

BUFFALO-RED RIVER WATERSHED DISTRICT

BARNESVILLE, MINNESOTA 56514

1303 4th AVE NE
Email: general@brrwd.org

PO BOX 341

PHONE 218-354-7710
Website: www.brrwd.org

BUFFALO-RED RIVER WATERSHED DISTRICT Minutes for Landowner Informational Meeting Lower Otter Tail River Restoration

July 10, 2018

The Board of Managers, Buffalo-Red River Watershed District (BRRWD), held a landowner informational meeting regarding the Lower Otter Tail River (LOTR) Restoration on Tuesday, July 10, 2018, at 7:00 PM in the Courtroom, Wilkin County Courthouse, 300 5th ST S, Breckenridge, MN. BRRWD Managers present were Jay A. Leitch, Mark T. Anderson, John E. Hanson, Catherine L. Affield, and Peter V. Fjestad. Others attending included: Bruce E. Albright, BRRWD Administrator, and Erik S. Jones, District Engineer, Houston Engineering, Inc. (HEI); John Lindquist, Otter Tail County Commissioner; Breanna Koval, Wilkin County Emergency Manager; Don Bajumpaa, District Manager, Wilkin Soil and Water Conservation District (SWCD); Pete Waller, Board Conservationist, Minnesota Board of Water and Soil Resources (BWSR); Howard Fullhart, Assistant Area Supervisor, Minnesota Department of Natural Resources (DNR) Fisheries, Fergus Falls; Ben Cox, Research Civil Engineer, and Nick Dunham, Environmental Planner, U.S. Army Corps of Engineers (COE); Joel Hoistad, Building Official, City of Breckenridge; and landowners: Vick Morgan, Matt Jenner, James Morgan, John Bertram, Werner Weinrich, Neil Crocker, Russ Wilson, Shary Loeks, Tim W. Christopher, Tim A. Christopher, Rich Christopher, Greg Christopher, Pete Friederichs, Chad Friederichs, Adam Friederichs, James G. Christensen, Marc Hasbargen, and Ed Lommel.

Administrator Bruce Albright called the meeting to order at 7:00 PM. He introduced the BRRWD Board and Staff and advised the audience that the proceedings were being audio recorded to aid in the preparation of the minutes. He passed around a sign-up sheet to record attendance.

Using an overhead projector and Power Point presentation, Erik Jones, BRRWD Engineer, briefly reviewed the meeting agenda. Meeting items included information regarding the LOTR project development process, the Otter Tail River segments/reaches involved with the possible restoration, the data collection process, restoration alternatives, and then the current restoration concepts. He noted that we are still in the early stages of project development. The last landowner informational meeting was held on 2/25/16. Since then, the BRRWD has completed a survey and hydraulic modeling to determine river water levels.

Jones discussed the configuration of the Otter Tail River channel. The project study area is divided into four segments. Segment 1 encompasses the stretch from Orwell Dam to Wilkin County Road (C.R.) No. 19. This segment generally has a well-defined floodplain with a channel bottom between 50'-100' wide. There is roughly a 30' vertical elevation separation between the adjacent fields and the river corridor. Segment 2 runs from Wilkin C.R. No. 19 downstream to Wilkin County Ditch (C.D.) No. 4. The floodplain in this reach is at field level with not much separation between the spoil bank and cropland during a flood. It has a more confined channel and lower capacity. Jones displayed a slide showing the elevation difference between Reach 1 and Reach 2. The original COE project area involved this segment of the river corridor. The channel bottom was straightened and widened to between 30'-50' with a 3H:1V side slope on both sides of the river if the existing spoilbank hasn't already eroded into the river. Segment 3 stretches from Wilkin C.D. No. 4 downstream to the Breckenridge Diversion. In this segment, the channel is well defined with deep ridges and meanders with greater depth and capacity. There is a 5'-10' difference between the fields and river corridor in this reach. The channel varies in width. In certain places it is between 500' to 1,000' wide, including the floodplain areas.

