MINUTES

North Dakota State Water Commission
Bismarck, North Dakota

June 14, 2018

The North Dakota State Water Commission (State Water Commission or Commission) held a meeting at the Brynhild Haugland Room, State Capitol, Bismarck, North Dakota, on June 14, 2018. Governor Burgum called the meeting to order at 1:03 p.m., and requested Garland Erbele, State Engineer, and Chief Engineer-Secretary to the State Water Commission, call the roll. Governor Burgum announced a quorum was present.

STATE WATER COMMISSION MEMBERS PRESENT:
Governor Burgum, Chairman
Tom Bodine, Deputy Commissioner, ND Department of Agriculture, Bismarck
Katie Andersen, Jamestown
Michael Anderson, Hillsboro
Richard Johnson, Devils Lake
Leander McDonald, Bismarck
Mark Owan, Williston
Jason Zimmerman, Minot

STATE WATER COMMISSION MEMBERS ABSENT:
Matthew Pedersen, Valley City

OTHERS PRESENT:
Leslie Bakken-Oliver, General Counsel, Governor's Office
Jennifer Verleger, General Counsel, State Water Commission
Garland Erbele, State Engineer, and Chief Engineer-Secretary,
North Dakota State Water Commission, Bismarck
State Water Commission Staff
Approximately 50 people interested in agenda items.

The attendance register is on file with the official minutes.

The meeting was recorded to assist in compilation of the minutes.

CONSIDERATION OF AGENDA:

The agenda for the June 14, 2018, State Water Commission meeting was presented; there were no modifications.

CONSIDERATION OF DRAFT MINUTES OF APRIL 12, 2018, AND MAY 17-18, 2018, SUBCOMMITTEE MEETING MINUTES:

The draft minutes of the April 12, 2018, State Water Commission meeting and May 17-18, 2018, subcommittee meetings were reviewed; there were no modifications.

It was moved by Commissioner Johnson, seconded by Commissioner Andersen, and unanimously carried, that the minutes of April 12, 2018, and May 17-18, 2018, subcommittee meeting minutes be approved as presented. Commissioner Pedersen was absent for vote.

STATE WATER COMMISSION FINANCIAL REPORTS:

The allocated program expenditures for the period ending April 30, 2018, were presented and discussed by David Laschkewitsch, Director of Administrative Services. The total expenditures are within the authorized budget amounts.

The Project Summary for the 2017-2019 Biennium, **APPENDIX A**, provides information on the committed and uncommitted funds from the Resources Trust Fund and the Water Development Trust Fund. The final summary for projects shows approved projects totaling $566,217,722 with expenditures of $124,097,034. A balance of $115,216,293 remains available to commit to projects in the 2017-2019 biennium.

The oil extraction tax deposits into the Resources Trust Fund total $122,940,746 through May 2018 and are currently $13,191,763 or 12 percent above budgeted revenues.

Deposits received for the Water Development Trust Fund total $23,803,450 through May 2018 and are currently $14,803,450 above the budget revenues of $9,000,000. The large increase is due to a settlement agreement being reached between the state and the major tobacco companies over enforcement of the 1998 Tobacco Master Settlement agreement. Those escrowed funds have now been released.

DEVILS LAKE WEST END OUTLET FLOODING:

Bruce Gibbens, attorney from Gibbens Law Firm, Cando, presented background information and handouts related to alleged seepage created by the Devils Lake west end outlet. It is alleged that the seepage is creating crop loss and flooding in the surrounding land. Attorney Gibbens represents landowners Dennis and Donna Johnson and Jim Fossen. Attorney James Wang represents Earl and Dick Huffman. A report summary was presented by Lance Loken, Western Plains Consulting, Bismarck. Landowner Dennis Johnson also presented information.

The handouts and report summary are attached as **APPENDIX B.**

Jon Kelsch, Project Manager, Devils Lake Outlet, presented additional information and map, attached as **APPENDIX C**.

Governor Burgum thanked everyone for the information and asked that the matter be placed on the agenda for August meeting and that mitigation should be explored. Because of possible litigation, the information discussed at the August meeting may be held in executive session.

PUBLIC COMMENT AND DISCUSSION ON REVISED COST-SHARE POLICY:

Craig Odenbach, Director of Water Development Division, presented the final proposed cost-share policy revisions. A spreadsheet listing the final revisions is attached as **APPENDIX D.**

After discussion, it was determined that revisions statutorily required and those for which a consensus was apparent would be accepted and approved. More discussion was desired for the other procedural revisions and that discussion would occur at the August committee meeting.

