

BUFFALO-RED RIVER WATERSHED DISTRICT

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MEDIATION PROJECT TEAM MINUTES

May 24, 2012

The Buffalo-Red River Watershed District (BRRWD) Mediation Project Team (PT) held a meeting on Thursday, May 24, 2012, at 7:05 PM at the Minnesota State University Moorhead (MSUM) Science Center, Glyndon, MN.

Attending were: Curtis M. Nelson, Gerald L. VanAmburg, Roger G. Ellefson, and John E. Hanson, BRRWD Managers; Bruce E. Albright, BRRWD Administrator and Houston Engineering, Inc. (H.E.); Zachary Herrmann, Engineer, H.E. Rick St. Germain, Engineer, H.E.; Lance Yohe, Red River Basin Commission (RRBC); Chuck Fritz, International Water Institute (IWI); Brian Winter, Program Director, The Nature Conservancy (TNC); Pete Waller, Board Conservationist, Minnesota Board of Water and Soil Resources (BWSR); Shawn May, Detroit Lakes Wetland Management District (WMD) and United States Fish and Wildlife Service (USFWS); Doug Wells, USFWS and Fergus Falls WMD; Keith Weston, Basin Coordinator, Natural Resources Conservation Service (NRCS); Alice Klink, NRCS; Caroline Clarin, Engineer, NRCS; Julie Aadland, Area Hydrologist, Minnesota Department of Natural Resources (DNR); Dave Barsness, Fisheries Specialist, DNR; Emily Siira, Area Hydrologist, DNR, and Robert A. Zimmerman, Engineer, City of Moorhead.

Members absent were: Breanna Paradeis Kobiela, BRRWD Manager, Erik S. Jones, Engineer, H.E.; Jack Frederick, Minnesota Pollution Control Agency (MPCA); Don Schultz, Area Wildlife Manager, DNR, Lynn Foss, Clay Soil and Water Conservation District (SWCD); Ross Aigner, Landowner/Wilkin SWCD; Henry VanOffelen, Natural Resource Scientist, Minnesota Center for Environmental Advocacy (MCEA); Ryan Frohling, Detroit Lakes WMD and USFWS; Audubon Dakota; Brian Dwight, Board Conservationist, BWSR; Craig O. Evans, PM-D, Army Corps of Engineers (COE); Leo Grabowski, Project Manager, COE; Tony Nelson, Farm Bill Biologist, Pheasants Forever (PF); and Brad Grant, Becker SWCD.

Albright called the meeting to order at 7:05 PM. He thanked the group for their attendance. Albright discussed the Mediation process and project development. Albright noted that Lance Yohe, RRBC, Rick St. Germain, Engineer, H.E., and Chuck Fritz, IWI, will be making presentations. Yohe will discuss the RRBC's Long Term Flood Study (LTFS) and RRBC's goal for each region in the Red River Valley to reduce flows by a specific target goal. St. Germain will discuss the results of H.E.'s retention/storage investigation for the BRRWD, which targets potential retention sites within the BRRWD to meet the LTFS goal, and Fritz will discuss the results of the IWI's tiling study.

Business brought before the group included:

Meeting Minutes. The 3/22/12 meeting minutes were distributed with the meeting notice. **Motion** by Waller to approve the minutes. **Seconded** by Aadland. **Approved.**

Lance Yohe/RRBC LTFS. Yohe gave a brief history of the RRBC. He noted that the full LTFS report is on the RRBC's Website. Yohe said that in the late 1990's, the Division of Basin Natural Resources Framework Plan was developed, which included 13 goals for the Red River basin. Goal No. 6 addressed flood damage reduction on the main stem. After the 2009 flood, the North Dakota and Minnesota State Legislatures appropriated \$500,000 each to the RRBC for flood damage reduction efforts in the Red River

