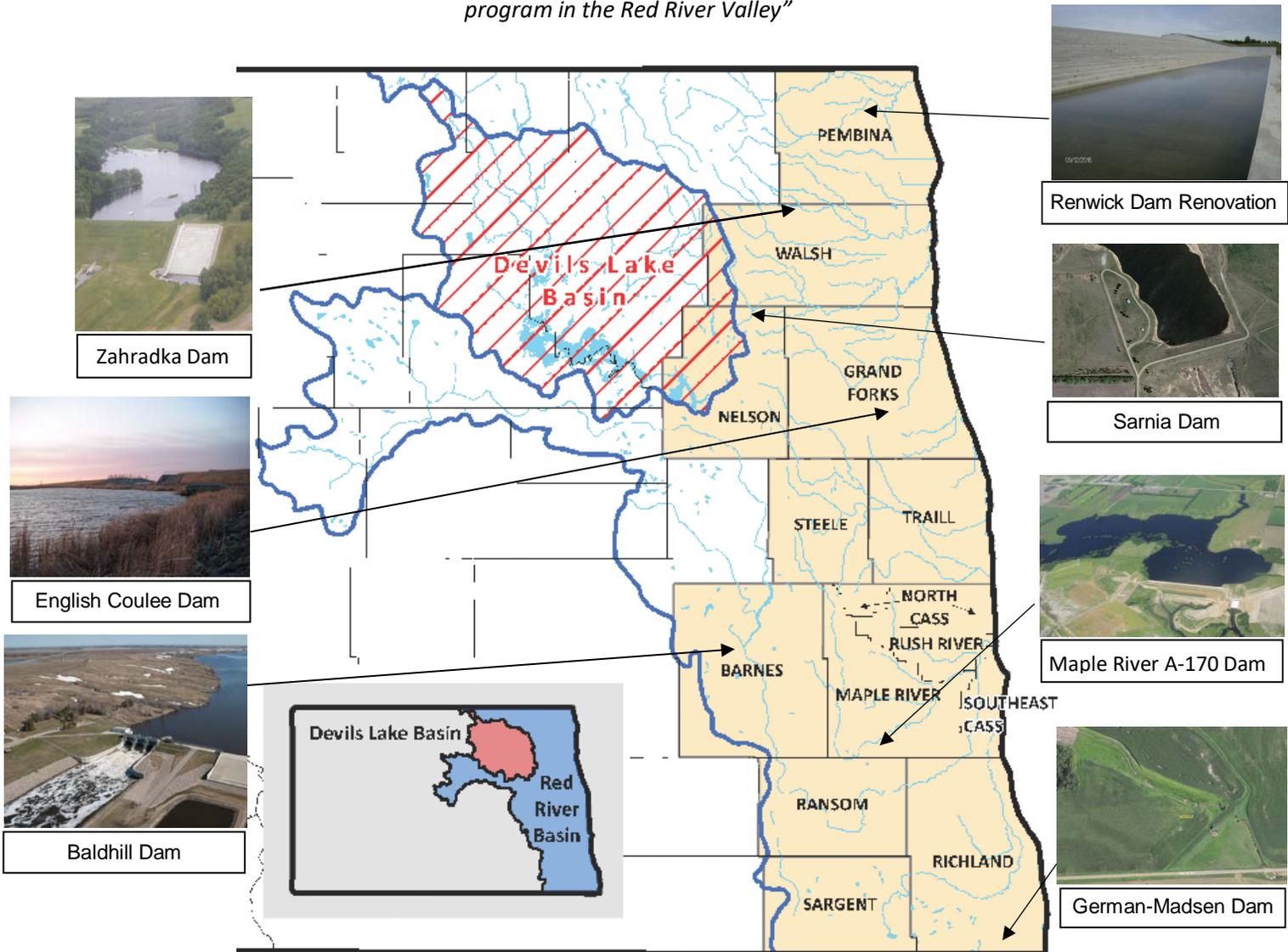


# Red River Joint Water Resource District

*“Providing a coordinated and cooperative approach to planning and implementing a comprehensive water management program in the Red River Valley”*



## **DRAFT 2018-2022 WATERSHED MANAGEMENT STRATEGY**

Developed by:  
The Red River Joint Water Resource District  
In cooperation with:  
The North Dakota State Water Commission

## Red River Joint Water Resource District (RRJWRD)

### Need:

- Formed in 1979 to:
  - Provide Basin-wide Watershed Planning
  - Reduce flood damage to rural and urban areas
    - Infrastructure (roads/bridges); Homes; Farmsteads; Cropland; Pasture/Hayland
  - Assist in construction of detention sites to temporarily detain flood waters
    - Provides flood damage reduction to several downstream water resource districts

### Accomplishments (1979 – 2018):

- Cost shared on the construction or renovation of 11 detention structures
- Provides 115,466 acre-feet of temporary flood water storage
- Leveraged over \$15 million of RRJWRD funds to obtain nearly \$100 million of construction and specific project studies from other sources

### Current Activities:

- Development of hydrology/hydraulic models for analysis of potential projects
- Red River Retention Authority (RRRA)
  - Federal funding obtained through RCPP program
    - Matched with State and local funds
    - Plan PL-566 like projects with main purpose of flood damage reduction
      - 7 watershed studies ongoing in ND portion of Red River Watershed
        - Scheduled to be completed by end of September 2019
      - Federal cost-share will be requested for final design and construction if feasible project determined from plan
- Pursue construction of other detention projects
- Repair of existing dams that have capability to temporarily hold flood waters

### Future Needs:

- Project design/construction of feasible projects determined through watershed studies
  - State and local funding needed to leverage Federal funding
    - **Up to \$29 million could be requested from the State during the 2019-21 biennium**
    - Results of each watershed plan will define the extent of feasible projects
- Dam rehabilitation, safety repair and preliminary study of potential dams
  - Many of existing dams are more than 50 years old
  - **Anticipated need for State cost-share is about \$3.7 million in 2019-21 biennium**

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## **PURPOSE OF THE STRATEGY**

### **What the Strategy Will Provide**

In general terms, the overall purpose of this water management strategy is to improve the quality of water management actions pursued by the RRJWRD. With this strategy in place, it will enable the RRJWRD to focus on future efforts that will more efficiently achieve water management and development goals. By providing timeframes for activity completion, the RRJWRD will be better equipped to monitor their progress in the future. The approximate timeframe of this planning strategy will be 2018-2022. Toward the end of this timeframe, the RRJWRD will reevaluate their water management goals to address more-contemporary issues at that time.

In more specific terms, this strategy will:

- Outline water management and development goals for activities pursued by the RRJWRD.
- Provide an inventory of accomplishments, based on completed projects.
- Provide an inventory of specific actions (projects, programs, and studies) that will help the RRJWRD meet its water management and development goals.
- Outline target timeframes for the completion of actions pursued by the RRJWRD, providing a gauge for measuring performance and success.
- Continue relationships with North Dakota, South Dakota, Minnesota, and Manitoba to further flood damage reduction efforts within the Red River Watershed of the North.

## **RED RIVER JOINT WATER RESOURCE DISTRICT**

### **Background**

The majority of water resource districts in North Dakota are established along county lines, but because water does not respect political boundaries, it is often advantageous for groups of water resource districts to work together to more effectively manage their water resources.

With that concept in mind, the North Dakota Legislature enacted the Joint Exercise of Powers Statute for water resource districts in 1975. This legislation essentially provided an opportunity for water resource boards to join together - providing improved communication and water management across political boundaries. The Joint Exercise of Powers for joint water resource districts can be referenced in North Dakota Century Code (NDCC) 61-16.1-11.

Four years after the Legislature enacted the Joint Exercise of Powers, the Red River Joint Water Resource District (RRJWRD) was created in 1979 – making it the first joint water resource district in the state. With a number of large flood events, particularly in 1950, 1969, 1975, 1978 and 1979 etched into the minds of many valley residents, the original impetus behind the formation of the RRJWRD was to establish an entity that could address the Red River Valley’s flooding problems. The main purpose of the RRJWRD is to reduce flood damage by providing cost-sharing for the construction of flood protection projects such as detention dams.

Beyond the response to flooding, it was also determined that a joint district would be more effective in holistically recognizing all of the natural resource management issues that were important to water management in the entire Red River Valley. Further, by joining together, members of the RRJWRD could more effectively develop comprehensive water management strategies, and more efficiently deal with other local organizations, regional entities, state and Federal agencies.

### **RRJWRD Water Management Goals**

Though the primary focus of the RRJWRD is to reduce flood damages in member counties, the District also recognizes the importance of managing water resources in a more comprehensive manner. As a result, the RRJWRD's water management goals reflect not only their desire to relieve areas of flood damages, but also how they would like to improve the water resources of the Red River Valley by more holistic means. The following goals attempt to address that philosophy.

Therefore, to improve the lives of citizens living within the member districts, it is the goal of the RRJWRD to:

- Reduce the threat of flooding for current and future generations through the use of structural and non-structural means;
- Support efforts of RRRRA, and help to pursue federal cost-share for any feasible projects that are identified in the ongoing RCPP planning effort;
- Improve coordination among member districts, government agencies, and other entities involved in managing the water resources of the Red River Basin;
- Educate the public, member districts, government agencies, and other entities involved in managing the water resources of the Red River Basin, about RRJWRD efforts and activities;
- Collect, manage, and distribute information to facilitate improved management of water resources within member counties, and in areas affecting, or affected by, member counties;
- Encourage the development of water management projects, programs, and studies that have the potential to improve the economic viability of the region and the quality of life for our citizens;
  - This would include surface / subsurface drainage. Structures that will reduce and / or eliminate downstream impacts, while still maximizing economic impacts of the projects, are encouraged to be installed on these projects.
- Monitor, where appropriate, the development of water projects in member counties, to avoid potential negative impacts that may result;
- Support water management and development efforts that improve water quality, and / or provide benefits for fish, wildlife, and recreation;
- Support the Red River Basin Commission (RRBC) goals, as described in their Long Term Flood Solutions Study.

In addition to specific actions that the RRJWRD will take involving various projects, programs, and studies, there are also other activities being pursued by outside interests that impact water management in member districts. Many of these activities include other aspects of a comprehensive plan, beyond flood damage reduction. As such, it is necessary that the RRJWRD participate in, and/or support those activities, when they compliment the RRJWRD's water management philosophies. Conversely, it may also be necessary for the RRJWRD to formally oppose activities of outside interests that directly

contradict the interests of member districts. The RRJWRD will take positions on those types of efforts on a case-by-case basis, as needed in the future.

### Funding

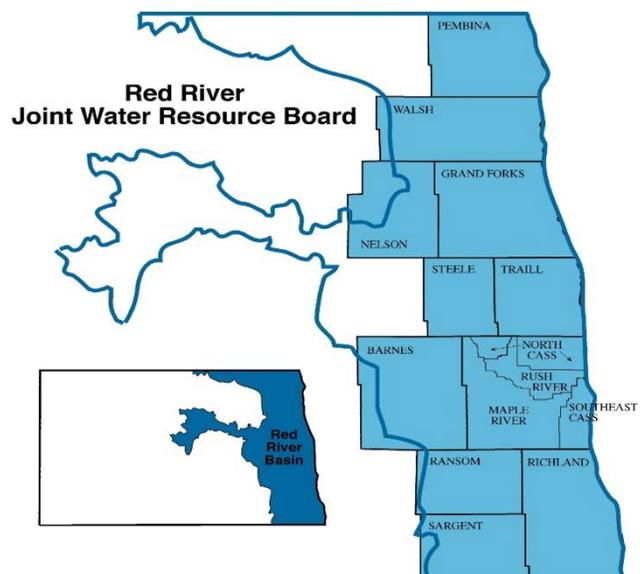
To pay for water management projects, programs, studies, and district operations, RRJWRD member districts pay an annual membership fee. By state law, the membership fee cannot exceed two mills upon the taxable valuation of real property within each district in the Red River watershed. However, the two mill levy may be in addition to the normal levy authorized in each district. The amount of the membership fee is set by a RRJWRD resolution. In all cases, levies must be approved by the respective county commissioners.

When the RRJWRD was initially formed, member counties were asked to pay a membership fee. In the first years of the district’s operation, membership fees were only a few hundred dollars per county. The RRJWRD soon began to use its authority to levy one mill to pay for more extensive activities and district operations. In 2011 the RRJWRD, with county commission approval, began to levy two mills to provide cost-share for detention projects that provide flood damage reduction benefits to more than one district. In 2018, the levy was set at 1 ½ mills, to account for concerns about economic conditions in the area. The amount of the levy will likely continue to vary, taking into account the extent of projects ready to proceed to construction and the economic viability of the landowners in the watershed. For more information on the history of the RRJWRDs mill levy and revenue generated, visit our website at [www.redriverjointwrd.org](http://www.redriverjointwrd.org).

Figure 1: RRJWRD member districts

### RRJWRD Authority

NDCC 61-16.1 outlines extensive authority and powers of individual WRDs, which are local government units charged with managing the surface water in their jurisdictional boundaries – within state water management guidelines and policies. When a joint board/district is formed, they essentially have similar authority as the individual WRDs that make up their entirety. However, joint boards cannot have authority over their individual member districts; and joint boards are only called to act in instances of inter-district significance, where two or more member WRDs may be benefitted or negatively impacted by a given action (project or program). The specific powers of the RRJWRD can be found on our website, [www.redriverjointwrd.org](http://www.redriverjointwrd.org).