Jones explained that the COE constructed the Orwell Dam in 1953 to assist in flood control and is now used as a municipal water storage reservoir and for agricultural water storage. The distance between the dam and the City of Breckenridge is about 32 miles. The contributing drainage area upstream of Orwell Dam is 1,212 square miles (sq. mi.) with another 164 sq. mi. between Orwell Dam and the City of Breckenridge. In 1954, the COE straightened and cleaned approximately 18 miles of the Segment 2 area of the LOTR, reducing the reach to 11.4 miles by disconnecting many of the natural meanders. The COE created a channel conversion with a 50' bottom with 3H:1V sideslopes and spoilbank. The goal of the project was to provide 10-year level flood protection when combined with the Orwell Dam flood control. The improvement steepened the grade of the channel to reduce the stage and duration of larger floods.

Jones displayed two slides showing a historical comparison of the river with the natural meanders from 1939 versus the straightened channel in 2015. The river follows the same path, but the reduced length and steeper slopes lead to higher velocity of flow and increased shear stress. Faster flow causes more erosion on the banks and bed of the channel.

In 2016, HEI conducted a survey of the river between Orwell Dam and Breckenridge using several data collection methods. Sonar was used to map the contours of the river bottom. Shots were taken every 4' with cross sections every 500' for a total of 57,796 sonar data points along the channel bottom. LiDAR data from an independently conducted DNR survey was also used. Stream bathymetry used a depth digital elevation model (DEM) to identify habitat pools and drifts within each river reach. A conventional rover survey was used to gather ground shots along the edge of the channel. This method connected the sonar survey to LiDAR data and added another 6,808 data points. Jones displayed a graph to demonstrate the difference in the as-built 1952 COE channel profile of Reach 2 versus the 2016 survey profile. The downstream end displays several feet of aggradation, while the upstream end shows 4 to 5' of degradation. Close to 7' of sediment material has moved downstream and is now above Lake Breckenridge Dam.

Using all the referenced survey data, HEI created and calibrated a hydraulic model between Orwell Dam and Breckenridge, using 713 cubic feet per second (cfs) and the surveyed water surface elevations. Jones displayed slides showing the current channel cross sections in various reaches compared to the as-built COE cross sections. The river channel has suffered significant downcutting and widening since 1952. Because of the downcutting and widening, the 10-year flood event impact area has also expanded.

The survey data identified 27 total unconnected old oxbows with the potential to be reconnected, 21 of those were eliminated by COE during the original project with 6 having been disconnected prior to the COE's project. The information was tabulated on each oxbow to identify the historic flow and see how much material has aggraded into the oxbows. The average reconnection elevation difference is between 1.5' and 7' depending on of how much the channel has downcut. Preliminary sizings for the side inlet pipes have been estimated for landowners if they want to undertake gully repairs, which will keep topsoil on the field and protects the inlet channels from continued downcutting.

HEI has looked at several potential restoration solutions to address the erosion issues and improve the aquatic habitat within the channel. Streambank restoration was used on the Etten property just upstream of the COE project through the installation of a toe wood-sod mat. This feature is created by harvesting trees for live branch cuttings, placing the cuttings into the soil, covering them with brush and soil, and topping with about 18" of sod mat. The next year, roots from the branches work their way down into the tree debris and stabilize the river bank. The slope is leveled to 4H:1V and then seeded. The BRRWD used this technique on their Hawley Buffalo River Restoration project. Another restoration alternative is to re-meander the channel. Adding meanders increases the channel length and creates new, slower flow conditions. Grade stabilizations are also a possible restoration alternative. Rock riffles are in-stream structures used to control the grade of the channel. The riffles are installed in a series to prevent further downcutting while allowing for a natural river flow through the system. The final alternative is the use of field Best Management Practices (BMPs).

The most common BMP used in our area for the county ditch systems is the installation of side inlet pipes. The existing gully is replaced with a berm and a culvert to reduce the peak runoff rate. The water is metered through the pipe, holding sediment back in the field. Another bmp is the installation of vegetated bufferstrips. These bufferstrips help slow runoff by catching sediment, control erosion, and stabilize banks.

Jones discussed the current restoration concepts we are planning to use for the Otter Tail River channel. He evaluated the existing meanders and grouped them into sets. These sets could be standalone projects with grouped oxbows that would be excavated and reconnected. Seven meander groups were identified and could be considered as individual alternatives.

