seconded. **Carried.**

6. Hydrology Committee Update

a. Bruce Davison reported that there was nothing new to report. The Committee has not met for a while. The draft Procedures Manual is almost complete. There were no major changes, except a few minor adjustments, to the hydrometric gaging stations both in Canada and the United States.

7. Review of 2017 Hydrologic Conditions and Operations and Summer Hydrologic Forecast and Planned Operations

a. Saskatchewan

John Fahlman reported that 2016 fall moisture conditions in the basin were wetter than normal at freeze-up particularly on the eastern side. Estevan, SK had the snowiest December in 100 years. According to the National Weather Service (NWS) Airborne Gamma snow survey in March 2017, the snowpack was near normal in the headwaters area and well above normal downstream of the reservoirs.

Winter Drawdown – On October 19, 2016 flows were initiated at a rate of 1.3 m^3/s (46 cfs) from Alameda Dam to draw the reservoir down to its February 1st Normal Drawdown Level (NDL) over the winter months. Alameda Reservoir was 0.69 m above its NDL as of October 2016. The NDL was achieved on January 18, 2017 (13 days early), but the outflow was maintained in anticipation of the potential for a further drawdown requirement. Rafferty Reservoir was 0.43 m (1.4 ft) below its NDL at freeze-up, therefore a release was not required.

Spring Runoff Forecast - March 15, 2017- Above normal runoff was expected throughout the basin. The flood operations are based on Sherwood flows exceeding 37,000 dam^3. No additional drawdown was required at Rafferty; however, an additional drawdown was required at Alameda Reservoir.

Alameda Drawdown – Target of 557.87 m based on February 1 and 15 inflow forecast of 36,000 dam^3. There was minimal snowfall in February reducing the March 1 Alameda inflow forecast to 19,000 dam^3 and the drawdown target to 560.20 m. At that time, the reservoir was 0.26 m or

2,900 dam^3 below the target, so the outflow was terminated. The snowfall in March was above normal, which increased the inflow forecast to 35,000 dam^3 and also increased the drawdown target to 557.99 m. Outflows were aggressively staged up in an attempt to reach the target prior to the start of runoff.

With runoff underway in areas below the reservoir, the outflow was terminated on March 24 at 1.26 m or 11,260 dam^3 above the target. The decision was discussed and unanimously agreed upon by the Flow Forecasting and Liaison Committee (FFLC). Actual inflow volumes were lower than forecasted, potentially due to an early snowpack limiting frost penetration into the ground, which allowed for additional infiltration during the melt. Had the drawdown objective been achieved, the reservoir would not have filled in 2017 (900 dam^3 or 0.08 m). J. Fahlman also presented various tables and hydrographs to show the observed spring runoff for Boundary, Alameda and Rafferty reservoirs including the Souris River at Sherwood.

Spring Runoff Summary - Overall, the system worked well during the 2017 snowmelt runoff. Inflows arriving at the Saskatchewan reservoirs were stored for the first 24 days of the snowmelt event. This reduced the peak at the Sherwood Crossing from an estimated unregulated peak of 150 m^3/s to just 10 m^3/s. All Saskatchewan reservoirs were near full supply level at the end of the event.

Going forward in 2017 – Plan on maintaining a 0.5 m^3/s (17 cfs) outflow from Rafferty Reservoir throughout the summer for water quality and ecological benefits. No release is planned from Alameda Reservoir during the summer of 2017. Initiation of an outflow at Alameda and adjustment of the outflow at Rafferty will take place in October to achieve NDL by February 1, 2018. Release rates will depend on summer inflows to the reservoirs and net evaporation.

Current Conditions in the Basin – Near record dry conditions following spring runoff. 20-80 % of normal precipitation between April 1 and May 31, 2017. A rain event was observed on June 14 near Corning, SK with 87 mm (3.4 in.) of rain in the area. The 12-hour total of 81 mm is about 1:100 year event. Higher accumulations were localized, but 40-55 mm was observed over most of the Moose Mountain Creek Basin. The event generated a runoff response below Moose Mountain Reservoir. Initiated a 15 m^3/s release from Alameda on June 15; and finally reduced to 10 m^3/s on June 16.

b. North Dakota

Steve Robinson reported the total volume of flow past the Long Creek near Noonan gage through May 31, 2017 calendar year was 38,260 acre-ft. (47,194 dam^3). This volume is about 235% of the median flow for the past 57 years. Flows for the current year are in the normal to much above normal range. Peak discharge for the reporting period January 1 to May 31, 2017 is 2,160 ft^3/s (61.3 m^3/s) which ranks 15th in 57 years of record.