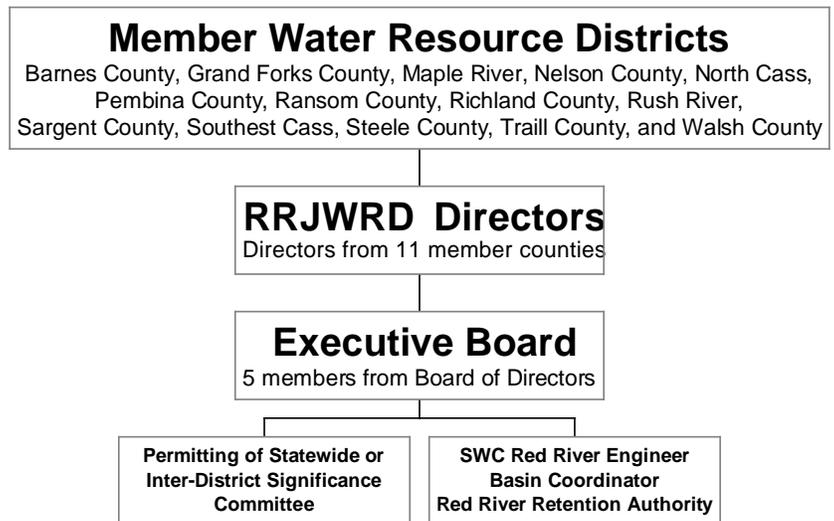
## Membership and Structure

The RRJWRD is made up of fourteen individual water resource districts (WRDs), covering eleven counties and the majority of the Red River Valley portion of North Dakota (See **Figure 1**). (A more detailed map of the boundary of the RRJWRD and the various tributary watersheds is shown in Appendix B.) The fourteen member WRDs (in alphabetical order) include: Barnes County, Grand Forks County, Maple River, Nelson County, North Cass, Pembina County, Ransom County, Richland County, Rush River, Sargent County, Southeast Cass, Steele County, Traill County and Walsh County.

For the purpose of formalized coordination and cooperation, a Joint Powers Agreement was established between the member WRDs. This agreement provides for the existence of a RRJWRD Board of Directors, which accounts for eleven members, or one vote from each county. As such, Southeast Cass, Rush River, Maple River and North Cass WRDs must determine among themselves and submit to the Secretary of the RRJWRD, the method by which they will cast one vote for Cass County.

In addition to the Board of Directors, an Executive Committee of five members and two alternates is also elected from the eleven-member Board of Directors. The Chairperson and Vice Chairperson of the RRJWRD also serve as Chairperson and Vice Chairperson of the Executive Committee. Further, the Executive Committee appoints a Secretary-Treasurer to the Board of Directors, who also serves as Secretary to the Executive Committee.

Since 1984 the RRJWRD has shared in the cost of a full-time engineer from the North Dakota State Water Commission (NDSWC), whose office is located within the watershed in the Fargo / West Fargo area. The full-time engineer serves the RRJWRD in a technical capacity, attending meetings on behalf of the district and providing expertise as necessary. The organizational structure of the RRJWRD is outlined in **Figure 2**.



**Figure 2: RRJWRD organizational structure**

## Red River Retention Authority

The RRJWRD of North Dakota and the Red River Watershed Management Board (RRWMB) of Minnesota signed a Joint Powers Agreement in 2010, which more formally describes the cooperation and coordination required between the two Boards in order to pursue detention projects within the watershed. The two Boards work together to prioritize projects; to facilitate interaction with Federal agencies; to provide assistance to member districts in obtaining regulatory approvals; to seek Federal, state, and other cost-share assistance; to develop long-term watershed goals; and to otherwise cooperate to reduce peak flood flows in the Red River watershed.

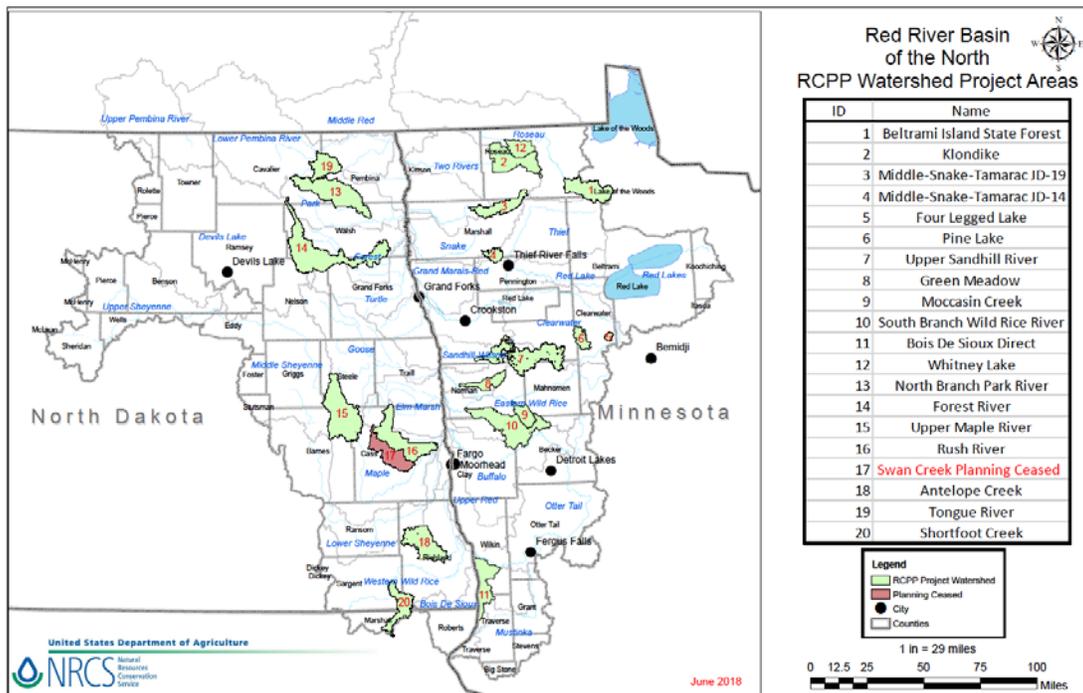
The Secretary of Agriculture announced on January 14, 2015, that up to \$12 million was included in funding for the Red River Basin of the North Flood Prevention Plan through the NRCS-Regional Conservation Partnership Program (RCPP). The Red River Retention Authority will be the lead partner for the projects. These funds will be used to plan PL-566 like projects to achieve the main goal of reducing flood damages. They will be leveraged with state and local funds.

There are now 19 potential watershed protection studies approved by the RRRRA that are underway. As shown in Figure 3, 7 of these are in North Dakota and 12 in Minnesota. A local cooperation agreement has been signed for each of these studies, between the Natural Resources Conservation Service (NRCS) and the local sponsors. The process for the study will identify any potentially feasible projects that would accomplish the goals set by the sponsors. Each study is expected to take about 2 ½ to 3 years to complete, with completion expected in 2019. A “Purpose and Need” statement has been completed for nearly all of the studies in ND. Many of the ND study areas have reviewed all possible alternatives that may accomplish the stated project purpose. Further analysis is underway to narrow down the possible alternatives to those most likely to meet the purpose and need. Each project will also need to obtain a B/C ratio, based on federal guidelines, of at least 1 to be eligible for federal cost-share for construction.

The procedure and information obtained for the study would be adequate to pursue any necessary permits for the identified projects. Additional federal funding will be pursued to complete the design and construction of any projects found to be feasible.

While the main purpose of the projects is for flood damage reduction, water quality benefits may also be obtained.

Figure 3: RCPP Studies



## **A BASIN PERSPECTIVE**

The RRJWRD recognizes the importance of managing water resources in the context of a basin-wide perspective. In this case, the entire Red River Basin, particularly areas downstream, are an important consideration in any water management decisions made by the RRJWRD. The RRJWRD actively works with various entities, including the Red River Watershed Management Board (RRWMB) of MN; Red River Retention Authority (RRRA); Red River Basin Commission (RRBC); International Water Institute (IWI); and Corps of Engineers to include the entire basin.

### **Red River Basin Commission**

The RRJWRD has been involved with the Red River Basin Commission (RRBC) – an organization that includes representation from all parts of the Red River Basin and envisions “A Red River Basin where residents, organizations and governments work together to achieve basin-wide commitment to comprehensive integrated watershed stewardship and management.” Their Mission is “To develop a Red River Basin integrated Natural Resources Framework Plan; to achieve commitment to implement the framework plan; and to work toward a unified voice for the Red River Basin.”

In 2005, the RRBC completed a Natural Resources Framework Plan (NRFP) that includes 13 basin-wide goals and objectives (see Appendix D). The RRBC provides annual updates on the progress of each of these goals. The RRJWRD supports the efforts of the RRBC and will strive to make special considerations of the 13 goals and objectives contained in the NRFP when making water management decisions and funding projects in the Red River Watershed of North Dakota.

RRBC completed the Long Term Flood Solutions (LTFS) Study in 2011. Stakeholders, including the RRJWRD, were very involved with the development of this comprehensive plan to address flooding in the Red River watershed. Among other outputs, a level of flood protection goal was established for various types of areas to be protected. Analysis was also done to determine the extent of temporary storage that would be required to reduce the peak of the 1997 flood on the Red River by 20 percent. Various recommendations were provided for flood damage reduction proposals. Rough cost estimates and proposed timelines were also developed. Progress reports have been provided by the RRBC to update the status of flood damage reduction efforts. The RRBC is pursuing efforts to review and provide possible updates on the goals and recommendations of the report.

### **International Water Institute**

The International Water Institute (IWI) managed the LiDAR acquisition for the entire Red River watershed located in the U.S. from 2007 to 2009. The IWI map portal allows users to access and display maps using LiDAR data and other available geospatial data. Hydro-conditioning for the Prioritize, Target, Measure Application (PTMApp) model is being developed for the tributary watersheds. Information on flood damage reduction, water quality, and other reports are also available on the IWI website.

The RRRA had previously contracted with the IWI concerning surface drainage management and tile drainage management. The Basin Technical and Scientific Advisory Committee (BTSAC) was established to analyze these management methods. Reports are available on the IWI website that describe potential impacts and summarize various methods that may minimize potential negative impacts and maximize potential positive impacts.

The RRJWRD is also partnering with the IWI to provide watershed education through the River Watch and the River of Dreams programs. Each program provides hands-on experience for youth in local communities throughout the Basin. The River of Dreams program will work with one school in each of the 14 RRJWRD member districts.

### **Corps Of Engineers – Comprehensive Watershed Plan**

The RRJWRD of North Dakota and the RRWMB of Minnesota are co-sponsors for the Corps of Engineers' (COE) Red River Watershed Feasibility Study. This \$18 million study, started in June 2008, has provided an opportunity to obtain valuable tools including LiDAR data, various hydrology and hydraulic models, and other decision support tools. The COE and RRBC also oversaw the development of a comprehensive watershed management plan (CWMP). The RRBC's NRFP was used as a starting point for the plan. Various subcommittees were formed in early 2014 to develop the plan. Members of the RRJWRD were part of the 6 inter-agency working groups. The plan was completed in June 2017. The intent is that the CWMP will be adopted as the successor to the NRFP. The CWMP will also be used to support future federal involvement in the basin, where appropriate. The recommendations for studies and projects are shown in Appendix E.

### **ACCOMPLISHMENTS (1979 – 2018)**

Modeling tools are necessary to properly design and to measure the impact of potential detention projects. Updated hydrology studies have been completed for all of the watersheds in the Red River watershed in North Dakota. With this new tool, detention studies have been conducted for every watershed. Each study report includes possible detention strategies to reduce downstream flooding impacts. The local benefits as well as the Red River mainstem benefits will be included in the analysis. A comparison will be made to the LTFS interim goal of 20 percent reduction in peak flow on the Red River.

The RRJWRD has partnered with the U.S. Geological Survey (USGS), providing cost-share on some of the key stream gages within the Red River watershed. Information provided from the stream gages is critical during a flood fight as well as being able to develop a model of historic flood events.

The RRJWRD has been active in outreach to communities, providing assistance for the River Watch program that is administered through the IWI.

The RRJWRD has provided cost-share for the development of an emergency action plan (EAP) for the majority of the existing detention dams within the area of the RRJWRD. Many of these dams were originally constructed through the NRCS (SCS) in the 1960's, 1970's, and 1980's.

The RRJWRD has provided cost-share to assist in the construction or renovation of 11 detention structures. About 115,466 acre-feet of flood water is able to be temporarily stored in these structures. The RRJWRD has contributed about \$16 million towards the construction of these projects and site specific studies. These funds have been leveraged with federal, state, and local funds to obtain over \$100 million of projects. An inventory of the currently completed projects and studies cost-shared by the RRJWRD are provided in Appendix F. County maps with the same information are shown in Appendix G.

## **CURRENT ACTIVITIES**

A regional detention analysis is currently underway through the Red River Watershed Feasibility Study. This analysis will provide information on the extent of peak flow and flood volume reduction possibilities at various sites on the Red River mainstem, if selected floodwater detention projects were constructed. This study is expected to be completed in mid to late 2018.

The RRRRA, along with the NRCS, will continue to oversee the 7 watershed studies ongoing through the RCPP. The completion of these plans is scheduled by, or before, the fall of 2019.

The cost-share agreement with the USGS states that the RRJWRD will provide up to \$137,500 for the operation of 14 stream gages within the Red River watershed during FY 2018.

The RRJWRD has agreed to provide outreach to communities through the River Watch and River of Dreams programs with the IWI.