basin. Yohe explained how the effort was organized to coordinate the Legislative, local government, and public sectors to put a plan together to reduce flood damages. A number of public meetings including the RRBC's Advisory and Technical Committees, as well as local agencies and government officials, were held regarding basin flooding concerns and specifically about the COE's Fargo-Moorhead Diversion initiative. The Winnipeg Diversion was built to handle the 700-year flood event, and the Grand Forks' dikes were built for the 250-year event. Yohe discussed the level of flood protection goals for the Red River Basin. He explained that the goal for the major urban/metropolitan areas (Fargo-Moorhead, Grand Forks-East Grand Forks, and Winnipeg) is for the 500-year or greater event. For the smaller cities/municipalities, the goal is for protection to the 200-year event; and for rural residences/farmsteads, the 100-year event. He discussed the historical accomplishments, which show since the 1920s, federal involvement in flood reduction efforts has diminished, and state/local responsibilities have increased. Using flow modeling (MIKE 11), the RRBC was able to develop a target flow reduction for each tributary/watershed district based on modeling information from the sub-basins. The LTFS study was also able to predict the effect of their flow reduction strategy on various points on the Red River main stem. The MIKE 11 modeling can assist watershed districts identify potential flood storage sites to achieve their flow reduction allocation. Yohe said that the amount of retention was estimated at 1.5 million acre-feet for the Red River basin, and estimated the cost of the strategy could be approximately \$1.5 billion (\$1,000/acre-foot). Several watershed districts provided the RRBC with plans for potential retention sites to achieve their 20% reduction goals, which were included in the LTFS report. He briefly discussed retention efforts in the Bois de Sioux Watershed District. Yohe explained that the data wasn't completely accurate because of inconsistent models from the various sources. As a result, the COE plans to build a hydrology model for each of the sub-watersheds with funding from their Main Stem Feasibility project that will be based on the IWI's LiDAR data and floods in 2009, 2010, and 2011. The RRBC will also refine the results of their LTFS based on the new LiDAR data.

Yohe explained that most of the retention in the Red River Basin will begin locally, developed through cumulative efforts, which will in turn provide tangible basin benefits that will bring funding to the Basin for more projects. Yohe pointed out that a 20% flow reduction in Fargo-Moorhead could potentially reduce flood stage by about 2.3'. The COE wants to implement a 12' stage reduction for Fargo with the Diversion project. He explained that retention is only one part of the solutions needed to reduce flood damage in the Red River basin. Yohe feels that if we can meet 50% of the proposed retention goals for the basin, and the COE can complete their Fargo-Moorhead Diversion project in the next 10 years, we might be able to have a significant impact on flood damage reduction in the Red River Basin. The COE has plans to identify all the structures in the basin/tributaries in the floodplain and what it would take to protect them.

Yohe explained funding projections for the LTFS recommendations over the next 50 years. He explained that the total price for the United States portion of the basin is \$4.6 billion. This includes \$1.77 billion for the proposed COE Diversion, and assumes federal funding for that project. The 50-year plan includes temporary storage to reduce flood damages, funding for community projects, rural ring dikes, and Devils Lake initiatives. The plan calls for storing 1.5 million acre-feet of water south of the Canadian border to ensure a 20% reduction in peak flows to prevent flood damages, which are estimated to cost between \$10.2 billion and \$12.8 billion in the basin for a single 500-year flood event. Yohe also briefly discussed the immediate needs/critical risks in the basin including the Fargo-Moorhead Diversion and Devils Lake.

Albright asked how many public informational meetings were held while the RRBC developed the LTFS. Yohe said that they held approximately 45 public meetings throughout the basin, plus the public had the opportunity to submit surveys/comments to the RRBC via their Website and US mail. Albright pointed out that the RRBC's LTFS effort appears to have changed public attitudes about working together to find a cooperative solution to our flooding problems. Yohe explained how the public meetings were conducted. He noted that the majority of attendees agreed that retention is the solution to our flooding problems, but very few were interested in offering their property for a retention site. Caroline Clarin, NRCS, asked if

retention/easement efforts to remove land from agricultural production has created measurable flood damage reduction impacts over the last 10 years. Yohe explained that these impacts could be measured at the stream gauges stations within the individual watersheds. He discussed managing early, middle, late staging releases to reduce peak flow on the main stem, and added that anything we can do to keep water on the upstream land longer will have positive benefits on nutrient loads downstream.