The total volume of flow past the Souris River near Sherwood gage through May 31, 2017 calendar year was 88,500 acre-ft. (109,165 dam^3). This volume is about 163% of the median flow for the past 86 years. Flows for the current year, based on the last 86 years of record are in the normal to above normal range. The peak discharge for the period January 1 to May 31 is about 1,800 ft^3/s (51.10 m^3/s) on April 1, which ranks 27 in 86 years of record.

The total volume of flow past the Souris River near Westhope gage, through May 31, 2017, was about 548,540 ac-ft (676, 624 dam^3). This calendar year's total flow is about 456 % of the median flow for the past 86 years. Flows for the current year, based on the last 87 years of record are in the normal to much above normal range. The peak discharge for the period January 1 to May 31 is 8,360 ft^3/s (237.3 m^3/s) on April 7, which ranks 3rd in 87 years of record. Based on unregulated flow analysis, this year's peak is between a 10 to 25 year recurrence.

S. Robinson provided information about the three-tiered USGS Souris River Water Quality Sampling Network. The USGS Cooperative Water Quality Sampling Network on the Souris River consists of 11 gaging stations that are sampled on a regular basis. Of those 11 gaging stations, 3 are sampled 8 times a year; 3 are sampled 6 times a year; 4 are sampled 4 times a year and 1 site is sampled once a year in a QA/QC sampling program with Environment and Climate Change Canada. The sampling frequency, constituent groups and sampling objectives were developed by the USGS and Environment and Climate Change Canada. The sampling frequency and timing were implemented in 2012 and were determined from an analysis of network efficiency completed by Joel Galloway and others in 2012. The report is available at the following website link:

https://pubs.er.usgs.gov/publication/sir20125216

S. Robinson also presented a table that depicted the spring 2017 Hydrologic Summary prepared by the USGS the National Weather Service (NWS). The table shows precipitation values and their respective deficits for a few long-term sites in North Dakota. Most of the results are the result of a very dry month of May and early June 2017. Bismarck (not in the Souris Basin) and Minot just recorded their 4th and 10th driest month of May on record with 143 and 111 years of data, respectively.

c. Manitoba

Mark Lee reported fall soil moisture was normal to well above normal in the Manitoba portion of the basin. Over the 2016-2017 winter, the Manitoba portion of the basin received a mix of below normal, normal, and above normal snow cover. The runoff potential was well above normal for spring 2017. Souris River flows fluctuated throughout the fall and winter as a result of reservoir operation in North Dakota. After the US FWS repair to Dam 357, flows in Manitoba increased over winter.

Spring 2017-The spring melt began in late March. The Manitoba tributaries and mainstem saw rapid rises and as expected, the melt produced very high runoff. The tributaries peaked in early April. The return period of these flows was in the 20-year to over 50-year event range. The Souris River peaked at Wawanesa at approximately 525 m^3/s (18,500 cfs) on April 5th. This corresponds to approximately a 1-in-40 year event. In fact, only the floods of 1882, 1904, 1976, and 2011 exceeded the peak flow of 2017. Much of the flow contributing to the peak was local Manitoba runoff and flow from North Dakota filled in the recession limb of the hydrograph.

Summer 2017 - After the spring freshet, flows have continuously declined on the mainstem. The current flow at Wawanesa is 12.2 m^3/s (430 cfs) which is near the median for this time of year. Precipitation has been mixed in the area. Areas that have received precipitation remain wet, where others that have experienced dry conditions are now drier than normal. Manitoba

Agriculture reports crops in northern areas are in great shape, but some fields in the southwest corner are experiencing moderate moisture stress with standing water in low lying areas. Most crops are benefitting from recent rains. Overall, there are no significant water supply or drought concerns at this time. M. Lee briefly talked about the Whitewater Lake Project Outlet proposal, which is currently going through the EA process. Wayne Jenkinson asked for an electronic copy of the EA.