The RRJWRD has also approved cost-share for various studies and dam safety repairs of existing dams. These obligated projects are shown in the table located in Appendix H. Approved cost-share for the ongoing RCPP watershed plans are also included in this table.

The NRCS recently announced approval of \$500,000 in funding to study the Matejcek Dam Rehabilitation project. With a total estimated cost of \$873,000, the remaining \$373,000 will need to be obtained from non-federal sources. The study is anticipated to take about 2 years, with a likely completion in the fall of 2020.

## **FUTURE NEEDS**

Local sponsors have submitted much of this list of projects to the NDSWC so that they could possibly be considered for cost-share during the 2019-21 biennium, or later. A discussion of the potential detention projects within the Red River watershed of North Dakota is included below:

There are other potential projects that have been discussed, but have not yet developed far enough to get cost-share approved from the RRJWRD. Many of these proposed projects could develop as the

outcome of the RCPP plans. If the projects are determined to be feasible at the federal level, efforts will be made to obtain federal cost-share to assist in the construction of these projects. Even if these potential projects are not found to be feasible at the federal level, they could still be pursued without federal funding. There may be adequate benefits at the non-federal level. The majority of the required steps and studies needed to obtain necessary permits would also be completed during the planning efforts. **Table 1 in Appendix I** is a list of potential projects as a result of the RCPP watershed plans that may be pursued for additional study, and / or construction. The importance of obtaining federal cost-share for the RCPP projects is shown by comparing the breakdown of anticipated state and local costs for construction of the projects. Table 1 includes the list of potential RCPP projects with cost-share estimated for state and local entities if no federal funds were available. **Table 2 in Appendix I** assumes that federal cost-share would be available at 50 percent of the total cost. The anticipated time frame that the sponsor is expecting to obtain cost-share to pursue the projects is also shown on these tables. **Up to \$29 million could be requested from the State during the 2019-21 biennium if federal funds were available and no hindrances to the process occurred.**

There are also several projects that may be pursued, that were not part of the RCPP planning process. **Table 3 in Appendix I** includes a list of potential projects that are expected to be studied in more detail, or constructed, in the near future. These projects would also help to address the flood damage reduction aspect of a comprehensive plan. Some of these projects are expected for dam safety repair for some of the existing structures. Many of these structures are approaching 50 years old. Major repairs may soon be needed to extend their useful life.

A cost-share request for the final design and construction for the Matejcek Dam Rehabilitation is expected shortly after the study is scheduled to be completed in the fall of 2020. The design and construction could possibly extend over several years. The total cost for construction is roughly estimated at about \$25 million. **The State share of cost-share during the 2019-21 biennium is estimated at about \$2 million.** The results from the study will provide a more accurate cost estimate and schedule.

An inventory of activities or actions (including projects, programs, and studies) has been established to help the RRJWRD and its member districts achieve their water management and development goals. In addition, to help the RRJWRD more effectively measure performance in the future, general time frames for the completion of those activities are also shown in Tables 1 through 3 of Appendix I. **Anticipated need for State cost-share is about \$3.7 million during the 2019-21 biennium.**

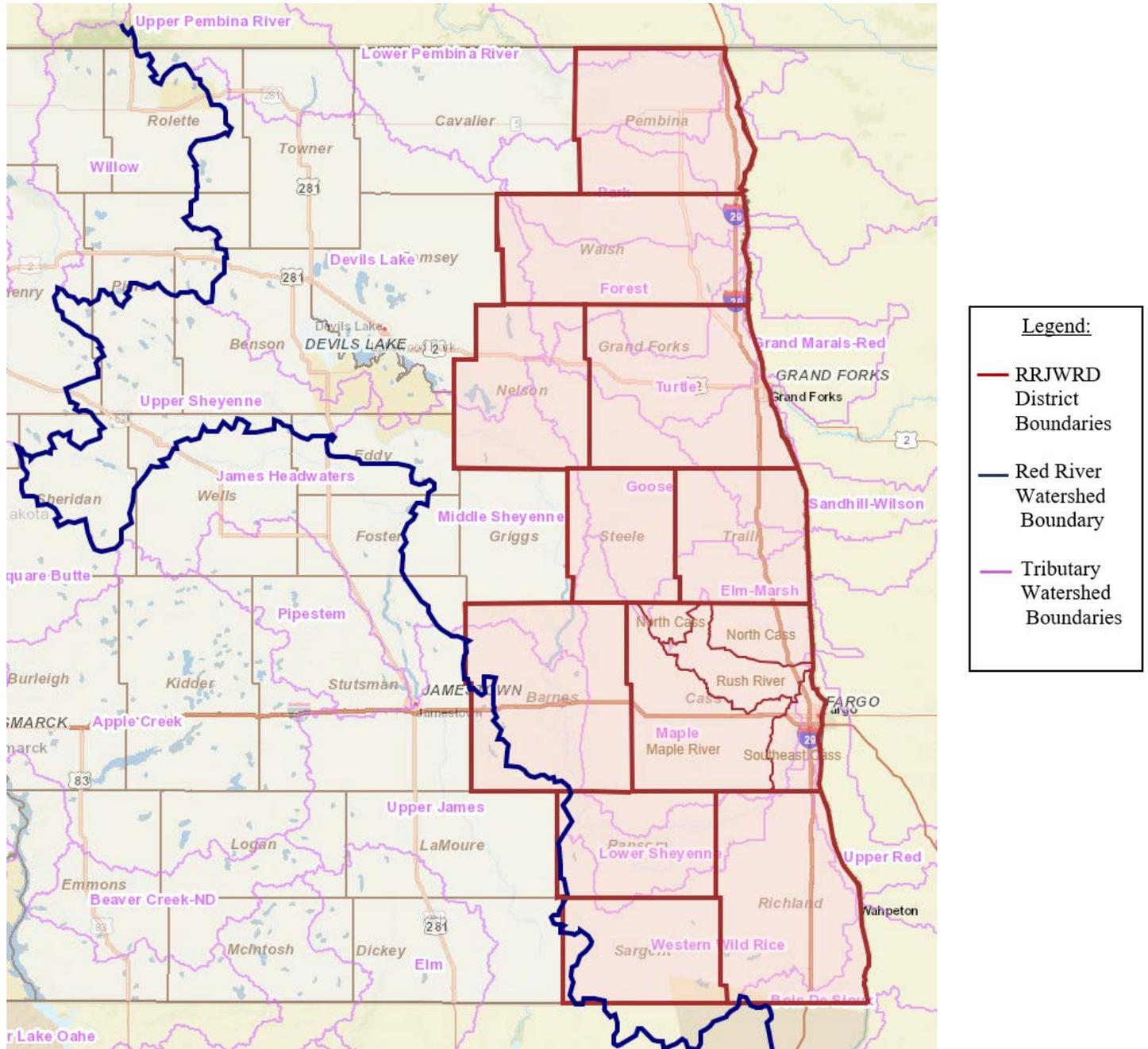
Because of the unpredictable nature of water management, it is expected that a number of activities will surface after this strategy is printed. In addition, it is also anticipated that some of the timeframes listed will encounter delays as a result of construction problems, permitting issues, and other environmental concerns, which are all typical of water management efforts. Some projects may not be pursued to construction, if further study determines that the project would not provide adequate benefits.

## **APPENDIX A**

To view the Powers and Duties of the RRJWRD, please visit our website - [www.redriverjointwrd.org](http://www.redriverjointwrd.org).

## APPENDIX B

Map Showing Tributary Watersheds within the Red River Joint WRD Boundary



## APPENDIX C

### Contacts for Water Resource Districts That Are Members of RRJWRD

<u>Board</u>	<u>Name</u>	<u>Phone</u>	<u>E-mail</u>
Red River Joint WRD	Nettie Johnson	(701) 636-5812	<a href="mailto:nettie.johnson@co.trail.nd.us">nettie.johnson@co.trail.nd.us</a>
RRJWRD, Chairman	Gary Thompson	(701) 739-3900	<a href="mailto:gwt2016@gmail.com">gwt2016@gmail.com</a>
Barnes County WRD	Heather Manson	(701) 845-8508	<a href="mailto:hmanson@barnescounty.us">hmanson@barnescounty.us</a>
Grand Forks County WRD	Kari Lavecchia	(701) 780-8312	<a href="mailto:kari.lavecchia@gfcounty.com">kari.lavecchia@gfcounty.com</a>
Maple River WRD	Carol Harbeke-Lewis	(701) 298-2381	<a href="mailto:Lewisc@casscountynynd.gov">Lewisc@casscountynynd.gov</a>
Nelson County WRD	Charlene Varnson	(701) 247-2682	<a href="mailto:charlenevarnson@gmail.com">charlenevarnson@gmail.com</a>
North Cass WRD	Carol Harbeke-Lewis	(701) 298-2381	<a href="mailto:Lewisc@casscountynynd.gov">Lewisc@casscountynynd.gov</a>
Pembina County WRD	LuAnn Kemp	(701) 265-4511	<a href="mailto:llkemp@nd.gov">llkemp@nd.gov</a>
Ransom County WRD	Heather Edison	(701) 683-5920	<a href="mailto:rcwrld@drtel.net">rcwrld@drtel.net</a>
Richland County WRD	Monica Zentgraf	(701) 642-7773	<a href="mailto:mzentgraf@co.richland.nd.us">mzentgraf@co.richland.nd.us</a>
Rush River WRD	Carol Harbeke-Lewis	(701) 298-2381	<a href="mailto:Lewisc@casscountynynd.gov">Lewisc@casscountynynd.gov</a>
Sargent County WRD	Sherry Hosford	(701) 724-6241 115	<a href="mailto:sherry.hosford@co.sargent.nd.us">sherry.hosford@co.sargent.nd.us</a>
Southeast Cass WRD	Carol Harbeke-Lewis	(701) 298-2381	<a href="mailto:Lewisc@casscountynynd.gov">Lewisc@casscountynynd.gov</a>
Steele County WRD	Tasha Krueger	(701) 524-1105	<a href="mailto:scwater@gmail.com">scwater@gmail.com</a>
Traill County WRD	Nettie Johnson	(701) 636-5812	<a href="mailto:nettie.johnson@co.trail.nd.us">nettie.johnson@co.trail.nd.us</a>
Walsh County WRD	Jennifer Lindenberger	(701) 352-3470	<a href="mailto:wcwrb@nd.gov">wcwrb@nd.gov</a>

## APPENDIX D

### Red River Basin Commission, Natural Resource Framework Plan Goals and Objectives

<b>Table 1. Goals with objectives for the Natural Resources Framework Plan, Red River Basin Commission, 2005</b>	
<b>Basin-Wide Goals</b>	<b>Objectives</b>
1.0 Manage natural resources in the RRB by watershed boundaries rather than political boundaries	1.1- Raise awareness of the benefits of basin-wide planning for decision makers and the public; increase 1.2 coordinated and comprehensive watershed planning
2.0 Integrate natural resource management	2.1- Conduct integrated, comprehensive, multi-disciplinary planning efforts, policies, projects and programs 2.2 that accommodate a balance in resource preservation, conservation and consumption; apply conservation criteria in the review and approval of all land-use plans, projects and programs
3.0 Increase applied research and data management to support decision-making	3.1- Distribute data and research to decision makers; standardize collection, storage and sharing of data; 3.4 develop and use technical models to support decision making; develop and use GIS for data management and planning
4.0 Improve stakeholder participation and awareness of land and water issues	4.1- Develop a stewardship ethic in the RRB; provide comprehensive watershed education and outreach; 4.4 provide opportunities for early involvement of project stakeholders; increase awareness of economic and environmental benefits of assistance programs
5.0 Maintain state-of-the-art flood forecasting tools for the Red River Basin	5.1 Increase data availability and level of coordination between jurisdictions for flood forecasting and planning
6.0 Reduce risk of flood damages for people, property and the environment in the main stem floodplain and in tributary waters	6.1- Implement flood mitigation measures that reduce risk to individuals and communities on the main stem and 6.2 tributaries; implement flood mitigation strategies in the upper basin that reduce risk locally and downstream
7.0 Ensure that flood (natural disaster) response and recovery programs meet the needs of all RRB residents	7.1 Increase availability of response and recovery programs that are adequate and equitable to residents in all jurisdictions
8.0 Manage urban and agricultural drainage systems to enhance productivity, while minimizing impacts to others	8.1- Manage drainage systems to protect agricultural land and minimize environmental impacts; design and 8.3 improve drainage systems with consideration of local, sub-watershed and main stem effects; design and implement urban and rural storm water strategies that minimize environmental impacts
9.0 Maintain, protect and restore surface and ground water quality in the Red River Basin	9.1- Develop a common approach to assessing water quality goals and conditions; develop water quality 9.6 restoration goals for impaired waters; reduce point- and non-point source pollution to protect surface and ground water; develop strategies to reduce nutrient loading to Lake Winnipeg by 10% in 5 years; encourage respect for water quality standards; develop programs that prevent the spread of non-native aquatic species and prevent the introduction of new species to the basin
10.0 Ensure the appropriate use and sustainability of the Basin's surface and groundwater	10.1- Develop a basin-wide strategy for future water supply needs; develop water supply emergency programs; 10.3 develop an understanding of minimum in-stream flow criteria to protect all users
11.0 Increase soil conservation efforts within the basin	11.1- Increase availability of conservation programs to landowners; use Best Management Practices to minimize 11.2 runoff and maintain soil on site
12.0 Conserve, manage and restore diversity and viability of native fish and wildlife populations and their habitats	12.1- Maintain, enhance and protect aquatic and terrestrial populations; enhance, protect or restore natural 12.4 systems (floodplains, stream functions, riparian areas, wetlands, grasslands); enhance or develop corridors between habitat blocks; identify and protect rare and unique species, habitat types and plant communities
13.0 Enhance and develop recreational infrastructure and access to the Basin's natural resources	13.1- Increase awareness and participation in outdoor recreational opportunities by the general public; promote 13.2 unique RRB habitats to enhance economic development and quality of life