It was recommended that the following numbered items, identified in **APPENDIX D**, be amended and approved, effective immediately, in the State Water Commission Cost-Share Policy: 1, 2, 4, 6, 8, 9, 12, 13,16, 18, and 19.

> **It was moved by Commissioner Owan and seconded by Commissioner McDonald that the State Water Commission amend and approve items 1, 2, 4, 6, 8, 9, 12, 13,16, 18, and 19 as identified in Appendix D, effective immediately, in the State Water Commission Cost-Share Policy.**
>
> **Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.**

PROJECT PRIORITIZATION GUIDANCE

Pat Fridgen, Director of Planning and Education, presented final revisions to the Project Prioritization Guidance attached as **APPENDIX E.**

After discussion, it was determined that further revisions be made to ensure terminology and definitions match in both the Cost-Share Policy and Project Prioritization Guidance. Governor Burgum requested clear delineation be given at the August meeting.

Blake Crosby, Executive Director, ND League of Cities, clarified his prior public comment related to population growth – specifically the use of three percent average growth over three years as a threshold for prioritization. Mr. Crosby suggested it was not their intent to have the agency delete reference to population growth as a priority consideration. However, they do feel the three percent is arbitrary, and ask that the Commission recognize growth as a high priority, but not use the three percent threshold.

The prioritization revisions will not go into effect until the 2019-2021 biennium.

STATE COST-SHARE PARTICIPATION REQUEST – WATER SUPPLY:

NORTH PRAIRIE RESERVOIR 9 AND SURREY SILVER SPRINGS - $1,189,150 (SWC Project No. 2050NOR)

North Prairie Rural Water District (District) received cost-share approval on pre-construction costs for two projects and requested cost-share on the construction costs with the plan to combine the two projects into one bid contract. The two projects are Reservoir 9 Water Supply and Surrey Silver Springs Development Water Supply. The District completed the project planning, determined the local match, completed plans and specifications for bidding the projects in June, and plans to start construction in July. The water supply for these two projects is treated water the District buys from Minot with Minot obtaining its raw water from the Sundre and Minot Aquifers. The 2,700 existing District users and Silver Springs users water rate is $49 per month minimum with water users paying $7.45 per 1,000 gallons used. Rural systems across the state have a median rate of $45 per month minimum and $6 per 1,000 gallons. The details of the two projects are listed below.

Reservoir 9 Water Supply - This cost-share request is for construction costs to address current and future water demands for users in the District system southwest of Minot with construction of 27,000 feet of 8-inch and 6-inch water transmission pipeline from Reservoir 10 to Reservoir 9. The plan is to complete the construction in October.

Reservoir 9 was approved for cost-share of $26,950 on pre-construction costs on August 23, 2017. The new estimated total cost is $1,537,324. With the previously approved cost-share of 35 percent on pre-construction costs, and 75 percent on eligible construction costs, the total cost-share funding is $1,114,620, or an additional $1,087,670.

Silver Springs Development Water Supply - This cost-share request is for construction costs to address water demands to the Surrey Silver Springs Development with construction of 1,500 feet of 12-inch water transmission line. The project is considered an improvement because it only increases the capacity to an area already served with a 4-inch water transmission line from Surrey. The plan is to complete the construction in September. The District currently provides water to Surrey and would provide water to the Silver Springs Development.

The Silver Springs project was approved for cost-share of $5,950 on pre-construction costs on August 23, 2017. The new estimated total cost is $184,776. With the previously approved cost-share of 35 percent on pre-construction costs and 60 percent on eligible construction costs, the total cost-share funding is $107,430, or an additional $101,480.

The total combined project cost estimate is $1,722,100. With the previously approved cost-share of 35 percent on pre-construction costs and 75 percent on eligible construction costs for Reservoir 9 and 60 percent on eligible construction costs for Silver Springs, the total cost-share funding is $1,222,050, or an additional $1,189,150. The water system improvement request and supporting material is attached as **APPENDIX F**.

Secretary Erbele recommended the State Water Commission approve an additional $1,189,150, resulting in a total cost-share of $1,222,050, with pre-construction costs funded at 35 percent, and construction costs funded at 75 percent for the District Reservoir 9 Water Supply Project and construction costs funded at 60 percent for Silver Springs Development Water Supply project. The funding is in the form of a cost-share towards eligible costs, contingent on available funding, and allows the District to use the cost-share in a combined bid package.