Action: Mark Lee will share an electronic copy of the EA among Board members and participants.

d. US FWS

Frank Durbian presented a summary of refuge operations in North Dakota. The total provisional inflow measured at Sherwood for the first five months of the year was 88,509 ac-ft (109,176 dam^3). This was 106% of the historic January-May inflow, which was 83,462 ac-ft (102,950 dam^3) for the period 1938 through 2017.

The Upper Souris Refuge pool volume decreased an estimated 377 ac-ft (465 dam^3) during the first five months of the year. The total provisional outflow measured at Foxholm on the south end of the Upper Souris Refuge for the first five months of 2017 was 108,531 acre-ft. (133,873 dam^3). This outflow was 152% of the historic record for the January-May outflow, which was 71,486 ac-ft (88,178 $dam^{3)}$ for the period 1938 through 2017. Lake Darling elevation decreased 0.12 ft. (0.04 m) from 1596.24 ft. (486.54 m) on January 1st to 1596.12 ft. (486.50 m) on May 31. The lake elevation on June 1st was 1596.12 ft (486.50 m).

Regarding the J. Clark Salyer National Wildlife Refuge; the total provisional inflow for the period January to May 31, 2017 was 199,099 ac-ft (245,589 $dam^{3)}$. This inflow was 184% of the historic record for the same period, which was 108,119 ac-ft (133,365 $dam^{3)}$ for the period of 1938-2017. Total pool volume on May 31 was 28,570 ac-ft (35,241 $dam^{3)}$. This was 3,775 ac-ft (4,656 $dam^{3)}$ below the January 1 volume of 32,345 ac-ft (39,898 $dam^{3)}$. Approximately 548,545 ac-ft (676,630 $dam^{3)}$ was passed to Manitoba during the five-month period. F. Durbian also reported on the state of water management issues in the Upper Souris National Wildlife Refuge and the J. Clark Salyer National Wildlife Refuge.

8. Flow Forecasting Liaison Committee Update

   There was nothing new to report. The Board approved Bruce Davison as a member of the FFLC.

   Motion: Mark Lee moved to accept Bruce Davison as a member of the FFLC. Nicole Armstrong seconded the motion. **Carried**.

9. Aquatic Ecosystem Health Committee (AEHC) Update

   R. Boals welcomed Dorothy Lindeman to the Board.

   Motion: Nicole Armstrong moved to accept Dorothy Lindeman as a member of AEHC.

   Shelly Weppler seconded the motion. **Carried.**

a. Heather Husband reported the AEHC has updated the Spill Communication Protocol. The Committee has also updated its membership list. A request to add E. coli to the parameters monitored by the Board was sent to IJC last year, but no response has been received. The matter is now with the IJC and the two federal governments awaiting approval.

b. There was some discussion about the discrepancy of water quality analysis done by Environment and Climate Change Canada and the USGS. Kristina Farmer was investigating the causes however, she left the department before the completion of the work. The issue is still pending.

10. Compliance with Water Quality Objectives for 2017

Heather Husband presented a summary of the water quality monitoring program. Environment and Climate Change Canada (ECCC) collected 9 water quality samples from the Souris River in 2016. Eight (8) samples were collected at Westhope (January, February, May, triplicate in June, July, August, September and October). The USGS collected a total of eight (8) water quality samples from the Souris River at the Sherwood site in 2016 (January, 2 in April, May, June, July and August). One joint sample (USDS and ECCC was collected at both sites in August 2016. The following exceedances were highlighted for the Sherwood and Westhope sites:

Sherwood-USGS/NDDoH

- Total Phosphorus exceeded its Water Quality Objective of 0.10 mg/L in 5 of 8 samples collected in 2016. Values ranged from 0.06 mg/L in April to 0.37 mg/L in July. Lowest yearly median for many years.
- Sodium exceeded its objective of 100 mg/L for 6 of the 8 samples in 2016. Results ranged from 72 mg/L in January to 236 mg/L in July
- Sulphate exceeded its objective of 450 mg/L on one occasion in 2016 with a maximum concentration of 505 mg/L in July.
- Total Dissolved Solids exceeded the Water Quality Objectives of 1000 mg/L once in July with a value of 1080 mg/L. The minimum value was 576 mg/L, which was observed in January. Total iron exceeded its water quality objective of 300 µg/L 6 out of 8 times in 2016, with a maximum value of 2,860 µg/L in October.
- pH did not exceed the Water Quality Objective of 8.5 pH units and 6.5 units in 2016. The maximum value of 8.4 was recorded in both April and October.
- Molybdenum did not exceed the Water Quality Objective of 10 mg/L
- Dissolved Oxygen (DO) concentrations remained at or above the 5 mg/L Water Quality Objective for all samples in 2016, with the lowest value of 6.5 mg/L occurring in both May and July.
- *E. coli* did not exceed the proposed maximum Water Quality Objective of 400 colonies /100 ml in 2016. Not enough data for geo-mean.
- Fecal coliform - No data collected.
- Chloride did not exceed the Water Quality Objective of 100 mg/L in 2016.

- Organics – Pesticide data were collected from April through October, excluding September.
- 2, 4-D, Atrazine, and MCPA were detected, but well below the Water Quality Objectives (WQOs).
- The ND Department of Agriculture tested for 103 different pesticides. Besides those mentioned on the WQOs above, 20 others were detected.
- Total Boron did not exceed its objective of 0.50 mg/L in 2016.

Westhope -ECCC

- Total Phosphorus exceeded its Water Quality Objective 0.10 mg/L for all samples collected in 2016. Values ranged from 0.10 mg/L in February to 0.44 mg/L in October.
- Sodium exceeded its objective of 100 mg/L for all 8 samples in 2016. Results ranged from 112 mg/L in February to 187 mg/L in July.
- Sulphate exceeded its objective of 450 mg/L on one occasion in 2016 with a maximum concentration of 451 mg/L in July.
- Total Dissolved Solids exceeded the Water Quality Objectives of 1000 mg/L twice once in January with a value of 1139 mg/L and in June value with a value of 1001 mg/L. The minimum value was 775 mg/L, which was observed in July.
- Total iron exceeded its water quality objective of 300 µg/L 7 out of 8 times in 2016, with a maximum value of 3,390 µg/L in October.
- pH exceeded the Water Quality Objective of 8.5 pH units in 5 out of 8 sampling events in 2016. The maximum value of 8.4 was recorded in August.
- Molybdenum did not exceed the Water Quality Objective of 10 mg/L in 2016.
- Dissolved Oxygen (DO) concentrations remained at or above the 5 mg/L Water Quality Objective for all samples in 2016 except for the January sample, which had a recorded DO value of 2.63 mg/L.
- *E. coli* exceeded the proposed maximum Water Quality Objective of 400 colonies /100 ml one time in 2016, on October 26.
- Fecal coliform - Fecal coliform exceeded the Water Quality Objective of 200 colonies per 100 ml once in 2016, on October 26.
- Chloride did not exceed the Water Quality Objective of 100 mg/L in 2016.
- Organics – Pesticide samples were collected between May to October, excluding August.
- Atrazine, Bromoxynil, MCPA, Picloram and 2,4-D were detected. Picloram exceeded the guideline of 50 ng/L in May, June and July. No other pesticides exceeded the guidelines.
- Total Boron did not exceed its objective of 0.50 mg/L in 2016.

Heather Husband noted there were fish kills in North Dakota in 2008 due to low flow conditions resulting in low Dissolved Oxygen levels. A grad student was retained and did some cross-sections, sediment and depth analysis. Chloride and Boron are on the watch list.

One hundred three (103) different pesticides were sampled; and the guidelines were incorporated into the Water Quality Objectives. Twenty (20) had detections and worth investigating. H. Husband asked which pesticides to include in the Water Quality Objectives noting that the North Dakota Department of Health does not test for 4 certain pesticides anymore because of non-use. Joe Goodwill mentioned that there were new products on the market for battling Leafy Spurge.

Total Phosphorus is down at Westhope and up at Sherwood and needs to be investigated. Iron exceedances could be attributed to background soil conditions and high coal deposits in the area/basin. Will continue with the same sampling schedule in 2017. H. Husband provided a summary table of exceedances for additional water quality parameters of interest for both the Sherwood and Westhope sites.

Action: Nicole Armstrong will check the Picloram exceedances in May, June and July and report back to the Board.