## APPENDIX E

### Comprehensive Watershed Management Plan – Recommendations

Red River of the North – Comprehensive Watershed Management Plan

June 2017

**Table 10: Recommendations: Candidate Studies and Projects**

Candidate studies and projects	Implementing Entity	Working Group
Continue advancement of RRBLTFSR recommendations.	Corps, RBBC, RRWMB, North Dakota Joint Board	Flood Damage Reduction and Hydrology
Deauthorization of old clearing and snagging projects on the Lower Branch of the Rush River and the Lower Wild Rice River.	Corps	Fish, Wildlife and Ecosystem Health
Wetland restoration.	Corps	Fish, Wildlife and Ecosystem Health
Continue basin-wide working group collaboration and discussion.	All entities involved with natural and water resources management in the basin	Fish, Wildlife and Ecosystem Health
Create environmental education curriculum that can be easily adopted by primary and secondary educators.	RBBC, Extension, local watershed districts	Fish, Wildlife and Ecosystem Health
Develop a basin-wide nutrient management strategy for the International Red River Basin.	IRRB Water Quality Committee	Water Quality
Water quality modeling.	USEPA, MPCA, ND Dept of Health	Water Quality
Water quality monitoring.	USEPA, MPCA, ND Dept of Health	Water Quality
Develop a basin-wide long-term drought preparedness strategy.	RBBC, Minnesota, North Dakota, Manitoba	Water Supply
Increased access to water based recreation in the Red River Basin.	River Keepers, RBBC, Minnesota DNR, ND Game and Fish	Recreation
Develop recreation baselines for basin.	River Keepers, RBBC, Minnesota DNR, ND Game and Fish	Recreation
Develop a soil sampling system across the basin to determine a baseline assessment of the current soil health conditions.	NRCS	Soil Health
Encourage holistic planning efforts for the basin.	All entities involved with natural and water resources management in the basin	All

## APPENDIX F Accomplishments

### Tables of Completed Construction and Site Specific Studies Cost Shared by the RRJWRD

Table F-1

**PROJECTS THE RRJWRD HAS FUNDED  
(CONSTRUCTION AND SITE SPECIFIC STUDIES)**  
As of June 26, 2018

<u>Project Name</u>	<u>YEAR</u>	<u>TOTAL COST</u>	<u>RRJWRD COST</u>	<u>FLOOD STORAGE ADDED BY PROJECT (ACRE-FEET)</u>	<u>LOCAL SPONSOR</u>
<b><u>Barnes County WRD</u></b>					
<b><u>Construction</u></b>					
Baldhill Dam Safety Project	2001	\$18,000,000	\$11,223		Sheyenne River Joint WRD
Baldhill Dam	2010	\$8,700,000	\$776,576	31,000	Sheyenne River Joint WRD
Clausen Springs Dam Repair	2012	\$1,921,263	\$342,202		Barnes County WRD
<b><u>Studies</u></b>					
Barnes-Maple WRD dam study	2006	\$40,000	\$10,000		Barnes and Maple
Barnes-Maple WRD Dam St. - Ph. 2	2006	\$40,000	\$10,000		Barnes and Maple
Maple River WRD Dam St. - Phase 3	2008	\$70,000	\$19,660		Barnes and Maple
Clausen Springs Dam EAP	2011	\$6,421	\$811		Barnes County WRD
<b>Total for Barnes County WRD</b>		<b>\$28,777,685</b>	<b>\$1,170,472</b>		
<b><u>Grand Forks County WRD</u></b>					
<b><u>Construction</u></b>					
English Coulee Dam	1990	\$3,150,000	\$281,537	5,962	Grand Forks County WRD
English Coulee Dam	2000	\$300,162	\$150,081		Grand Forks County WRD
<b><u>Studies</u></b>					
Melstad Dam EAP	2012	\$11,360	\$1,477		Grand Forks County WRD
Upper Turtle River Dam #1 EAP	2016	\$11,707	\$1,522		Grand Forks County WRD
Upper Turtle River Dam #4 EAP	2016	\$10,820	\$1,406		Grand Forks County WRD
Upper Turtle River Dam #8 EAP	2016	\$11,337	\$1,474		Grand Forks County WRD
Upper Turtle River Dam #5 EAP	2016	\$14,268	\$1,855		Grand Forks County WRD
<b>Total for Grand Forks County WRD</b>		<b>\$3,509,653</b>	<b>\$439,352</b>		
<b><u>Maple River WRD</u></b>					
<b><u>Construction</u></b>					
Maple River T-180 Dam	1985	\$820,000	\$213,215	2,890	Maple River WRD
Maple River A-170 Dam	2008	\$18,000,000	\$7,412,500	60,000	Cass County Joint WRD
Maple River Dam Betterments	2010	\$236,416	\$118,208		Maple River WRD
Absaraka Dam Repairs	2011	\$178,839	\$47,262		Maple River WRD
Swan Buffalo Det. Dam #12 Safety Imp. (Absaraka)	2017	\$187,099	\$42,599		Maple River WRD
Swan Buffalo Det. Dam #8 Safety Imp. (Embden)	2017	\$179,454	\$38,123		Maple River WRD
Swan Buffalo Det. Dam #5 Safety Imp. (Garsteig)	2017	\$197,103	\$45,324		Maple River WRD
<b><u>Studies</u></b>					
Barnes-Maple WRD dam study	2006	\$40,000	\$10,000		Barnes and Maple
Barnes-Maple WRD Dam St. - Ph. 2	2006	\$40,000	\$10,000		Barnes and Maple
Maple River WRD Dam St. - Phase 3	2008	\$70,000	\$19,660		Barnes and Maple
Absaraka Dam EAP	2011	\$17,386	\$2,260		Maple River Joint WRD
Embden Dam EAP	2011	\$13,120	\$1,706		Maple River Joint WRD
Garsteig Dam EAP	2011	\$14,246	\$1,852		Maple River Joint WRD
Upper Maple River Dam Design	2012	\$275,420	\$68,855		Maple River Joint WRD
Upper Maple River Dam EA Phase I	2013	\$102,665	\$24,336		Maple River Joint WRD
Maple River Dam T-180 EAP	2013	\$41,096	\$10,463		Maple River Joint WRD
Upper Maple River Dam EA Phase II	2015	\$230,000	\$74,560		Maple River Joint WRD
<b>Total for Maple River WRD</b>		<b>\$20,642,842</b>	<b>\$8,140,922</b>		
<b><u>Nelson County WRD</u></b>					
<b><u>Construction</u></b>					
Sarnia Dam	1981	\$63,840	\$15,960	840	Nelson County WRD
Tolna Dam Repair	2000	\$9,584	\$2,396		Nelson County WRD
Tolna Dam Repair	2008	\$20,000	\$2,042		Nelson County WRD
Michigan Flood Reduction Project	2018	\$4,263,556	\$732,860		Nelson County WRD
<b><u>Studies</u></b>					
Tolna Dam EAP	2011	\$10,676	\$1,388		Nelson County WRD
McVillie Dam	2016	\$15,600	\$10,140		Nelson County WRD
<b>Total for Nelson County WRD</b>		<b>\$4,383,256</b>	<b>\$764,786</b>		

<u>Project Name</u>	<u>YEAR</u>	<u>TOTAL COST</u>	<u>RRJWRD COST</u>	<u>FLOOD STORAGE ADDED BY PROJECT (ACRE-FEET)</u>	<u>LOCAL SPONSOR</u>
<b><u>North Cass WRD</u></b>					
<b><u>Construction</u></b>					
Elm River Dam #3 Repair	2004		\$4,269		North Cass WRD
Elm River Dam #3 Safety Improvements	2014	\$114,336	\$36,676		Elm River Joint WRD
<b>Total for North Cass WRD</b>		<b>\$114,336</b>	<b>\$40,945</b>		
<b><u>Pembina County WRD</u></b>					
<b><u>Construction</u></b>					
Herzog Dam repair	2003		\$740		Pembina County WRD
Drayton Dam Repair	2004		\$2,554		Pembina County WRD
Pembina River Bank Protection	2010	\$107,500	\$21,500		Pembina River WRD
Herzog Dam Repair	2013	\$12,197	\$1,387		Pembina County WRD
Bourbanis/Olson Dam Repairs	2015	\$798,652	\$64,891		Pembina County WRD
Renwick Dam Improvements-Drawdown date	2016	\$164,722	\$13,637		Pembina County WRD
Renwick (Tongue River) Dam Renovation	2016	\$8,926,418	\$781,062		Pembina County WRD
<b><u>Studies</u></b>					
Herzog Dam EAP	2012	\$10,261	\$667		Pembina County WRD
Wieler Dam EAP	2013	\$11,644	\$757		Pembina County WRD
Goschke Dam EAP	2013	\$10,989	\$714		Pembina County WRD
Willow Creek Dam EAP	2013	\$10,972	\$713		Pembina County WRD
Bourbanis Dam EAP	2013	\$10,770	\$700		Pembina County WRD
Cavalier-Hamilton-Carlisle Feasibility Study	2015	\$90,452	\$25,025		Pembina County WRD
<b>Total for Pembina County WRD</b>		<b>\$10,154,576</b>	<b>\$914,347</b>		
<b><u>Ransom County WRD</u></b>					
<b><u>Construction</u></b>					
Dead Colt Creek Dam	1984	\$1,219,310	\$497,596	4,935	Ransom County WRD
Dead Colt Creek - Pump System	1994	\$38,976	\$12,992		Ransom County WRD
Dead Colt Creek Dam-Valve Repair	2003	\$12,840	\$4,280		Ransom County WRD
Fort Ransom Dam Repair	2012	\$24,083	\$5,479		Ransom County WRD
<b><u>Studies</u></b>					
Dead Colt Creek Dam EAP	2013	\$28,500	\$3,705		Ransom County WRD
<b>Total for Ransom County WRD</b>		<b>\$1,323,709</b>	<b>\$524,052</b>		
<b><u>Richland County WRD</u></b>					
<b><u>Construction</u></b>					
German Madsen Dam	1984	\$175,000	\$39,458	347	Richland County WRD
Watershed Restoration - Richland Co. Dr. #39 Watershed	2005		\$48,672		Richland County WRD
<b><u>Studies</u></b>					
Antelope Creek Detention	2002	\$11,959	\$5,980		Richland County WRD
Antelope Creek Feasibility Study	2010		\$30,375		Richland County WRD
Wild Rice River Dam Study-Phase II	2015	\$324,655	\$81,201		Richland County WRD
<b>Total for Richland County WRD</b>		<b>\$511,614</b>	<b>\$205,686</b>		
<b><u>Rush River WRD</u></b>					
<b><u>Studies</u></b>					
Rush River Detention Study Phase 1	2011	\$20,701	\$5,175		Rush River WRD
Erie Dam EAP	2011	\$8,866	\$1,153		Rush River WRD
Rush River Preliminary Soils Analysis	2013	\$54,788	\$17,989		Rush River WRD
Rush River Watershed Retention Plan	2016	\$142,880	\$46,904		Rush River WRD
<b>Total for Rush River WRD</b>		<b>\$227,236</b>	<b>\$71,221</b>		