It was moved by Commissioner Owan and seconded by Commissioner Johnson that the State Water Commission approve an additional $1,189,150, for a total cost-share of $1,222,050, paid on eligible costs for 35 percent pre-construction costs and 75 percent construction costs for the North Prairie Rural Water District Reservoir 9, and paid on eligible costs for 60 percent construction costs for Silver Springs Development Water Supply project. This action is contingent upon the availability of funds.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

STATE COST-SHARE PARTICIPATION REQUESTS – FLOOD CONTROL:

LOWER HEART RIVER FLOOD RISK REDUCTION - $280,000 (SWC Project No. 2131)

The Lower Heart River Water Resource District (District) requested cost-share assistance for their Lower Heart River Flood Risk Reduction project.

The project is located in Mandan. The Lower Heart River is susceptible to ice jams during spring flood events. Ice jams can occur along the channel at bridges and in the floodplain where floodwaters overtop the channel banks. In order for the levees to meet freeboard requirements, either the levees would need to be raised or the modeled 100-year water surface profile has to be lowered. A strategy to lower the water surface profile would be to implement various project components that could increase channel or overbank conveyance.

A previous digital flood insurance rate map effort through the State Water Commission and FEMA, determined that the existing Lower Heart River levees are no longer in compliance with regulatory standards. FEMA has yet to pursue formal de-accreditation of these levees, and Mandan is currently in a seclusion status. If the levees were ultimately de-accredited, a majority of downtown Mandan and a large community growth area in southeast Mandan would be mapped as being located in the special flood hazard area. These properties would then be considered at risk, and flood insurance would be required for any federally insured loan, resulting in considerable expense to those property owners. Project rehabilitation would bring the system into compliance through the levee certification process. Currently in downtown Mandan there are 1,831 structures potentially at risk valued at around $248 million. Damages from excessive levee overtopping or a breach event are estimated to exceed $115 million. Based on the proposed Hydraulic Concept Plan, new right-of-way and increased system conveyance are required to achieve certification. In addition, geotechnical evaluation and internal drainage considerations are required to develop the 30 percent and 60 percent preliminary plan document for agency review. The Cost-Share Request Form, letter request, and Preliminary Engineering Scope of Services is attached as **APPENDIX G.** The estimated total project cost is $800,000.

Secretary Erbele recommended the State Water Commission approve the total cost-share of $280,000, with pre-construction costs funded at 35 percent. The approval is subject to the entire contents of the recommendation contained herein, obtaining all applicable permits, and the availability of funds.

It was moved by Commissioner Owan and seconded by Commissioner Andersen that the State Water Commission approve total state cost-share of $280,0000, paid on eligible costs for 35 percent pre-construction costs. This action is contingent upon the entire contents of the recommendation contained herein, obtaining all applicable permits, and the availability of funds.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

MINOT SWIF REALLOCATION - $368,778
SWC Project No. 2107-02

On June 22, 2017, the State Water Commission approved $950,254 for Minot's 2017 Levee Repair, Bank Stabilization, and Snagging and Clearing project which included improvements necessitated as part of the System-Wide Improvement Framework (SWIF) process for their existing flood control system. Bids for the construction of this project came in under the engineer's original estimate and Minot is requesting that the unused funds of $368,778 be reallocated.

Minot is requesting a total cost-share of $756,211 for two additional SWIF-related flood control projects that protect areas behind the current levee system in Minot by constructing gatewells to better manage storm water behind the levees and prevent backflow from the river.

The current request included $387,433 in new monies and reallocation of $368,778 from Minot's 2017 Levee Repair, Bank Stabilization, and Snagging and Clearing project. Because of competing demands for funding from the flood control bucket, allocation of any new monies was not recommended. The Cost-Share Request Form and supporting documentation is attached as **EXHIBIT H.**

Secretary Erbele recommended the State Water Commission approve the request of Minot to reallocate $368,778 from the cost-share allocation for Minot's 2017 Levee Repair, Bank Stabilization, and Snagging and Clearing project to Minot's 2018 Outfall Pipe Rehabilitation project. This approval is subject to the entire contents of the recommendation contained herein, and the availability of funds.