Ellefson questioned Yohe's statement regarding the COE's plan to protect/raise structures in the floodplain. He also discussed problems with finding storage sites and the costs related to buyouts in the floodplain. He commented that homeowners should have flood insurance to cover flood damages. Yohe said that it has been determined that we have to learn to live with the flooding problem and protect the structures in the floodplain. He agreed that it would be best if people didn't build in the floodplain. He supports the changes that the Cities of Fargo and Moorhead have made in their Planning & Zoning ordinances to keep structures out of the floodplain. The Red River Watershed Management Board (RRWMB) and the North Dakota Joint Board have adopted the RRBC's LTFS recommendations as guide. Yohe noted that the LTFS will be updated annually.

Albright explained that Yohe had attended a BRRWD meeting in 2010 to discuss the LTFS and the retention goals the RRBC had suggested for each watershed district in the Red River Basin. He explained that the RRBC contacted those watershed districts with recently updated watershed management plans and models to challenge them to conduct a retention study to identify possible sites. Rick St. Germain, Engineer, H.E., prepared a study to identify possible retention sites within the BRRWD that we could develop to reach our 20% reduction goals, as determined by the LTFS.

BRRWD Storage Report. St. Germain discussed his report, dated 11/18/10, regarding the above referenced study on the potential effect of storage reservoirs in the Buffalo River watershed on the 1997 flood on the main stem of the Red River. He noted that using the 2008 IWI LiDAR data, the available storage at various pool elevations was determined. The report identified six potential storage sites in the Buffalo River watershed. To attain a 20% reduction on the main stem of the Red River, St. Germain explained that we will need to achieve a 35% reduction on the Buffalo River or about 60,000 acre-feet of storage. This would be equivalent to a 4" runoff event. St. Germain displayed a table with the details of the selected sites including drainage area, total volume, total gated volume, and total ungated volume. He also displayed a map showing the general locations of the potential sites in Deerhorn, Manston, Barnesville, Elkton, and Spring Prairie Townships, including an off-channel storage site on Stony Creek. St. Germain explained that the exact locations of the sites would be kept confidential until the BRRWD has contacted the local landowners. He explained how the HEC-HMS model, developed for the BRRWD's Revised Watershed Management Plan (RWMP), was calibrated for the 1997 spring flood using the observed runoff volumes from the three United States Geological Survey (USGS) gauging stations in the BRRWD near Hawley, Sabin, and Dilworth. Three charts were displayed showing a comparison of the actual 1997 observed gauge conditions compared to the model calibration. A table comparing the observed 1997 gauge readings and the model results showed very minor variances. When the proposed flood storage sites were incorporated into the 1997 model, it was evident that during the 1997 flood event, the potential storage sites would have been effective at reducing peak flows, as well as the overall volume. The peak flows at the Sabin gauge could be reduced by approximately 52%.

Klink asked what size event would equal a 4" runoff event. St. Germain explained that would be approximately a 100-year event. He observed that ungated storage did not deliver the necessary flood reduction results.

Albright discussed the potential retention features of the "Sabin Coulee" site, which drains directly into the Red River and eventually to Fargo-Moorhead. He noted that this site has been of interest for many years and could potentially provide 9,000 acre-feet of gated storage. Yohe commented that evidence doesn't

support concerns about agricultural damages from spring flooding. Ellefson maintained that there are impacts to holding spring runoff on agricultural land from trash/organic matter deposits, etc. Someone mentioned the Energy & Environmental Research Center (EERC) "Waffle" storage plan. Klink asked if there was any data regarding agricultural damages from spring flooding. Yohe didn't have any information on this issue. Albright commented that the Fargo-Moorhead urban area is very important to the entire region and major flooding impacts to this economic center will have significant effects on all of us.