<u>Project Name</u>	<u>YEAR</u>	<u>TOTAL COST</u>	<u>RRJWRD COST</u>	<u>FLOOD STORAGE ADDED BY PROJECT (ACRE-FEET)</u>	<u>LOCAL SPONSOR</u>
<b><u>Sargent County WRD</u></b>					
<b><u>Construction</u></b>					
Frenier Dam Improvements	2015	\$225,046	\$73,462		Sargent County WRD
<b><u>Studies</u></b>					
Shortfoot Creek Watershed Study	2012	\$16,779	\$5,453		Sargent County WRD
Shortfoot Creek Watershed Study	2015	\$57,706	\$18,871		Sargent County WRD
Storm Lake Outlet Assessment District	2016	\$35,268	\$22,916		Sargent County WRD
<b>Total for Sargent County WRD</b>		<b>\$334,800</b>	<b>\$120,703</b>		
<b><u>Southeast Cass WRD</u></b>					
<b><u>Steele County WRD</u></b>					
<b><u>Construction</u></b>					
Sussex Dam	1981	\$252,494	\$62,582	600	Steele County WRD
Beaver Creek (BC-20) Dam	1988	\$1,175,000	\$358,255	5,400	Steele County WRD
BC-20 Dam - Add'l Riprap	1990	\$57,784	\$57,784		Steele County WRD
Elm River Dam #1 - Spillway Repair	2006	\$6,716	\$1,679		Steele County WRD
Upper Maple River Dam	2016	\$8,497,691	\$2,653,427		Maple-Steele WRD Jt. Brd
<b><u>Studies</u></b>					
Sussex Dam Repair Study	2008		\$5,872		
Steele County Dam & Augustadt Study	2010	\$30,000	\$13,526		Steele and Traill Co. WRD
Emergency Action Plan-Beaver Cr. Dam	2010		\$2,500		
Upper Maple River Dam Design	2012	\$275,420	\$68,855		Maple-Steele WRD Jt. Brd
Upper Maple River Dam EA Phase I	2013	\$102,665	\$24,336		Maple-Steele WRD Jt. Brd
Upper Maple River Dam EA Phase II	2015	\$230,000	\$74,560		Maple-Steele WRD Jt. Brd
<b>Total for Steele County WRD</b>		<b>\$10,627,770</b>	<b>\$3,323,376</b>		
<b><u>Traill County WRD</u></b>					
<b><u>Construction</u></b>					
Augustadt Dam Repair	1992		\$20,000		Traill County WRD
<b><u>Studies</u></b>					
Steele County Dam & Augustadt Study	2010	\$30,000	\$13,526		Steele and Traill Co. WRD
<b>Total for Traill County WRD</b>		<b>\$30,000</b>	<b>\$33,526</b>		
<b><u>Walsh County WRD</u></b>					
<b><u>Construction</u></b>					
Homme Dam Safety	2005	\$11,881,000	\$13,500		Walsh County WRD
Park River Dam #5	2007	\$3,517,100	\$289,393	3,492	Walsh County WRD
Matejeck Dam Repair	2009		\$1,965		Walsh County WRD
Park River Bank Stabilization	2012	\$63,217	\$12,643		Walsh County WRD
N. Br. Park River Riparian Project	2012		\$2,000		Walsh County WRD
Melstad Dam Repairs	2014	\$10,003	\$2,276		Walsh County WRD
Union Dam Repairs	2014	\$10,776	\$2,452		Walsh County WRD
<b><u>Studies</u></b>					
Chyle Dam EAP	2012	\$9,432	\$1,226		Walsh County WRD
Soukup Dam EAP	2012	\$9,700	\$1,261		Walsh County WRD
Whitman Dam EAP	2012	\$10,436	\$1,357		Walsh County WRD
Skyrud Dam EAP	2012	\$10,091	\$1,312		Walsh County WRD
Union Dam EAP	2012	\$10,437	\$1,357		Walsh County WRD
<b>Total for Walsh County WRD</b>		<b>\$15,532,191</b>	<b>\$330,741</b>		
<b>TOTAL</b>		<b>\$96,169,666</b>	<b>\$16,080,129</b>	<b>115,466</b>	

**PROJECTS THE RRJWRD HAS FUNDED  
(Large Scale Studies)**  
As of June 26, 2018

	<u>STUDIES</u>	<u>YEAR</u>	<u>TOTAL COST</u>	<u>RRJWRB SHARE</u>
1	Project Manual	1981	\$2,171	\$2,171
2	Maple River Watershed Study	1982	\$29,200	\$7,300
3	Elm River Watershed Study	1982	\$27,400	\$6,850
4	Goose River Watershed Study	1982	\$35,760	\$8,940
5	Wild Rice River Watershed Study	1982	\$24,824	\$6,206
6	Baldhill Creek Study	1984		\$3,651
7	Red River Study	1989	\$20,000	\$10,000
8	TIC - Retention Task Force	1993	\$15,000	\$3,750
9	Baldhill Dam FC - Phase 1	1996-1998	\$50,000	\$20,000
10	Red River Basin Board	1998		\$25,000
11	USGS - High Flow Stats	1998-1999	\$90,000	\$13,300
12	USGS - Wetlands Analysis	1999		\$12,000
13	USGS - Water Quality Summary	2000		\$7,525
14	USGS - Wetland Analysis	2000		\$11,250
15	.Griggs County - Sheyenne R	1996-2000	\$658,100	\$25,000
16	Water Quality Project			
17	USGS Wetland Analysis	2001		\$11,250
18	.USGS Stream Gages-Wetland An	2002		\$13,305
19	.USGS Steam Gages-Wetland An	2002		\$26,610
20	Red River Unsteady Flow Model	2003	\$129,620	\$12,500
21	USGS Wetland Study -FY 2003	2004		\$13,000
22	Corps' FM and Upstream Study	2004	\$124,750	\$31,188
23	Griggs Co. - Sheyenne R. Water	2005		\$25,000
24	Quality Project			
25	Water Quality Trend Analysis - USGS	2005	\$146,300	\$7,700
26	RRBC-Hydraulic Model	2006		\$15,000
27	RRBC - Flood flow gaging	2009	\$33,000	\$10,000
28	LiDAR - RR Basin Feasibility Study	2010	\$5,000,000	\$473,000
29	Sheyenne River Watershed Study	2010	\$150,000	\$37,500
30	USGS Stream Gages - FY2010	2010		\$28,100
31	SCD - Demonstration Plots	2010		\$2,000
32	USGS Stream Gages - FY 2011	2011		\$28,885
33	USGS Stream Gages on Elm	2011		\$5,000
34	IWI Flood Mapping	2011	\$28,802	\$22,381
35	Elm River Federal Maintenance District	2012	\$54,105	\$35,168
36	USGS - Stream Stats	2012		\$30,120
37	Wild Rice HEC-RAS Modeling Study	2012	\$115,793	\$57,896
38	USGS Streamgage on RR at Hickson	2013	\$8,000	\$8,000
39	USGS - Stream Stats	2013		\$22,751
40	USGS - Stream Stats	2014		\$31,031
41	USGS - Stream Stats	2014		\$103,738
42	BTSAC Study - Tile Drainage Impacts	2014	\$110,000	\$51,031
43	Elm River Watershed Retention Study	2014	\$124,742	\$40,541
44	Maple River Watershed Retention Plan	2015	\$172,374	\$56,022
45	Study of Dams Upstream of Fargo	2015	\$94,551	\$32,068
46	Lower Sheyenne Watershed Retention Plan	2015	\$208,983	\$67,919
47	Red River Watershed Comp Det Plan	2015	\$68,050	\$22,116
48	USGS - Stream Stats	2015		\$129,110
49	Wild Rice Comprehensive Det Plan	2013	\$271,901	\$88,397
50	N Br Park River Watershed Feasibility Study	2016	\$217,544	\$70,702
51	Upper Wild Rice Watershed Study	2016	\$209,958	\$88,707
52	HMS Modeling	2016	\$81,563	\$40,781
53	USGS - Stream Stats	2016		\$132,280
54	Forest River Flood Control Feasibility Study	2016	\$159,994	\$51,998
55	Red River Basin Dist Detention Study	2017	\$915,215	\$463,392
	<b>TOTAL STUDY COST</b>		<b>\$9,377,700</b>	<b>\$2,549,130</b>

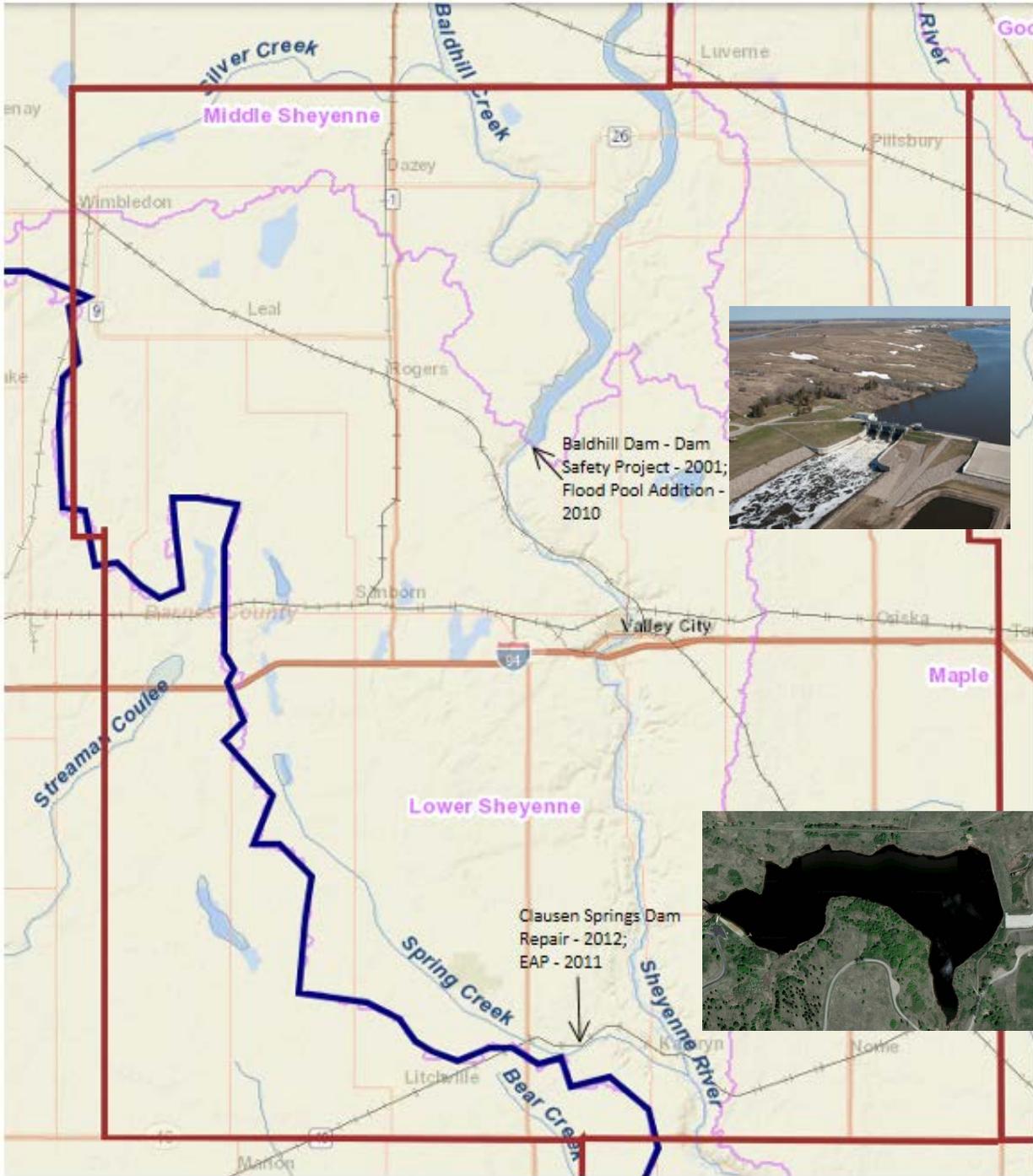
Note: Listed on this table are studies that include 3 or more water resource district  
Studies of specific sites, or limited to less than 3 water resource districts are included on table for construction and study projects

## **APPENDIX G**

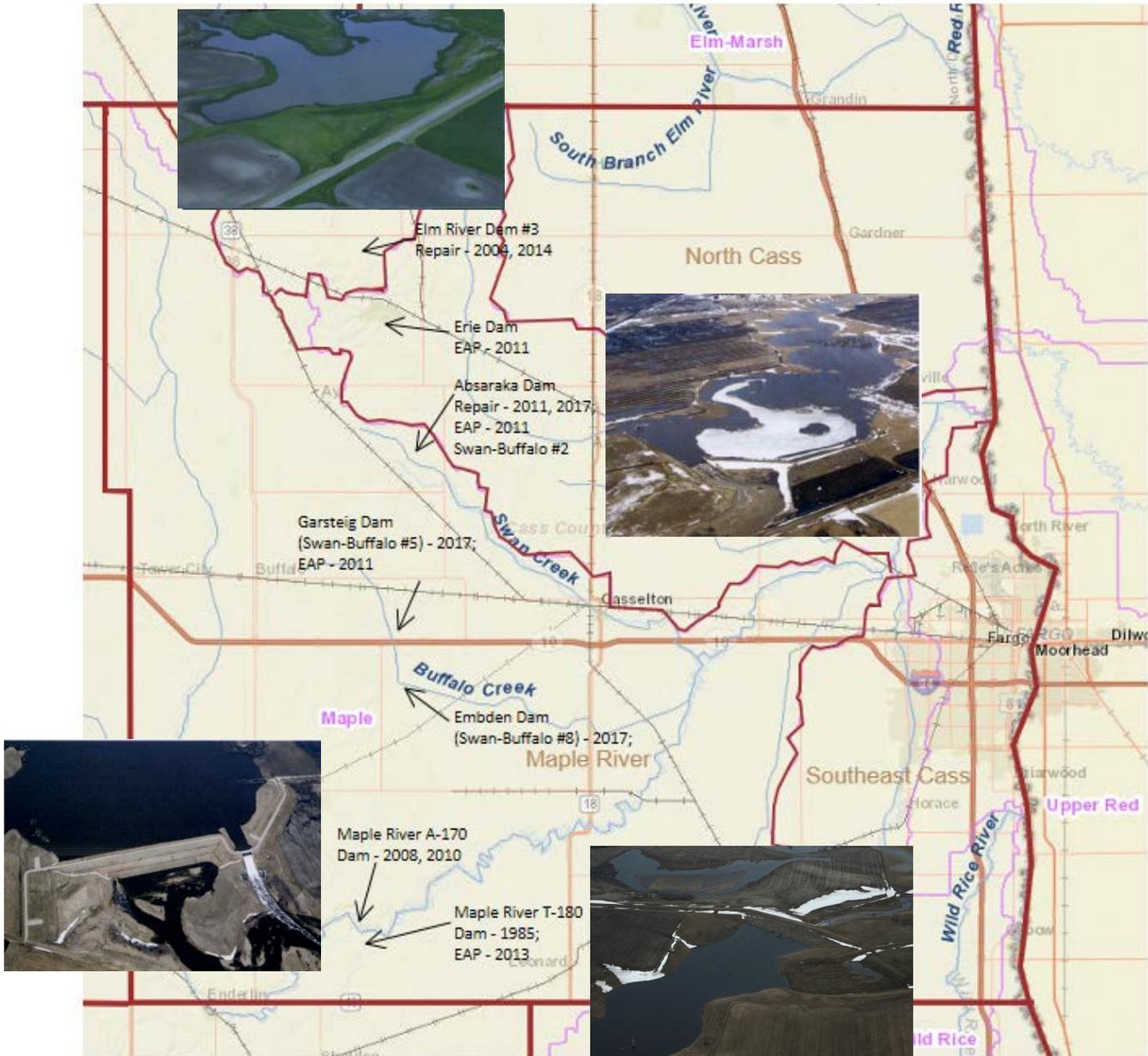
### **Maps Showing Completed Projects that the RRJWRD Provided Cost-Share within Each Member District**