It was moved by Commissioner Johnson and seconded by Commissioner Owan that the State Water Commission approve the reallocation of funds request in the amount of $368,778. This action is contingent upon the entire contents of the recommendation contained herein, and the availability of funds.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

STATE COST-SHARE PARTICIPATION REQUEST – GENERAL WATER MANAGEMENT:

LOWER YELLOWSTONE IRRIGATION DISTRICT - $692,500
(SWC Project No. PS/IRR/LOW)

The Lower Yellowstone Irrigation District #2 (District) requested cost-share assistance for their Lateral W Irrigation Protection project.

The project is located in McKenzie County. Current and worsening flood conditions on the Missouri River in this location are causing significant and rapid erosion of the river bank which is threatening canal "Lateral W." The river erosion could lead to the failure of this canal during the summer irrigation season when the water is needed the most. Lateral W is the water supply for more than 800 acres of irrigated land, including high value crops. The District will re-route the lateral away from the eroding river bank via a buried syphon and reconnect it to the original lateral farther east, away from the river. This was determined to be the most cost-effective and most feasible solution from a regulatory perspective.

The estimated project total is $1,400,000. The District is requesting $800,000 in cost-share funds from the State Water Commission, however the policy is 50 percent cost-share for irrigation projects. The Cost-Share Request Form and supporting documentation is attached as **APPENDIX I.**

Secretary Erbele recommended the State Water Commission approve the request for 35 percent cost-share for pre-construction costs ($17,500), and 50 percent cost-share for construction costs ($675,000), for a total cost-share of $692,500.

It was moved by Commissioner Zimmerman and seconded by Commissioner McDonald that the State Water Commission approve total state cost-share of $692,500, paid on eligible costs for 35 percent pre-construction costs and 50 percent construction costs. This action is contingent upon the entire contents of the recommendation contained herein, and the availability of funds.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

FEDERAL MUNICIPAL, RURAL, AND INDUSTRIAL WATER SUPPLY:

NORTHWEST AREA WATER SUPPLY - $1,815,000 (FY18)
(SWC Project No. 237-03/237-04)

An additional $1,815,000 was made available in the FY2018 Federal Municipal, Rural, and Industrial Water Supply (MR&I) program. This request is to approve the additional MR&I funding towards the Northwest Area Water Supply (NAWS) project, specifically the Biota Water Treatment Plant design and the Minot Water Treatment Facility Phase II project construction.

The NAWS Biota Water Treatment Plant (Contract 7-1D) will be constructed near Max, has an estimated design cost of $5,619,594, an estimated construction cost of $80 million, and has been determined to be 100 percent a federal responsibility. The design will be completed in fall 2019.

An upgrade of the Minot Water Treatment Facility is being completed to provide 27 million gallons per day capacity to meet the growing needs of the NAWS project service area. Phase I was completed and addressed the filter capacity. The Phase II construction contract (Contract 7-1B) to install two softening basins has a construction cost of $26,868,000. With Minot providing 35 percent or $9.4 million, state or federal funding will be required to make up the remaining $17.5 million.

Total federal funding approved to-date is $10,000,000, approved on December 8, 2017. The recommendation was presented to the Garrison Diversion Conservancy District for their consideration on June 8 and was approved. Allocating the 2018 federal MR&I funds to NAWS will simply stretch the effectiveness of the state funds that have been obligated and budgeted.

Secretary Erbele recommended the State Water Commission approve an additional $1,815,000, resulting in total federal FY2018 MR&I funds of $11,815,000, to the NAWS project. The funding is subject to future revisions and the project follows the federal MR&I program requirements.

It was moved by Commissioner Owan and seconded by Commissioner Andersen that the State Water Commission approve an additional $1,815,000, for a total federal FY2018 MR&I funds of $11,815,000, to Northwest Area Water Supply project. This action is contingent upon future revisions and the project follows the federal MR&I program requirements.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

NORTHEAST REGIONAL WATER DISTRICT EXPANSION - $1,9000,000 (FY17) (SWC Project No. 237-03/237-03NOE/1736-99)

Northeast Regional Water District (Northeast) is requesting additional federal Municipal, Rural, and Industrial Water Supply (MR&I) program funding towards the Expansion Phase 2 project, which includes service to 250 rural users in western Cavalier County and eastern Towner County in Northeast's Langdon Branch. The project involves installing a new water system for 275 miles of 4-inch to 2-inch distribution pipelines.