Brian Winter, TNC, questioned what the consequences are to the current trend of returning marginal agricultural land back into production by removing it from the Conservation Reserve Program (CRP), etc., and installing new drainage tiling. He stated that "if retention matters a thimble at a time, then drainage matters a thimble at a time." He wondered if all the new agricultural drainage might cancel out the gain from proposed 20% reduction scenario.

Yohe speculated that individual landowners might have to be required to have some type of stormwater retention plans for their property. Klink suggested that it would be cheaper for landowners to do the retention planning prior to tile drainage projects.

Ellefson commented about the terminology of "flooding" even when it is just minor stage increase on the Red River.

Albright noted that the BRRWD's RWMP includes Regional Assessment Locators (RALs) that act as gauging stations to measure water quality/quantity in each of the seven Planning Regions. Each of the RALs can be used to measure our flood reduction goals/achievements. He noted that agricultural tiling is the newest agricultural practice to add to peak flood timing.

Albright introduced Chuck Fritz, Executive Director, IWI, who has worked with Keith Weston, NRCS, and the Red River Retention Authority (RRRA) plus other agencies, to conduct a study on the effects of subsurface tiling.

Red River Basin Tile Drainage Study. Fritz gave a Power Point presentation regarding the Basin Technical and Scientific Advisory Committee's (BTSAC) Tile Drainage Study. He explained the origin of the Study and listed the members of the BTSAC. The study was conducted to answer two questions: 1). What are the impacts of agricultural drainage on peak watershed flows? 2). How should agricultural drainage systems be designed to maximize benefits while minimizing adverse impacts? The study resulted in two Briefing Papers in response to the referenced questions. Fritz explained that the primary audience for the report was the Red River Watershed Management Board (RRWMB)/member watershed districts and the North Dakota Red River Joint Water Resources Districts/member water resources districts.

Fritz discussed the general scientific processes involved with subsurface drainage. He explained the difference between water retention/long term storage and detention/short term storage. Without subsurface drainage, water is retained long term. With subsurface drainage, long term storage is converted to short term storage (detention). Briefing Paper #1 dealt with the impacts of subsurface drainage on watershed peak flow on agricultural fields. Hydrologic modeling from Europe showed that tiling decreases peak flow and delays water discharge. However, in early spring and late fall, tiling increases water yield from the field. Fritz noted that in the BTSAC study, modeling didn't show the delayed discharge in the Red River valley. Conclusions put forward in Briefing Paper #2 were that situations do exist where adding uncontrolled subsurface drainage to areas has the potential to increase flooding; however, the inclusion and appropriate operation of control structures on these systems can maximize water storage potential and reduce flood flows. He discussed subsurface drainage management practices. In the fall, the control structure should be opened and in the spring, the control should be closed.

Fritz discussed water management objectives. From an agricultural producer's perspective, to provide optimal crop production, we would want to remove water during wet periods and conserve water during droughts. From a watershed management viewpoint, the objective is to reduce flood flows for the spring/summer events to minimize flood damages. Fritz discussed early, middle, and late peak flow region contributions. The preferred options would be for tile outlet control structures and water storage trading. He noted that on or off site storage mitigation might need to be implemented to reduce upstream unmanaged tile drainage, and manipulating culvert sizing to reduce peak flows could also be employed. Another option is drainage limitation coefficients, which is limiting discharge from a tiling project. Ellefson asked who sets the limits on the tile operation. Fritz said that it would probably be the Watershed District Managers who would have to create/enforce on the rules of operation. He discussed how the different options would affect the early, middle, and late regions. Fritz explained that the next steps would be to set up a Grid Surface/Subsurface Hydraulic Analysis (GSSHA) model. This concept will be functional in the next 6-8 months to alter or modify the current hydrographs. It could be used to modify or revise certain recommendations. Water storage trading/credit program is also another concept that will be developed.