Upstream of C.R. No. 19, where the channel was not straightened in the 1950s, the riverbed still degrades with significant channel slope, and the headcutting migrates down through the system. Erosion creates a flat stream bed and downstream sedimentation. The boulder rock arch rapids concept is a project feature that could be used to address sediment migration, which will step water down via man-made rapids. The arches refocus the river back into the historic channel path, raise the water levels, and stabilizes headcutting. Rock riffle grade control and tow wood-sod mats can also be used as grade control alternatives.

Don Bajumpaa, District Manager, SWCD, asked about the plan for the existing oxbows after the designated oxbows are reconnected. Jones explained that since there isn't enough fill, the plan is to leave those oxbows open and to use the old channel as an overflow during certain flood events. Ben Cox, COE, noted the rock structures added to the channel would need to be placed to be sure the original COE project does not lose its effectiveness to protect against a 10-year flood event. Jones agreed that the project must maintain the integrity of the original project to be eligible for the Section 1135 COE funding. The structures installed to restore water into the oxbows would maintain the existing hydraulics in the revised channel.

One landowner raised the concern about being able to get across the new river alignment once the oxbows are reconnected. He did not think he would be able to cross as he does now and felt he would be losing land within the oxbow. Jones explained the overflow structures could potentially be designed to be driven on so that access would not be impeded. He added that property access within the oxbows will be considered in the project design moving forward. Jones displayed a map showing the concentrated flow locations. The locations where the gullies come into the river are identified by priority.

The total estimated cost of the restoration (not including easement acquisitions) is \$21,059,778. The potential funding sources for this type project could include: COE Section 1135 (up to \$13 million), BWSR CWF Grant (Clean Water Funds), Lessard-Sams Outdoor Heritage Fund (LSOHC), Minnesota Pollution Control Agency (MPCA) Section 319 Grant, Conservation Reserve Enhancement Program (CREP), and Reinvest in Minnesota (RIM), landowner contributions for side inlet structures (25% match), and potential private contributions (Enbridge Ecofootprint grant).

Cox went into greater detail on the Section 1135 program. In the 1950s, the COE channelized and straightened about 18 miles of the LOTR to provide agricultural land flood protection for a 10-year event. The Section 1135 program gives the COE continuing authority to study and construct projects for improvement of the environment associated with past projects that had unintentional environmental consequences not originally envisioned during construction, which have contributed to some of the impairments and degradation in this area. In 2015, the COE partnered with the BRRWD to investigate alternatives for a channel restoration in this stretch of the LOTR. The COE, BRRWD, and HEI have worked closely together to complete the plan/design phase this fall. The next step would be to organize a public input meeting next spring to gauge public interest in the proposed project, followed by cost estimates for the final channel restoration design, permitting, and funding. The COE's share of the total project cost could be \$13 million, which reflects the Federal Government's (Section 1135 program funding) commitment to 75% of the

costs, and the BRRWD would be responsible for the remaining 25%, including the cost of easement acquisitions.

Cox asked if there were any questions about the COE's involvement in the project development. Jones noted that BRRWD has been working closely with the COE to make sure that the study data is not duplicated. The COE will use the BRRWD's information and then supplement this information with their historical data. Jones expected that the two studies will complement each other and avoid redundancy. Jones explained that currently, we will continue to coordinate with the Section 1135 program feasibility study and finalize the restoration design with public input. Prior to actual construction startup, we must submit the DNR permit applications and secure funding.

Albright asked when the study would go out for public review and comment. Cox believes it would be after the first of the year. There are some internal reviews and higher-level approvals that will be needed before going out for public involvement. The study release would be well advertised, and a 30-day notice would be given to review the report and provide comments. Property owners would be notified in advance.

Albright mentioned that in 2005, the stretch of channel from Orwell to Breckenridge was under Federal review by the Environmental Pollution Agency (EPA) for water quality, and it was determined that the segment of the river was impaired because it was carrying too much sediment. A Total Maximum Daily Load (TMDL) study is now being conducted for the entire Otter Tail watershed including Otter Tail Lake, Big Pine Lake near Perham, and all the lakes coming down through the system. It is assumed that the Otter Tail system probably doesn't meet state standards for aquatic life use. The outlet of Wilkin/Otter Tail County Judicial Ditch (J.D.) No. 2 has also been determined to be impaired. HEI has looked at that 1.5 miles from the river north, which is now downcutting. Water drops approximately 6'-8' at the culverts in Trunk Highway (T.H.) No. 210 and C.R. No. 160.