Northeast received over 60 additional users during the Expansion Phase 2 user sign-up process and has coordinated the service area with surrounding rural water systems. Northeast is working on the National Environmental Policy Act requirements, completing plans and specifications for bidding the project this fall, and plans to complete the expansion in 2020. The Expansion Phase 1 project is currently under construction to install a pipeline from the Devils Lake water treatment plant to the existing Langdon Branch and for the Expansion Phase 2 project. Devils Lake raw water comes from the Spiritwood Aquifer. The Langdon Branch existing 980 users and the 250 expansion users will have a water rate of $55 per month minimum and pay $6 per 1,000 gallons used. Rural systems across the state have a median rate of $45 per month minimum and $6 per 1,000 gallons.

Total federal funding approved to-date is $6 million, approved on June 22, 2017. The updated cost estimate is $10.54 million. Federal MR&I funding at 75 percent would provide a total of $7.9 million, or an additional $1.9 million.

This request adjusts the Southwest Pipeline Project funding to provide the additional funding for the expansion project. This recommendation was presented to the Garrison Diversion Conservancy District for their consideration on June 8 and was approved. The request letter and supporting material is attached as **APPENDIX J**.

Project	Previous	Recommended
Northeast Regional Water District	$6,000,000	$7,900,000
South Central Regional Water District	$ 495,000	$ 495,000
Southwest Pipeline Project	$2,300,000	$ 400,000
Administration	$ 205,000	$ 205,000
Total	**$9,000,000**	**$9,000,000**

Secretary Erbele recommended the State Water Commission adjust the Southwest Pipeline project funding to approve an additional $1,900,000, resulting in total federal MR&I funds of $7,900,000, funded at 75 percent to Northeast Regional Water District Expansion Phase 2 project. The funding is contingent on available funding and the project follows the federal MR&I program requirements.

It was moved by Commissioner Zimmerman and seconded by Commissioner McDonald that the State Water Commission adjust the Southwest Pipeline project funding to approve an additional $1,900,000, for a total federal MR&I funds of $7,900,000, funded at 75 percent to Northeast Regional Water District Expansion Phase 2 project. This action is contingent upon available funding and the project follows the federal MR&I program requirements.

Commissioners Andersen, Anderson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Commissioner Johnson abstained from voting. Governor Burgum announced the motion unanimously carried.

NORTHWEST AREA WATER SUPPLY CONTRACT 2-2A-2 (SWC Project No. 237-04)

The NDDOT plans to continue to widen US 83 bypass around Minot to four lanes in 2019. We modified NAWS infrastructure near the Mouse River to accommodate the road expansion in 2016 and now need to relocate the meter vault serving Minot's North Hill connection, extend a bore casing to accommodate the new driving lane, and extend the piping. Bids were previously scheduled to be opened for this contract on June 20,

2018. This contract includes approximately 700 feet of pipe, a new vault pad, 95 feet of casing, relocating the existing vault, and associated valving and tie-ins to the existing infrastructure. A class five estimate of costs for this project is $500,000 to $600,000. The completion date for the contract is October 31, 2018. The vault relocation is on track to occur after peak water use season. Placing the new vault pad and piping to and from may occur at any time but taking the line out of service to relocate the vault and extending the casing to accommodate the new roadbed will not occur until September. The materials have to be ordered prior to the August 9 State Water Commission meeting.

Secretary Erbele recommended the State Water Commission authorize the Chief Engineer-Secretary to award NAWS Contract 2-2A-2 to the lowest responsible bidder upon review of the bids by staff and the consultant engineer, and contingent upon legal review of the contract documents by legal counsel.

It was moved by Commissioner Johnson and seconded by Commissioner Zimmerman that the State Water Commission approve an award to NAWS Contract 2-2A-2 to the lowest responsible bidder, not to exceed $900,000. This approval is contingent upon legal review of the contract documents by legal counsel.

Commissioners Andersen, Anderson, Johnson, McDonald, Owan, Zimmerman, Bodine, and Governor Burgum voted aye. There were no nay votes. Governor Burgum announced the motion unanimously carried.

Note to Commissioners: The apparent low bid was for $515,695. Houston Engineering, Inc. is reviewing bids but it is expected that this bid will be awarded.

RED RIVER WATER SUPPLY PROJECT FUNDING:
(SWC Project No. 1928)

Duane DeKrey, General Manager, Garrison Diversion Conservancy District, provided an update on the status of the Red River Valley Water Supply project funding. A summary of the update is attached as **APPENDIX K.**

There was discussion regarding changing the name of the project, meetings held with Secretary of Interior Zinke, and future meetings with Canadian officials regarding the diversion project.