11. Water Management Initiatives

a. International Watershed Initiative Projects - Mark Gabriel and Wayne Jenkinson, IJC, discussed the SPARROW Model and its application the Red-Assiniboine-Souris River Basins. The SPARROW is currently used to model the Great Lakes and is expected to be ready for application in the Souris. An IWI project proposal has been made to conduct Trend Analysis in the Red River Basin. It may be of interest to develop a similar proposal for the Souris. M. Gabriel and W. Jenkinson explained the process and what needs to be included in an IWI submission that could include:

- Project has to fit the definition of an IJC Programme,
- Funds are available for watershed boards,
- Has to be a scientific study,
- Could include data collection,
- Time for submission - calls are made in April and October of each year,
- Fill out a short 2-page IWI form,
- Proposals go to the IJC Review Committee,
- Communications could be part of a proposal, and
- Outreach types of activities are encouraged.

W. Jenkinson and M. Gabriel also presented a recent example of and IWI Project – a Masters or Ph.D. grad student working on the St. Mary-Milk Apportionment Agreement. IWI encourages:

- Partnerships
- Bi-national (key)
- Knowledge transfer
- Fitting the mandate of the boards
- More information available on the IJC Website. Samantha Clause, IJC, could provide support.

It was noted H. Husband's presentation could be a good IWI candidate. It was noted that the Plan of Study (POS) is currently overshadowing the interest in preparing IWI proposals.

b. Status of IJC's Water Quality Objectives Review Report – M. Gabriel reported the fundamental pieces of the report have been completed. The report is still with governments. There has been no response from governments. The next step is for Boards to start their own internal reviews.

c. Update on the POS - Wayne Jenkinson reported there is no change regarding the Plan of Study (POS) since the last Board meeting in February 2017. Waiting for decision by the State Department (Department of Interior) to provide the matching funds. Once a reference is given, a Study Board will be setup. The duration of the project is estimated to be three years and is contingent on decisions made by both governments. The matching funds from North Dakota for $300,000 are still in place, as is the commitment from the US ACE. There is no firm deadline – maybe some time in July 2017 timeframe. Russell Boals noted the reference from governments to the IJC would help move the POS forward. Camille Mageau asked what could be done operationally to use the funding already available. Following the testament from the Public Session the previous night. Shelly Weppler asked whether the Board should write a letter and there was agreement prepare a letter.

Motion: Shelly Weppler motioned that the Board to write a letter to the IJC regarding the POS. Scott Gangl Seconded. **Carried**.

d. Report on the 1989 Agreement Core Committee – Jeff Woodward mentioned the Committee met two weeks ago. Some of the tasks undertaken were:

- Reviewing the Annex and updating it outside of the POS
- A draft version is available and ready for submission to the Board
- Dependent on the POS
- Majority of the work is done.

e. Report from North Dakota Aquatic Invasive Species Project - Heather Husband provided a brief report on harmful algal blooms (HABs) project conducted by the North Dakota Department of Health. The focus was on a state-wide cyanobacteria or blue-green algae study done in the North Dakota portion of the Souris River Basin. Started testing last year. The analysis costs $300/sample . The study results helped in deciding when to issue advisories and warnings to the general public. The information is readily available on a website. The public can also report concerns. North Dakota is developing an Application (Beta-version) for public use. There is also a US FWS Project for the Upper Des Lacs and Lake Darling. In 2014, Des Lacs had issues where around 25 cattle have died after drinking water affected by cyanobacteria. The project will focus on identifying the factors driving the mechanisms of the cyanobacteria infestation. The project will continue throughout 2017.

f. Discussion - IJC's Climate Change Framework – W. Jenkinson led the discussion and provided a report on the IJC Workshop that was held in Washington DC in the spring. Prior to that, Bill Werick had presented at the February 2017 meeting in Regina, SK and apprised the Board about future Climate Predictions. There were questions about the Board's mandate and what the Board can do to

address climate change issues. What are the risks? The St. Croix Board has started implementing climate change impacts/issues in their activities. R. Boals sited some recent examples about the impacts of climate change in the St. Mary-Milk River Basin. Changing rainfall patterns in the last 10 years and flows becoming more influenced by late summer rainfall instead of snowmelt – i.e. rainfall driven events are becoming more predominant. This in-turn affects and complicates how reservoirs are operated. Reservoir operators have to deal with more extreme events. The Board has drought criteria written in the original agreement, which has apportionment implications. Water quality issues were also raised and it was suggested doing some thinking around the IJC request for potential threats.