The TMDL process identifies impaired reaches and lakes and then the MPCA prepares a Watershed Restoration and Protection Strategy (WRAPS), which proposes strategies to fix these problem areas. Federal Law doesn't mandate anything at this point, but simply wants us to provide a strategy to fix the problem. The WRAPS process will provide potential funding opportunities to repair the impaired reaches as target areas. When the repairs are completed, MPCA will reassess the target areas, and if the problems are fixed, the site goes off the impaired list.

A landowner asked if the required buffers and inlet culverts will need to be installed prior to construction of this project. Albright said the protected waters were supposed to be buffered by November 2017. As protected waters, the Otter Tail River should have 50' buffers on each side of the channel. The Wilkin SWCD and others are still working with landowners to comply with the Buffer Law. The second deadline for the 2015 Buffer Law is for all the legal ditch systems to have a one-rod (16.5') bufferstrip to be compliant by November 1, 2018. The BRRWD and Counties are working with landowners to meet that requirement. Bajumpaa noted that Wilkin County is at 90% compliance with the 2015 Buffer Law. He added that the County can work with anyone who still needs to get this work done.

Bajumpaa asked if the Section 1135 program could also be used to address streambank erosion. Ben Cox, COE, noted that if the damage can be linked to the original COE project, then the streambank erosion can be fixed using this program. In addition, erosion protection will be a priority going forward.

A landowner asked if the bufferstrips right-of-way (R/W) will keep encroaching on his property if the streambank continues to erode. Bajumpaa thought that the buffer R/W wouldn't be enforced in those reaches where there is severe erosion. Cox pointed out that the erosion needs to be shown to be a result of the original COE project to channelize or straighten the river. The further away from the original project area the site is located, the harder it will be to justify COE involvement or funding for the repair.

Bajumpaa asked how we might be able to use the Section 1135 program resources to fix the ditch infrastructure in the lower portion of the LOTR if the original COE project might have caused the problem. Cox wasn't sure about this issue but commented that we will need to focus the limited Federal funding (\$10 million) to priority areas. Bajumpaa noted that he was just interested in bringing this issue forward for further discussion. Albright noted that there is additional funding available for work in this area for which Jones will prepare applications. He added that it is important for landowners to support our efforts. The Otter Tail River restoration is going to be an ongoing effort for several years. There are stand alone projects, such as the side inlet installation and grade stabilizations, that could be completed sooner. He noted that there is information regarding the LOTR project on the BRRWD's website at www.brrwd.org. The BRRWD, SWCD, and the COE will start contacting individual landowners who have property with identified problems early next year to set up meetings.

A landowner asked if there were any project or funding that has been identified that wouldn't involve landowner approval, for example, excavating Breckenridge Lake. Jones commented that the upstream problems need to be addressed before Breckenridge Lake or the sediment source will just keep filling in the lake. Other landowners also supported restoring Breckenridge Lake.

Albright noted that some of the parcel maps around the oxbows don't currently show an owner and more research will need to be done to find the records for those areas. Jones thought that the original plans will probably show where R/W was acquired by the COE for their project. Albright commented that the local landowner share of the project costs could be assessed watershed-wide with a watershed management district (wmd) fee, in the same way the local project costs were assessed for the Wolverton Creek project.

Albright encouraged the landowners to contact the BRRWD office with questions. The current studies should be concluded by the end of the year, and the results will be made public. He assured the group that the restoration project being developed as a long-range plan. Jones noted that the project development timeline could be accelerated contingent on landowner interest. Bajumpaa commented that the SWCD has been very successful in acquiring CWF grants and encouraged the landowners to contact the SWCD, BRRWD, or COE regarding their concerns or interest in work on their property. Albright commented that the river resource is worth the work to improve it to meet standards. He encouraged the attendees to bring any concerns/questions to the staff and Managers, who will be available following the meeting.

The meeting was adjourned at 8:25 PM.

Respectfully submitted,

Bruce E. Albright, BRRWD Administrator