PROJECT UPDATES:

Commission staff provided brief updates on the following projects with the summary updates attached as **APPENDIX L:**

Jon Kelsch, Construction Section Chief, Devils Lake Outlet;
Laura Ackerman, Investigations Section Chief, Missouri River and Mouse River;
Sinduhja S.Pillai-Grinolds, SWPP Project Manager, Southwest Pipeline Project;
Pat Fridgen, Director of Planning and Education, Drought Disaster Livestock Water Supply Program and Economic Analysis and Life Cycle Cost Analysis;

OTHER:

Governor Burgum requested a standing item be added to commission meeting agendas in order for commissioners and Governor to discuss overall items of interest relating to their basins and relevant water issues throughout the state.

Each commissioner will be asked to write an article for *The Current,* which is a quarterly publication of the State Water Commission. The article will be placed in *The Current* under a section named "Commissioner's Corner."

The next scheduled meeting is scheduled for August 9, 2018, Couteau Room, 1st Floor, Judicial Wing, Capitol.

There being no further business to come before the State Water Commission, Governor Burgum adjourned the June 14, 2018, meeting at 5:13 p.m.

Doug Burgum, Governor
Chairman, State Water Commission

Garland Erbele, P.E.
North Dakota State Engineer,
and Chief Engineer-Secretary
to the State Water Commission

APPENDIX A

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 BIENNIUM

Apr-18

	BUDGET	SWC/SE APPROVED	EXPENDITURES	REMAINING UNOBLIGATED	REMAINING UNPAID
MUNICIPAL & REGIONAL WATER SUPPLY:					
MUNICIPAL WATER SUPPLY	96,687,009	95,919,488	15,082,275	767,521	80,837,213
RED RIVER VALLEY	30,000,000	17,000,000	4,000,000	13,000,000	13,000,000
OTHER REGIONAL WATER SUPPLY	96,541,296	96,541,296	27,976,331	0	68,564,966
UNOBLIGATED MUNICIPAL/REG WATER SUPPLY	11,940,650			11,940,650	
RURAL WATER SUPPLY:					
RURAL WATER SUPPLY	60,633,188	60,340,688	20,930,107	292,500	39,410,580
UNOBLIGATED RURAL WATER SUPPLY	7,941,426			7,941,426	
FLOOD CONTROL:					
FARGO	144,876,087	78,376,087	18,194,958	66,500,000	60,181,129
MOUSE RIVER	89,410,776	89,358,276	4,206,610	52,500	85,151,666
VALLEY CITY	14,607,634	14,607,634	2,177,485	0	12,430,149
LISBON	9,000,010	9,000,010	3,227,332	0	5,772,678
OTHER FLOOD CONTROL	35,830,517	35,830,517	3,596,585	0	32,233,932
PROPERTY ACQUISITIONS	21,422,133	21,422,133	13,091,702	0	8,330,431
WATER CONVEYANCE	17,959,384	17,959,384	2,348,048	0	15,611,336
UNOBLIGATED FLOOD CONTROL	5,175,907			5,175,907	
GENERAL WATER:					
GENERAL WATER	23,926,311	23,926,311	6,619,100	0	17,307,210
UNOBLIGATED GENERAL WATER	9,545,787			9,545,787	
REVOLVING LOAN FUND:					
GENERAL WATER PROJECTS	5,581,900	5,581,900	2,292,500	0	3,289,400
WATER SUPPLY	354,000	354,000	354,000	0	0
TOTALS	681,434,015	566,217,722	124,097,034	115,216,293	442,120,688