Gregg Wiche talked about the Stochastic Modelling done by the USGS. Datasets exist to look at future years. How does Climate Change impact the Agreement? The USGS Model superimposed long historical record over long drier periods. The question to the Board is – Do we have information; what is on the radar including water quantity and quality issues? Frank Durbian shared an example from the US FWS. This is their 5th year since they have started incorporating Climate Change into their plans along with invasive species issues in Lake Darling and J. Clarke Wildlife Refuge. Other Board members also shared their experience regarding climate change and how it impacts their respective jurisdictions – from flood risks to droughts, water quality and aquatic invasive spices. There was consensus that a changing climate is happening. There was also agreement to do some further thinking around climate change implications under different scenarios.

Mark Lee mentioned Climate Change is recognized by Manitoba. What do we do to adapt? The 1:200 year-event is now the design flood. David Pattyson noted his Committee in the Upper Souris River Watershed is grappling with Climate Change. D. Pattyson mentioned that he has attended a "Natural Hazard Risk Assessment" Workshop in Saskatoon and noted one of the impacts of Climate Change on the rate and frequency of wild fires in Saskatchewan and how it is impacting the province. Judy DesHarnais, US ACE, stated their reports have to incorporate the impacts of Climate Change and they must build resiliency in the projects, risk-based approach, and expertise available in-house. Joe Goodwill also shared his experience of having watched 2-3 dry/wet extreme cycles as tributaries to the Souris in his area are getting deeper and faster.

Shelly Weppler emphasized the need for planning and communication with "what if scenarios". Mark Lee mentioned Climate Change Statement in Manitoba is coming from the Prairie Climate Change Centre in Winnipeg. The statement focuses on reducing vulnerability and to be better prepared for extreme events caused by Climate Change. Nicole Armstrong also supplemented M. Lee's statement. Change in the ice-free season and occurrence of early algal blooms are just a couple of examples in Manitoba. Darin Schepp, ND SWC, mentioned about the investigation going on in North Dakota regarding potholes and non-contributing areas. There was also good discussion and perspective including conflict resolution mechanisms as part of the investigation.

12. Update on Water Management Projects

a. Saskatchewan - John Fahlman mentioned there were 13 capital projects that applied for approval.

Action: John Fahlman will send a 1-page summary report to the secretaries.

b. North Dakota – There were less than 10 permits last year. No other changes and nothing major since then.

Drainage and its implications – Tile drainage in eastern North Dakota – Keep it on the agenda. Manitoba is revising its drainage regulations. The "No net loss" policy of wetlands is working in Saskatchewan. The Board agreed to discuss tile drainage at its future meetings. Also, to invite people to come and make presentations to the Board on how they install tile drainage systems in their respective areas.

13. Other Business

a. ISRB Communication – Shelly Weppler asked about their role as members of the Communications Committee. The Board agreed a communication plan is needed.

Action: Russell Boals volunteered to draft the Terms of Reference (TOR) for the Communications Committee.

b. Update on Activities of from Watershed Groups

David Pattyson reported about issues regarding decommissioning of old wells and restoration of wetlands in the Upper Souris Watershed. D. Pattyson talked about Aquatic Invasive Species and how citizens are involved in the monitoring program.

Ryan Ackerman, Souris River Joint Board (SRJB), discussed the Mouse /Souris River Plan in North Dakota and the damages in City of Minot from the 2011 Flood. In 2011, the flood damaged 4,100 homes; 11,000 people were displaced; and the damages were in excess of $1 billion. ND SWC initiated a study after the flood. Parallel efforts are underway by the US ACE conducting a feasibility study. The Plan of Study (POS) is important to the SRJB.

Wanda McFadyen, ARBI, made a brief presentation about the activities of the Assiniboine River Basin Initiative.