(Does not include most studies)

**Maps are shown from page 20 through page 30**



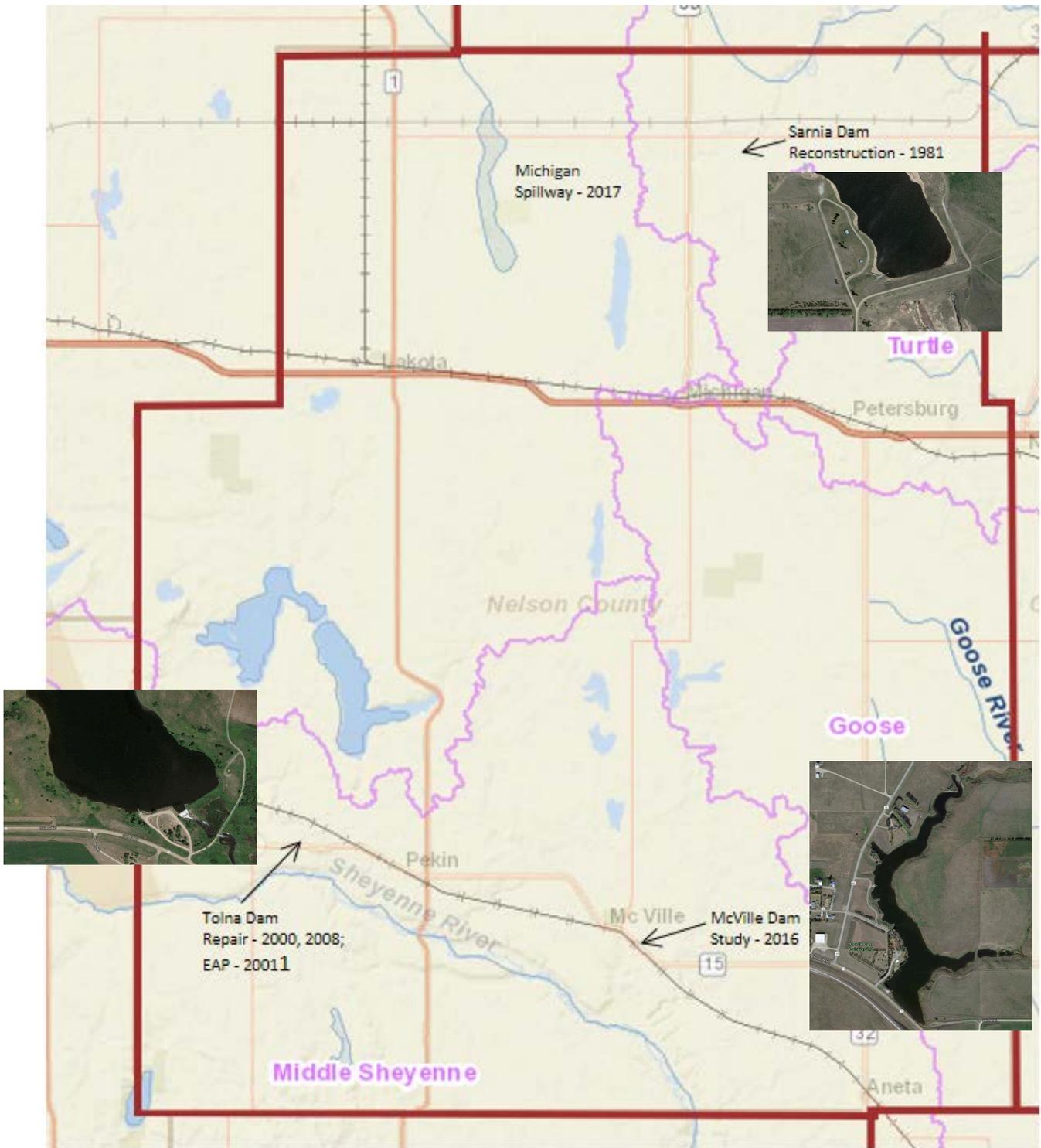
Barnes County – Projects that the RRJWRD Provided Cost-Share



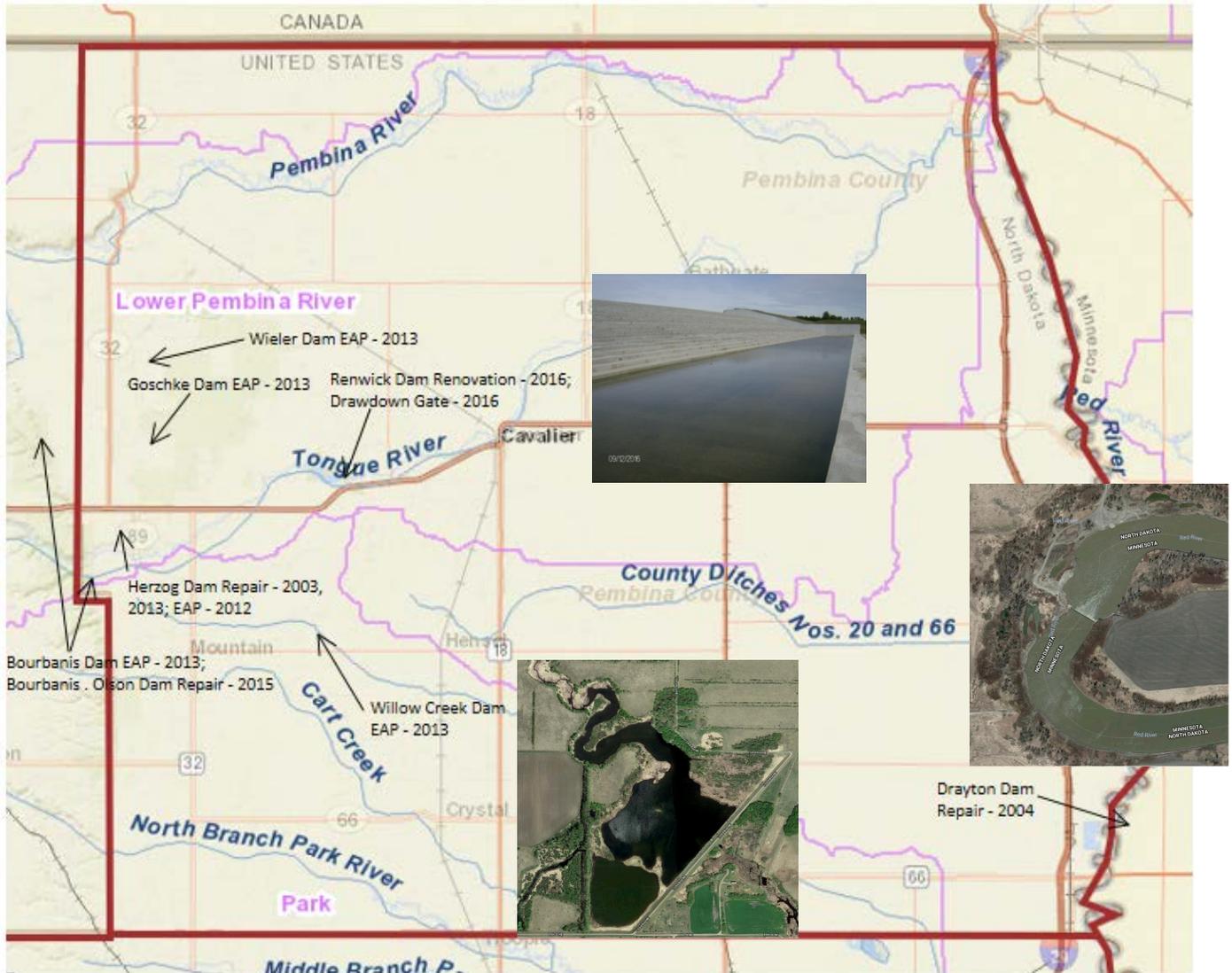
Cass County (Includes North Cass WRD, Rush River WRD, Maple River WRD, and Southeast Cass WRD) – Projects that the RRJWRD Provided Cost-Share



Grand Forks County – Projects that the RRJWRD Provided Cost-Share



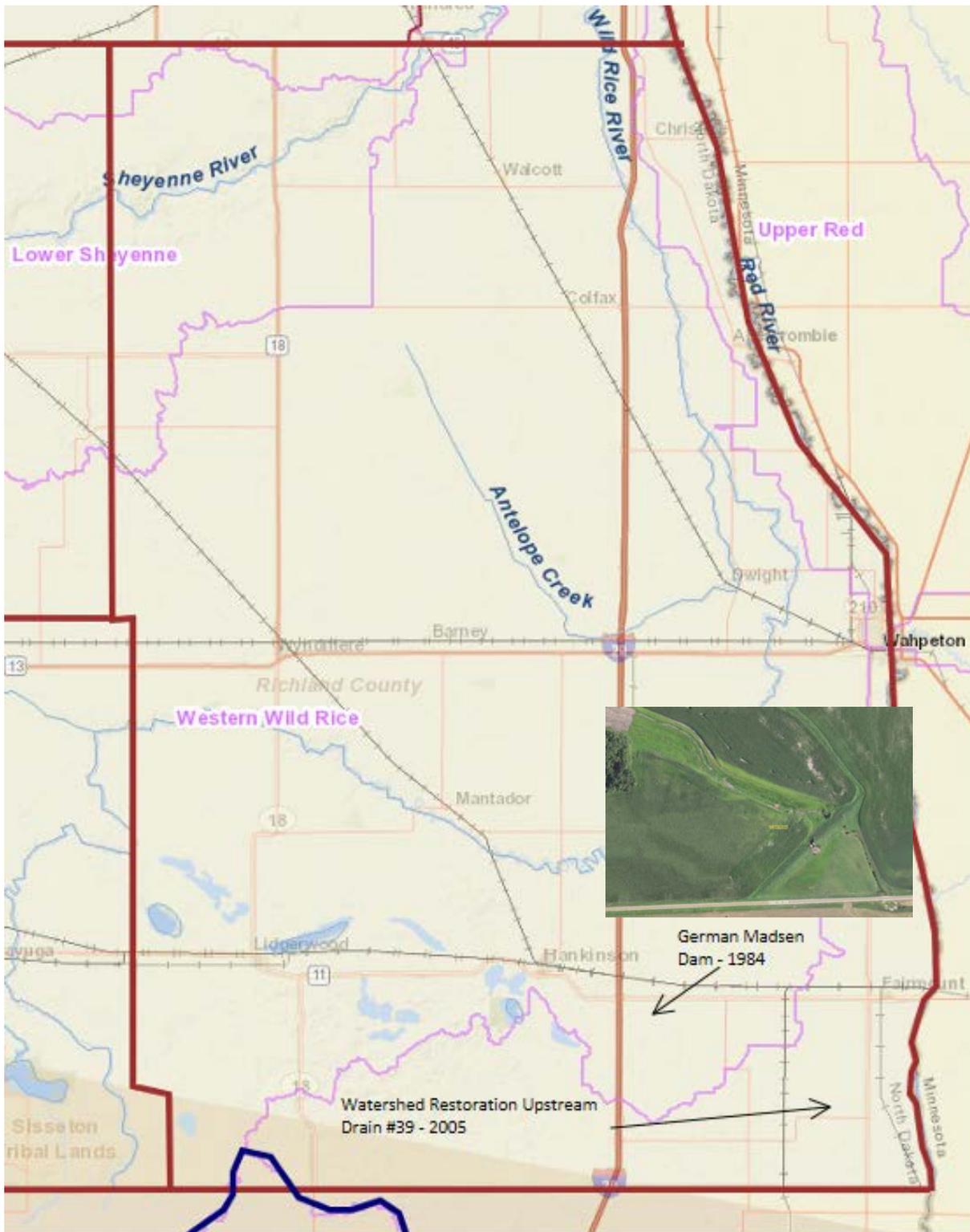
Nelson County - Projects that the RRJWRD Provided Cost-Share