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 Biennium

WATER SUPPLY

Approved By	SWC No	Dept	Sponsor	Project	Approved Date	Total Approved	Total Payments	Apr-18 Balance
			Municipal Water Supply:					
	2050-13	5000	Mandan	New Raw Water Intake	10/7/2013	1,515,672	49,041	1,466,630
	2050-15	5000	Washburn	New Raw Water Intake	10/7/2013	2,281,927	140,716	2,141,211
	2050-18	5000	Grafton	Water Treatment Plant Phase 3	10/7/2013	48,822	48,822	(0)
	2050-20	5000	Dickinson	Capital Infrastructure	10/6/2015	1,793,507	0	1,793,507
	2050-21	5000	Watford City	Capital Infrastructure	8/1/2015	536,627	1,617	535,010
	2050-26	5000	Fargo	Fargo Water System Regionalization Improvements	7/29/2015	4,131,788	1,035,934	3,095,854
	2050-28	5000	Mandan	Water Systems Improvement Project	10/6/2015	2,005,765	1,403,327	602,437
	2050-29	5000	Minot	Water Systems Improvement Project	10/6/2015	3,478,647	1,982,043	1,496,604
	2050-30	5000	Watford City	Water Systems Improvement Project	10/6/2015	5,374,639	248	5,374,391
	2050-31	5000	West Fargo	Water Systems Improvement Project	10/6/2015	1,086,602	392,388	694,214
	2050-32	5000	Williston	Water Systems Improvement Project	10/6/2015	7,857,010	0	7,857,010
	2050-36	5000	Dickinson	Water Systems Improvement Project	10/6/2015	674,881	0	674,881
	2050-37	5000	Dickinson	Dickinson State Avenue South Water Main	12/11/2015	963,920	0	963,920
	2050-44	5000	Beulah	Water Treatment Plant	3/9/2016	1,639,813	1,180,768	459,045
	2050-49	5000	Grand Forks	Grand Forks Water Treatment Plant	8/23/2017	50,645,520	8,428,342	42,217,178
	2050-51	5000	Mercer	Connect to McLean-Sheridan	8/23/2017	166,950	0	166,950
	2050-52	5000	New Town	Water Transmission Storage	8/23/2017	1,040,000	0	1,040,000
	2050-53	5000	West Fargo	Brooks Harbor Water Tower	8/23/2017	1,950,000	0	1,950,000
	2050-54	5000	West Fargo	North Loop Connection	8/23/2017	510,000	0	510,000
	2050-55	5000	West Fargo	West Loop Connection	8/23/2017	1,110,000	0	1,110,000
	2050-56	5000	Williston	US Highway 2 Water Main	8/23/2017	434,400	419,029	15,371
	2050-66	5000	Lincoln	Lincoln Water System Improvement Project	2/8/2018	1,130,000	0	1,130,000
	2050-67	5000	Williston	Williston Water System Improvements	2/8/2018	2,336,000	0	2,336,000
	2050-69	5000	Mandan	Sunset Reservoir Water Transmission Line	4/12/2018	3,135,000	0	3,135,000
	2050-70	5000	Wing	Water Tower Repair	4/12/2018	72,000	0	72,000
				TOTAL MUNICIPAL WATER SUPPLY		***95,919,488***	***15,082,275***	***80,837,213***
			Regional Water Supply:					
	1736-05	8000	SWPP	Southwest Pipeline Project	7/1/2017	44,988,408	18,580,415	26,407,993
	2374	9000	NAWS	Northwest Area Water Supply	2/8/2018	22,508,462	1,390,279	21,118,183
HB 1020	1973-02	5000	WAWSA	WAWSA	9/15/2014	155,603	155,603	(0)
	1973-05	5000	WAWSA	WAWSA	10/6/2015	8,888,823	4,946,499	3,942,324
	1973-06	5000	WAWSA	WAWSA	12/8/2017	20,000,000	2,903,534	17,096,466
	325-105	5000	RRVWSP	RRVWSP Garrison Diversion	8/23/2017	17,000,000	4,000,000	13,000,000
				TOTAL REGIONAL WATER SUPPLY		***113,541,296***	***31,976,331***	***81,564,966***
			Rural Water Supply:					
	2050-17	5000	Barnes Rural RWD	Improvements	3/11/2015	1,096,634	1,063,438	33,196
	2050-23	5000	Greater Ramsey WRD	SW Nelson County Expansion	8/23/2017	1,364,794	414,096	950,698
	2050-25	5000	All Seasons Water District	Bottineau County Extension, Phase I	7/29/2015	299,358	0	299,358
	2050-33	5000	Stutsman RWD	Phase V Storage & Pipeline Expansion Project	10/6/2015	1,172,760	497,149	675,611
	2050-34	5000	North Prairie RWD	Storage and Water Main	10/6/2015	1,968,086	702,825	1,265,261
	2050-35	5000	Southeast Water Users Dist	System Wide Expansion Feasibility Study	8/23/2017	13,159,145	3,817,780	9,341,365
	2050-38	5000	Dakota Rural Water District	Reservoir C Expansion	12/11/2015	90,841	17,366	73,475
	2050-41	5000	Northeast Regional WD	City of Devils Lake Water Supply Project	12/11/2015	12,789,020	10,361,443	2,427,577
	2050-42	5000	Walsh RWD	Phase 1 & 2 System Expansion	12/11/2015	1,639,753	845,775	793,978
	2050-43	5000	All Seasons Water District	System 4 Connection to System 1	12/11/2015	4,900,000	0	4,900,000
	2050-45	5000	Garrison Rural Water District	System Expansion Project	3/9/2016	1,731,110	1,362,787	368,323
	2050-50	5000	Grand Forks Traill RWD	Eastern Expansion & TRWD Interconnect Fesibility	8/23/2017	126,000	109,430	16,570
	2373-39	5000	North Central Rural Water Consortium	Carpio Berthold Phase 2	4/1/2015	2,425,167	594,461	1,830,706
	2373-41	5000	North Central Rural Water Consortium	Granville-Deering Area	10/24/2016	1,831,540	977,152	854,389
	2050-57	5000	North Central Regional Water District	Mountrail Expansion Phase II	8/23/2017	3,086,000	3,063	3,082,938
	2050-58	5000	North Central Regional Water District	Mountrail Co. Watery Phase III	8/23/2017	3,430,000	0	3,430,000
	2050-59	5000	Cass Rural Water District	Horace Storage Tank	8/23/2017	91,000	0	91,000
	2050-60	5000	North Prairie Rural District	Reservoir 9 Water Supply	8/23/2017	26,950	0	26,950
	2050-61	5000	North Prairie Rural District	Surrey/Silver Spring	8/23/2017	5,950	0	5,950
	2050-62	5000	Traill Rural District	Expansion/Interconnect	8/23/2017	150,880	121,869	29,011
	2050-63	5000	Walsh RWD	System Expansion Project	8/23/2017	57,375	41,475	15,900
	2050-64	5000	McLean-Sheridan Water District	Turtle Lake Water Tower	12/8/2017	107,450	0	107,450
	2050-65	5000	Tri-County Rural Water District	System Expansion Project	12/8/2017	103,250	0	103,250
	2050-71	5000	East Central RWD	Grand Forks/Traill Project	4/12/2018	5,345,000	0	5,345,000
	2050-72	5000	Stutsman RWD	Phase 6 Pettibone Project	4/12/2018	2,100,000	0	2,100,000
	2050-73	5000	Walsh RWD	System Expansion Project	4/12/2018	1,242,625	0	1,242,625
				TOTAL RURAL WATER SUPPLY		***60,340,688***	***20,930,107***	***39,410,580***
				TOTAL		***269,801,472***	***67,988,713***	***201,812,759***