The RRWMB has directed their member watershed districts and their Technical Science Advisory Committees (TSAC) to develop recommendations based on the IWI study. Albright explained ways to standardize tile permitting rules throughout the Red River basin. The BRRWD is considering revising their Rules to address this issue. He noted that one option might be for Watershed Districts to cost share tiling projects that include outlet structures, as it could be affordable retention. The group discussed the benefits of controlled outlets during drought conditions. Ellefson questioned the idea of watershed district's cost sharing control structures. Yohe pointed that there is no statistical evidence to prove that tiling increases crop yield. Ellefson said that the benefit comes from being able to access the field during spring/summer wet periods. There could possibly be some NRCS Environmental Quality Incentives Program (EQIP) funding for cost sharing control structures on a limited, experimental basis. The group had an extended discussion on this topic.

Project No. 56, Manston Slough Restoration. The BRRWD held the Final Hearing on 5/22/12, which was recessed. Albright discussed the hearing testimony. There are still a few easements options to acquire. The 75% funding package is now in place with hopes that BWSR will provide Wetlands Reserve Program (WRP)/Reinvest In Minnesota (RIM) money to cover the remaining \$650,000. The Board hopes to reconvene the Final Hearing in early July and get construction underway after Labor Day.

Project No. 49, Oakport Flood Mitigation. Albright reported that we are still seeking funding for 2012. We need approximately \$1 million to complete the work under contract this year and another \$5 million to complete the final phase. It doesn't appear there will be State funding for the final phase this year.

Highwater Outlets. Albright briefly discussed the status of the highwater outlet projects, which have been completed and are operational.

Wolverton Creek/Comstock Coulee. Albright reported that we are now in Phase II of the grant funding. The Red River elevations at the outlet were finally low enough last fall to allow us to complete the repairs associated with the 2007 Clean Water Fund (CWF) grant. The next steps will be to schedule a landowner meeting with Steering Committee, comprised of BWSR, NRCS, and the County SWCDs representatives.

Project No. 39, Georgetown Levee. Albright reported on the progress of acquisitions and easements. The Appraisers found \$5.1 million in benefits for the \$3.5 million project. There are a number of properties that still need to be acquired. The Final Hearing was held in April, which will be continued next week. The Board is looking for cooperation from the Georgetown residents regarding easement acquisition/buyouts, or they might consider walking away from the project.

BRRWD Total Maximum Daily Load (TMDL)-Phase II. Albright reported that the project work is ongoing. Jack Fredericks, MPCA, would like to set up a time for Bruce Paakh, MPCA, and Dave Friedl, DNR, to present the current sampling data and Stream Power Index (SPI) reports to the PT. Albright noted that impairments are more significant than expected. A kickoff meeting in June will be held for Phase I of the Upper Red TMDL.

COE Fargo-Moorhead Metropolitan Feasibility Study. Albright commented that at this point the COE is looking at alternatives/modifications for the project. The COE remains very interested in the Hawley Buffalo River Restoration project as a possible mitigation site for the Diversion project.

Activities Update. Albright distributed copies of the latest BRRWD press release.

Watershed District Enlargement. Albright noted that on 4/25/12, BWSR approved the proposed expansion of the BRRWD in accordance with a petition Otter Tail and Wilkin Counties submitted to add approximately 446 square miles to the BRRWD. BWSR held a hearing regarding the petition to enlarge the BRRWD on 2/23/12 in Barnesville. The petition also asked to increase the number of BRRWD Managers from 5 to 7, who will be appointed by their respective counties. The BRRWD has two years to update our Revised Watershed Management Plan (RWMP) to include the new area.

New Office. Albright reported on the progress of the new office building project. We hope to be in the new office by Labor Day.

Social Indicators Survey (SIS). Dr. Karlyn Eckman and Alec Albright, Water Resources Center, University of Minnesota (U of M), presented the final SIS report on 5/15/12. One of their recommendations was that the BRRWD consider hiring a watershed educator.

Next Meeting. The next PT meeting is tentatively scheduled for Thursday, July 26, 2012, at 7:00 PM in the MSUM Science Center, Glyndon.

Albright thanked Yohe, St. Germain, and Fritz for their presentations.

Adjournment. There being no further business to come before the group, Albright adjourned the meeting at 9:35 PM.

Respectfully Prepared and Submitted by

Bruce E. Albright, BRRWD Administrator