- Completed the Framework Plan
- Completed the State of the Basin Report that included agricultural drainage in 3 jurisdictions, water quality and LiDAR mapping.
- Modelling for flood preparedness
- Tile drainage issues – have conducted 4 webinars. The webinars are still available on 'YouTube". The next conference will be held on February 13-15, 2018 at the Double-Tree Hotel in Regina. W. McFadyen also mentioned the ARBI website is active and she will provide her report electronically to the Board.

14. Next meeting

The next face-to-face meeting is scheduled to be held on February 21, 2018, in Bismarck, ND SWC will host and coordinate the meeting.

Action: ND SWC will coordinate the hosting of the next face-to-face meeting.

15. Adjournment

The meeting was adjourned at 2:30 p.m. on June 27, 2017 (Boissevain, MB).

International Souris River Board
ACTION ITEMS – progress updated June 27, 2017

PERSONS OR COMMITTEE RESPONSIBLE	TOPIC	MINUTE	ACTION	STATUS As of February 2018
Doug Johnson	Development of an International Souris River Board Procedures Manual	Sep 25/09-3 Feb 27/09-10a.	Doug Johnson to coordinate and call a meeting of a Canadian team for production of a draft procedures manual. At the Feb 23, 2010 meeting, Doug reported this was incomplete.	On Hydrology Committee Work Plan
Bob Harrison Martin Graczyk Ed Eaton	Report on the spring 2009 flood.	Sep 25/09-3 June 18/09-10d.	SRFFLC to write a report on the spring 2009 flood. The report is to document what happened, provide a chronology of events, examine why the forecast (at Minot) was too high, lessons learned, and make recommendations for improvements for the future.	Completed
AEHC	Compliance with Water Quality Objectives	September 14, 2011	AEHC to recommend actions to be taken by the Board to address exceedances of water quality objectives	Closed
John Fahlman	Winter release from mid-level outlet for better water quality	June 20, 2012	J. Fahlman to check with his staff if releases could be made from the mid-level out of Rafferty Reservoir to improve water quality downstream and respond to Mike Sauer.	Closed
Flow Forecasting Liaison Committee	New Communication Strategy	June 20, 2012	The Flow Forecasting Liaison Committee will create a formal communication strategy	Completed
AEHC	New E. coli objective	June 20, 2012	AEHC will prepare a short report detailing the justification/reasons for adding E. coli to the ISRB Water Quality Objectives	Closed
AEHC and HC	Varying flow rates for winter releases	June 20, 2012	AEHC and HC will develop a plan for testing various winter release rates to determine the optimum flow rate to maintain DO levels	Closed
ISRB	Engaging the Upper Souris Watershed Association with Board activities	June 20, 2012	As an IWI Board, the ISRB would continue to seek opportunities to engage watershed associations and the public	Closed
AEHC	Terms of Reference	February 20, 2013	AEHC Co-chairs to send their TOR to the Board	Completed
Water Security Agency	90-day volume - Souris River at Sherwood	February 20, 2014	WSA will prepare an estimate of the 90-volume for the Souris River at Sherwood for March 20 meeting	Completed
ISRB	Flood event determination	February 20, 2014	The Board will determine the return period/flood event for Spring 2014	Completed
Co-Secretaries	Membership update	February 20, 2014	Co-Secretaries will send an updated list of all committees to the Board	Completed
ISRB	Communication Protocol	February 20, 2014	Board to review and approve the “Communication Protocol for Fish Kills in the Souris River on March 20, 2014	Completed
Co-Chairs	Mike Laitta’s support	February 20, 2014	Co-Chairs will send a joint letter requesting the IJC for Mike Laitta’s assistance.	Closed
ISRB	Potential Public Board members	February 20, 2014	Board will prepare a list of potential NGOs to establish a pool to draw public candidates for Board membership	Closed