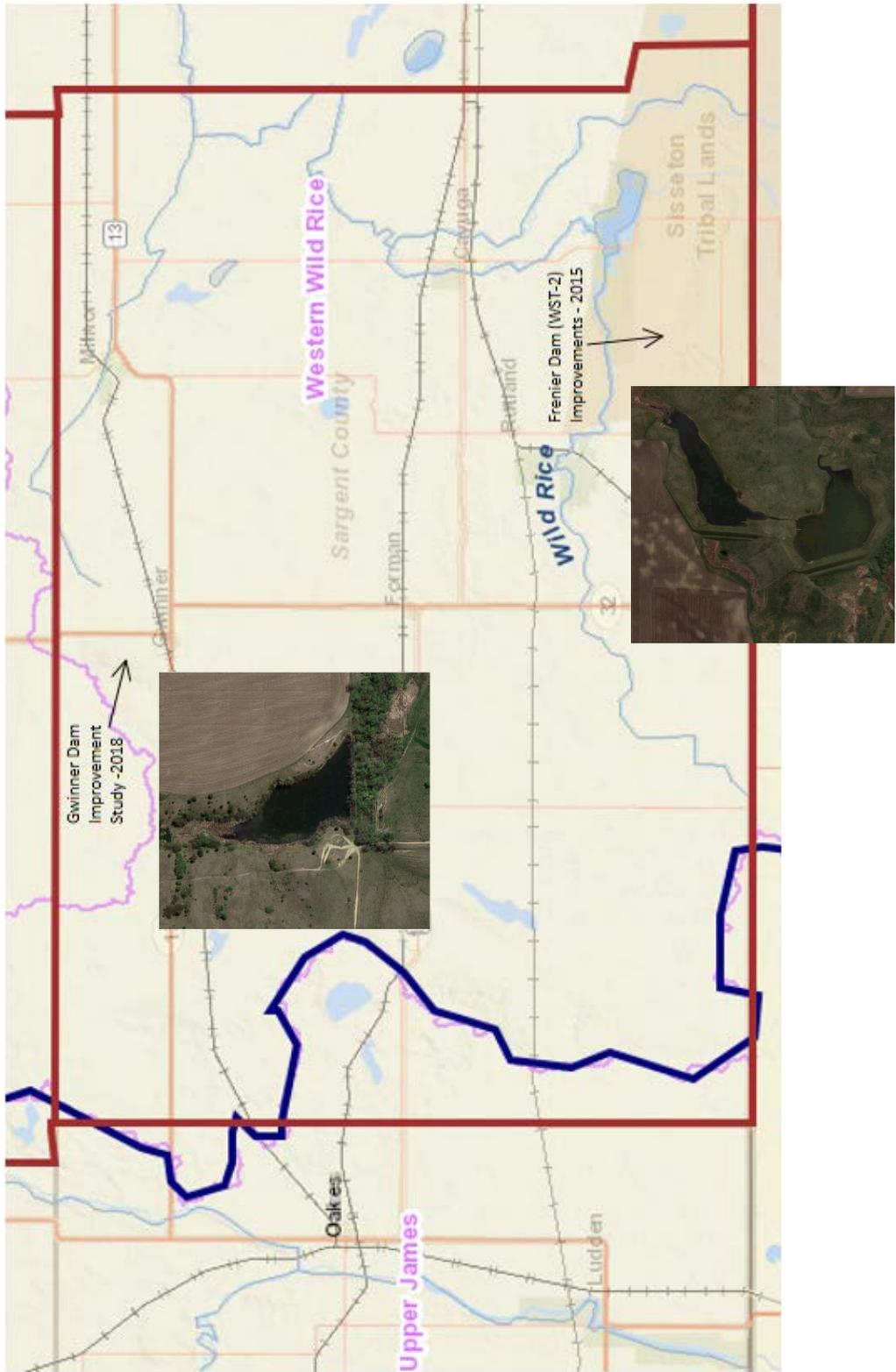
Pembina County - Projects that the RRJWRD Provided Cost-Share



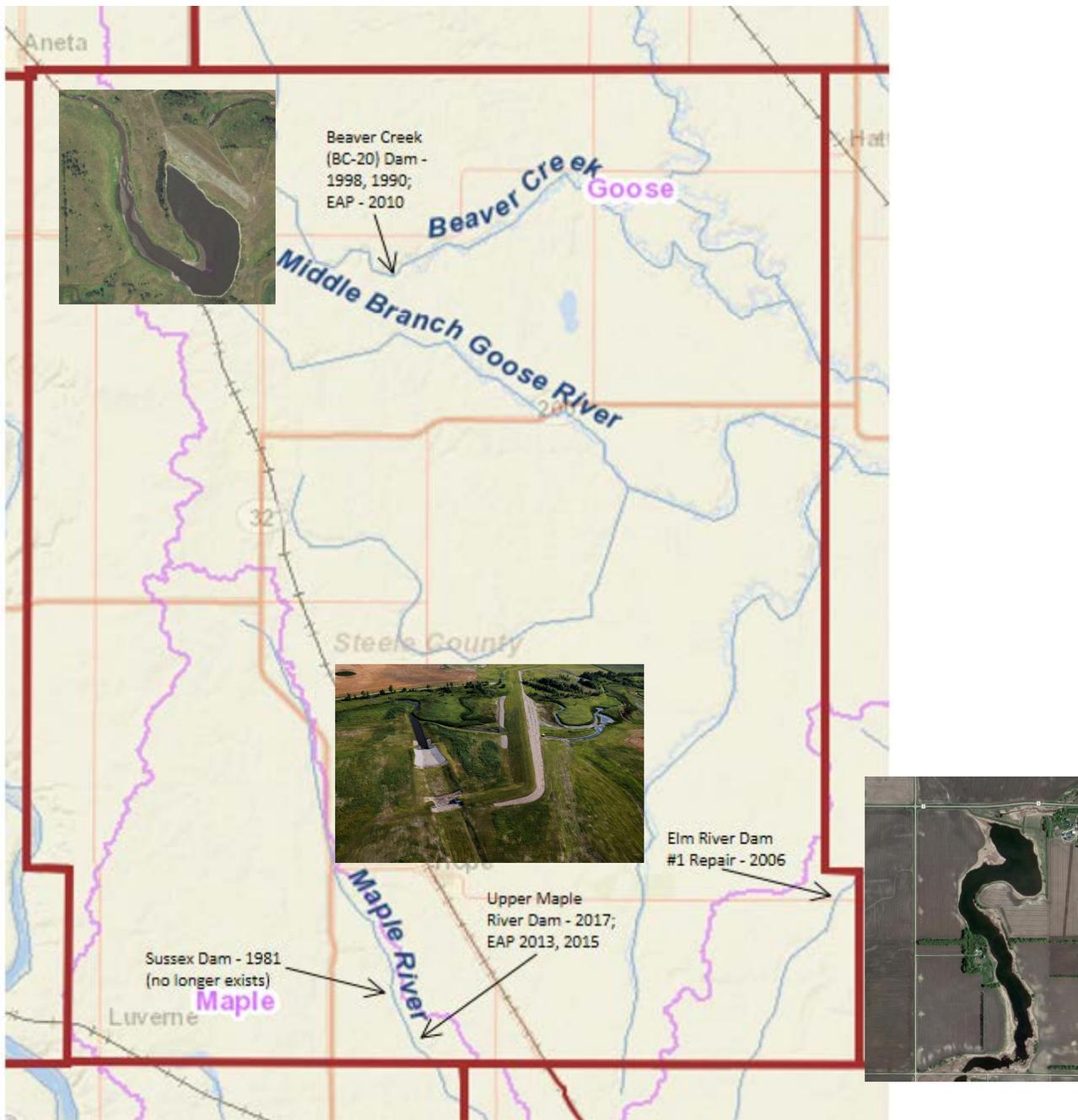
Ransom County - Projects that the RRJWRD Provided Cost-Share



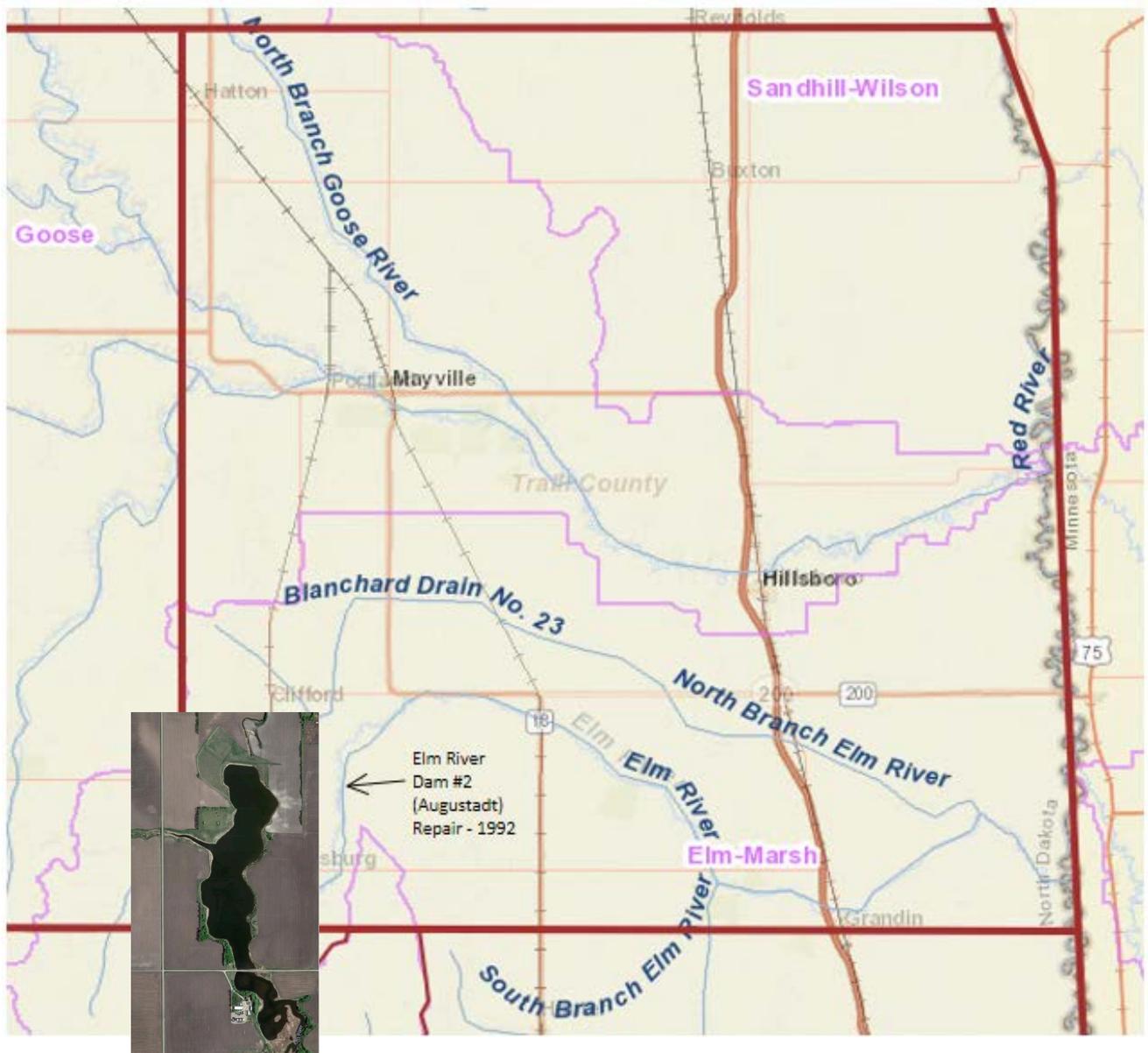
Richland County - Projects that the RRJWRD Provided Cost-Share



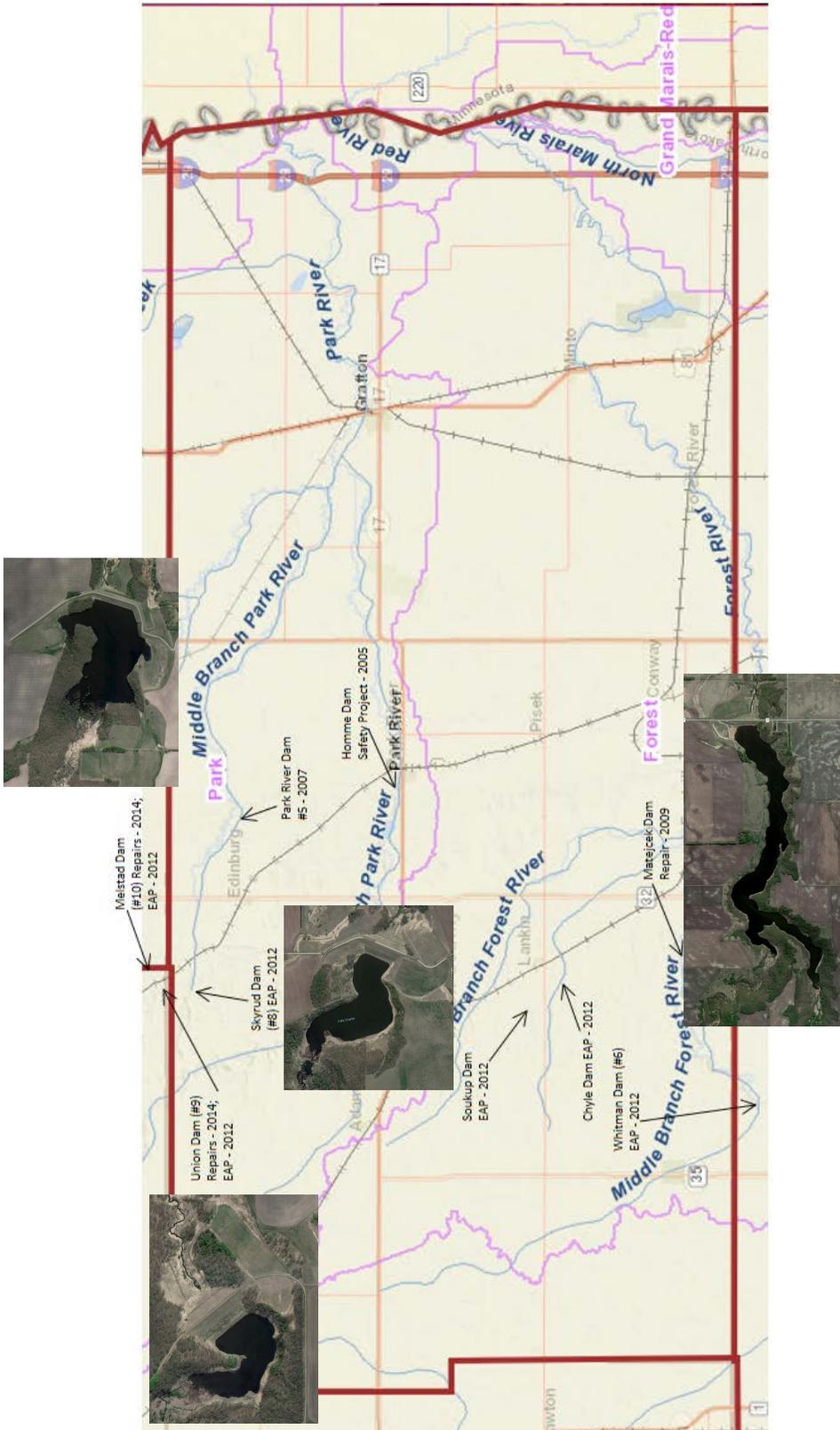
Sargent County - Projects that the RRJWRD Provided Cost-Share



Steele County - Projects that the RRJWRD Provided Cost-Share



Trail County - Projects that the RRJWRD Provided Cost-Share



Walsh County - Projects that the RRJWRD Provided Cost-Share

APPENDIX H

RRJWRD Obligated projects

8/2/2018

RED RIVER JOINT WATER RESOURCE DISTRICT  
OBLIGATED FUNDING

PROJECT	ESTIMATED		RRJWRB		DATE APPROVED	AMOUNT PAID ON		BALANCE ON	
	TOTAL COST	OBLIGATION	OBLIGATION	OBLIGATION		OBLIGATION	OBLIGATION	OBLIGATION	OBLIGATION
1. Manitoba Border Dike - legal fees (Notes 1, 2, 3, 7 and 9)	2,050,000	512,500			April 14, 2004	479,621.28	32,878.72		
2. Baldhill Creek Dam Phase II: Prelim Geotech Invest	110,000	35,750			September 11, 2012	0.00	35,750.00		
3. USGS Streamgauge on Rush River near Armenia	45,000	19,500			August 8, 2012	0.00	19,500.00		
4. Hazen Brook Detention Site Study	60,000	19,500			March 12, 2014	0.00	19,500.00		
5. ND River Watch Strategy (Note 4, Note 11)	193,200	116,250			September 10, 2013	95,178.39	21,071.61		
6. Rush River Watershed Detention Study, Phase II (Note 6)	400,000	185,900			April 8, 2015	39,039.80	146,860.20		
7. Upper Maple River Watershed Comp Det Study, Ph II (Note 6)	400,000	185,900			April 8, 2015	74,547.03	111,352.97		
8. Swan Creek Watershed Comp Detention Study, Ph II (Note 6)	400,000	185,900			April 8, 2015	37,885.75	148,014.25		
9. IWI - RRB/DIN Web Services (Note 8, Note 10)	50,754	41,904			April 8, 2015	37,703.72	4,200.71		
10. Gwinner Dam Improvement Study	122,410	51,718			June 23, 2015	28,060.31	23,657.92		
11. Renwick Dam Emergency Action Plan (EAP)	79,600	10,348			August 12, 2015	9,227.24	1,120.76		
12. North Branch Park River NRCS Watershed Study	732,000	98,020			August 12, 2015	0.00	98,020.00		
13. Forest River NRCS Watershed Study	826,000	137,735			August 12, 2015	0.00	137,735.00		
14. Lower Red Basin Regional Detention Study (Note 5)	754,000	45,000			August 12, 2015	28,417.00	16,583.00		
15. North Branch Antelope Creek NRCS Small Watershed Study	824,000	136,890			February 10, 2016	13,817.61	123,072.39		
16. Shortfoot Creek Watershed NRCS/RCCP	940,000	185,900			January 13, 2016	60,954.02	124,945.98		
17. Lake Bertha Flood Control Outlet	541,780	245,943			April 13, 2016	116,853.27	129,089.73		
18. Tongue River NRCS Watershed Plan	799,151	126,391			April 13, 2016	29,037.47	97,353.83		
19. Upper Maple River Dam Emergency Action Plan	16,000	2,080			June 8, 2016	0.00	2,080.00		
20. Elm River Dam #1 Repair Project	27,150	11,471			July 17, 2016	0.00	11,470.88		
21. Herzog Dam Gate Repair	173,600	36,790			September 28, 2016	3,678.80	33,111.20		
22. IWI - PTWApp	1,533,196	227,839			April 12, 2017	128,065.30	99,773.70		
23. IWI - River of Dreams	46,550	23,275			June 27, 2018	0.00	23,275.00		
<b>TOTALS</b>	<b>\$11,124,391</b>	<b>\$2,642,505</b>				<b>\$1,182,087</b>	<b>\$1,460,418</b>		

Notes:

1. RRJWRB share increased from \$100,000 to \$150,000 at April 12, 2006 meeting. Total possible cost increased from \$400,000 to \$600,000.
2. RRJWRB also pledged 25% cost of potential liability for purpose of "letter of undertaking", up to \$87,500.
3. RRJWRD approved another \$100,000 at September 11, 2012 meeting.
4. Additional \$48,300 for 2 years approved on June 23, 2015.
5. RRJWRB is the local sponsor of this project, SWC cost share was approved at 35% (\$45,000).
6. At their November 23, 2015 meeting, the RRJWRD approved an additional \$3,900 for each of these studies.
7. At their December 10, 2015 meeting, the RRJWRD approved an additional \$62,500.00
8. Agreement was extended a year on July 13, 2016 with no additional funding needed.
9. At their August 10, 2016 meeting, the RRJWRD approved an additional \$200,000.
10. Additional funding approved September 27, 2017.
11. Additional funding approved for two years (\$48,300) 12/8/2016 see email in file

## **APPENDIX I**

### **Future Needs**

**Appendix I: Table 1: RCPP Projects – Without Federal Funding**

Potential RCPP Projects Assume No Federal Cost Share July 2018									
Sponsor	Project Name	Total Cost	Potential Federal Share	Potential State Share	Potential RRJWRD Share	Potential Local Share	Potential Timeframe for Funding		
							2019-21	2021-23	2023-25
Cass County Joint WRD	Upper Maple River Watershed Detention Project - Site #1	\$12,500,000	\$0	\$7,500,000	\$3,250,000	\$1,750,000	x		
Cass County Joint WRD	Upper Maple River Watershed Detention Project - Site #2	\$12,500,000	\$0	\$7,500,000	\$3,250,000	\$1,750,000	x		
Cass County Joint WRD	Rush River Watershed Detention	\$4,000,000	\$0	\$2,400,000	\$1,040,000	\$560,000	x		
Forest River Joint WRD	Forest River Flood Control - Detention	\$27,500,000	\$0	\$16,500,000	\$7,150,000	\$3,850,000	x	x	
Forest River Joint WRD	Forest River Flood Control	\$10,800,000	\$0	\$6,480,000	\$2,808,000	\$1,512,000	x	x	
Forest River Joint WRD	Johnstown Detention Site - Study	\$120,000	\$0	\$72,000	\$31,200	\$16,800	x		
Park River Joint WRD	North Branch Park River Detention	\$25,000,000	\$0	\$15,000,000	\$6,500,000	\$3,500,000	x		
Park River Joint WRD	North Branch Park River Flood Control - Crystal	\$4,000,000	\$0	\$2,400,000	\$1,040,000	\$560,000	x		
Pembina County WRD	Tongue River Watershed Detention	\$10,000,000	\$0	\$6,000,000	\$2,600,000	\$1,400,000	x		
Richland County WRD	North Branch Antelope Creek Detention Project	\$50,000,000	\$0	\$30,000,000	\$13,000,000	\$7,000,000	x		x
Sargent County WRD	Shortfoot Creek Watershed Detention	\$9,000,000	\$0	\$5,400,000	\$2,340,000	\$1,260,000	x		
<b>Totals</b>		<b>\$165,420,000</b>	<b>\$0</b>	<b>\$99,252,000</b>	<b>\$43,009,200</b>	<b>\$23,158,800</b>			

**Appendix I: Table 2: RCPP Projects – With Federal Funding**

Potential RCPP Projects Assumed Federal Cost Share July 2018									
Sponsor	Project Name	Total Cost	Potential Federal Share	Potential State Share	Potential RRJWRD Share	Potential Local Share	Potential Timeframe for Funding		
							2019-21	2021-23	2023-25
Cass County Joint WRD	Upper Maple River Watershed Detention Project - Site #1	\$12,500,000	\$6,250,000	\$3,750,000	\$1,625,000	\$875,000	x		
Cass County Joint WRD	Upper Maple River Watershed Detention Project - Site #2	\$12,500,000	\$6,250,000	\$3,750,000	\$1,625,000	\$875,000	x		
Cass County Joint WRD	Rush River Watershed Detention	\$4,000,000	\$2,000,000	\$1,200,000	\$520,000	\$280,000	x		
Forest River Joint WRD	Forest River Flood Control - Detention	\$27,500,000	\$13,750,000	\$8,250,000	\$3,575,000	\$1,925,000	x	x	
Forest River Joint WRD	Forest River Flood Control	\$10,800,000	\$5,400,000	\$3,240,000	\$1,404,000	\$756,000	x	x	
Forest River Joint WRD	Johnstown Detention Site - Study	\$120,000	\$60,000	\$36,000	\$15,600	\$8,400	x		
Park River Joint WRD	North Branch Park River Detention	\$25,000,000	\$12,500,000	\$7,500,000	\$3,250,000	\$1,750,000	x		
Park River Joint WRD	North Branch Park River Flood Control - Crystal	\$4,000,000	\$2,000,000	\$1,200,000	\$520,000	\$280,000	x		
Pembina County WRD	Tongue River Watershed Detention	\$10,000,000	\$5,000,000	\$3,000,000	\$1,300,000	\$700,000	x		
Richland County WRD	North Branch Antelope Creek Detention Project	\$50,000,000	\$25,000,000	\$15,000,000	\$6,500,000	\$3,500,000	x		x
Sargent County WRD	Shortfoot Creek Watershed Detention	\$9,000,000	\$4,500,000	\$2,700,000	\$1,170,000	\$630,000	x		
<b>Totals</b>		<b>\$165,420,000</b>	<b>\$82,710,000</b>	<b>\$49,626,000</b>	<b>\$21,504,600</b>	<b>\$11,579,400</b>			

Notes:

Potential federal funding (50%) included for proposed detention projects in watersheds that are included in the Regional Conservation Partnership Program  
 SWC potential construction cost share assumed at 60% of non-federal cost, with exception of 75% for dam safety project

SWC potential study cost share assumed at 35% of non-federal cost

RRJWRD potential cost share assumed at 65% of non-federal, non-state costs

1. RRJWRD cost share dependant on if the project includes temporary flood water detention

In some cases, sponsors included numbers that differed from assumed cost shared percentages. The sponsor's numbers were used in those cases.

Appendix I: Table 3: Potential Projects – Non - RCPP

Potential Non-RCPP Projects July 2018										
Sponsor	Project Name	Total Cost	Potential			Potential RRJWRD Share	Potential Local Share	Potential Timeframe for Funding		
			Federal Share	State Share	Potential			2019-21	2021-23	2023-25
Elm River Joint WRD	Elm River Dam #1 Spillway Improvements	\$1,500,000	\$0	\$1,125,000	\$243,750	\$131,250	x			
Grand Forks County WRD	Hazen Brook Dam Feasibility Study	\$58,500	\$0	\$19,500	\$25,350	\$13,650	x			
Grand Forks County WRD	Upper Turtle River Dam Site #10 Study	\$162,000	\$0	\$56,700	\$68,445	\$36,855	x	x		
Nelson County WRD & the City of McVille	McVille Dam Spillway Improvements	\$1,000,000	\$0	\$750,000	\$162,500	\$87,500	x			
Pembina County & Cavalier County WRD	Tongue River Dam Safety Repairs	\$1,400,000	\$0	\$1,050,000	\$227,500	\$122,500	x			
Pembina County WRD	Herzog Dam Assessment Study	\$2,000,000	\$0	\$700,000	\$845,000	\$455,000	x			
Pembina County WRD	Herzog Dam Safety Repairs	\$2,500,000	\$0	\$1,875,000	\$406,250	\$218,750	x	x		
Walsh County WRD	Matejcek Dam Rehabilitation	\$25,000,000	\$16,250,000	\$6,562,500	\$1,421,875	\$765,625	x	x	x	
<b>Totals</b>		<b>\$33,620,500</b>	<b>\$16,250,000</b>	<b>\$12,138,700</b>	<b>\$3,400,670</b>	<b>\$1,831,130</b>				

Notes:

- SWC potential construction cost share assumed at 60% of non-federal cost, with exception of 75% of dam safety project
- SWC potential study cost share assumed at 75% of non-federal cost for dam safety project
- SWC potential cost share assumed at 35% of non-federal cost for engineering study
- RRJWRD potential cost share assumed at 65% of non-federal, non-state costs
- 1. RRJWRD cost share dependant on if the project includes temporary flood water detention