International Souris River Board
ACTION ITEMS – progress updated June 27, 2017

PERSONS OR COMMITTEE RESPONSIBLE	TOPIC	MINUTE	ACTION	STATUS As of February 2018
ND SWC	Next Face-to-Face Meeting	February 20, 2014	ND SWC will host the June 2014 Public and Board meeting	Completed
IJC	IWI template	June 25, 2014	Mark Colosimo will send the IWI template to H. Husband for submission of the proposed changes to the Water Quality Objectives.	Completed
ISRB Co-Chairs and Co-Secretaries	Public membership on Board	June 25, 2014	Board will prepare a list of potential NGOs to establish a pool to draw public candidates for Board membership	Completed
Dan Selinger	Determination of Natural Flows to May 31, 2014	June 25, 2014	Dan Selinger, WSC, to submit his calculations to the Board for review and approval at the Sept. 25 conference call	Completed
Manitoba Water Conservation & Stewardship	Next face-to-face meeting	June 25, 2014	Manitoba Water Conservation and Stewardship will coordinate and host the next Board meeting.	Completed
Megan Estep	Synopsis of the adequacy of the hydrometric network in the Souris River Basin	February 26, 2015	Megan Estep volunteered to provide a synopsis to the IJC regarding the adequacy of the hydrometric network in the Souris River Basin.	Completed
ISRB Co-Chairs	Request for support letter to the City of Minot NDRC application submission	February 26, 2015	Co-Chairs to review and endorse the support letter on behalf of the Board.	Completed
Saskatchewan Water Security Agency	Host the Summer 2015Public and Board meeting	February 26, 2015	Saskatchewan Water Security Agency will coordinate the Summer 2015 Public and Board meeting in Estevan, SK	Completed
ISRB Co-Secretaries	Doodle poll to set-up a webinar	February 26, 2015	The Co-secretaries will conduct a Doodle Poll to set-up a webinar for Gregg Wiche's presentation on Climate Analysis and Water Balance Report as part of the POS	Completed
ISRB Co-Secretaries	Next face-to-face meeting June 18-19, 2015	February 26, 2015	Co-Secretaries will coordinate with EC and WSA to setup the logistics for the Summer 2015 meeting in Estevan, SK	Completed
ISRB	Submit an IWI Project Proposal	February 24, 2016	Board to prepare and submit an IWI proposal to improve communication and display of the Annual Report and website.	Completed
Joel Galloway	Discrepancies of results of water quality sampling	February 24, 2016	Joel Galloway will investigate the reason for the discrepancies of the results of the joint water quality sampling between Canada and the USGS	Ongoing
Pascal Badiou	DU Nutrient Project	February 24, 2016	Pascal Badiou to present the results of the DU Nutrient Project to the Board	Ongoing
Mark Gabriel	IJC - Review Water Quality Objectives	February 24, 2016	Mark Gabriel will present the results from his review of the Souris River Water Quality Objectives	Completed

International Souris River Board
ACTION ITEMS – progress updated June 27, 2017

PERSONS OR COMMITTEE RESPONSIBLE	TOPIC	MINUTE	ACTION	STATUS As of February 2018
ISRB Secretaries	IJC Climate Change Framework	February 23, 2017	Secretaries to add to the agenda for discussion at the June 2017 Board meeting	Completed
ISRB Secretaries	North Dakota Water Quality Project	February 23, 2017	Secretaries to add to the agenda for discussion at the June 2017 Board meeting	Completed
Souris River Study Committee	Plan of Study (POS) report	February 23, 2017	The Souris River Basin Study Committee to present its draft report at the June 2017 Board meeting	Completed
Public Working Committee	Public meetings	February 23, 2017	David Pattyson, Shelly Weppler, Debbie McMechan, and Wanda McFadyen to work on public outreach. Co-Chairs will send an email to the IJC about the creation of the Committee	Closed
Mark Lee	Whitewater Lake EA	June 27, 2017	Mark Lee to send an electronic copy of the EA for the Whitewater Lake Project in Manitoba	Ongoing
Nicole Armstrong	Picloram Exceedances	June 27, 2017	Nicole Armstrong to check and report back the Picloram Exceedances in May, June, and July	Ongoing
John Fahlmann	Water Management Projects	June 27, 2017	John Fahlman to send a 1-page summary about capital projects in Saskatchewan to the secretaries	Ongoing
Russell Boals	Terms of Reference for the Communications Committee	June 27, 2017	Russell Boals will prepare the Terms of Reference (TOR) for the Communications Committee	Ongoing
ND SWC	Winter 2018 Board Meeting	June 27, 2017	ND SWC will coordinate and host the Winter 2018 Board meeting in Bismarck in North Dakota	Ongoing

Note: When two or more meetings are referenced to an item; that indicates a carry-forward of an action item from previous meetings.