SWC Board Approved to Continue

STATE WATER COMMISSION
PROJECT SUMMARY
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FLOOD CONTROL

Approved By	SWC No	Dept	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Apr-18* Balance
			Flood Control:					
SB 2020	1928-01	5000	Fargo	Fargo Flood Control Project	4/19/2016	20,001,131	18,194,958	1,806,173
SB 2020	1928-05	5000	Fargo Metro Flood Diversion	Fargo Metro Flood Diversion Authority 2015-2017	7/6/2016	58,374,956	0	58,374,956
	1771-01	5000	Grafton	Grafton Flood Control Project	10/12/2016	32,175,000	2,788,765	29,386,235
	1974-06	5000	Souris River Joint WRD	Development of 2011 Flood Inundation Maps	12/18/2015	1,522	0	1,522
	1974-09	5000	Souris River Joint WRD	Mouse River Flood Control Design Engineering	8/8/2016	96,696	96,696	(0)
	1974-11	5000	Souris River Joint WRD	Funding of 214 agreement between SRJB & USACE	12/5/2014	31,500	0	31,500
	1974-14	5000	Souris River Joint WRD	StARR Program (Structure Acquisition, Relocation, or Ring Dike)	3/9/2016	5,895,975	1,565,582	4,330,393
	1974-15	5000	Souris River Joint WRD	Perkett Ditch Improvements	12/2/2016	404,593	242,952	161,641
	1974-16	5000	Souris River Joint WRD	Corps of Engineers Feasibility Study MREFPP	12/9/2016	355,546	168,340	187,206
	1974-18	5000	Souris River Joint WRD	Rural Reaches, Preliminary Engineering	10/12/2016	236,941	9,211	227,730
	1974-19	5000	Souris River Joint WRD	4th Avenue Tieback Levee & Burlington Levee - Design Engineerng	10/12/2016	2,463,340	1,237,206	1,226,134
	1974-20	5000	Souris River Joint WRD	Utility Relocations	10/12/2016	422,034	11,289	410,745
	1974-21	5000	Souris River Joint WRD	Highway 83 Bypass & Bridge Replacement	10/12/2016	1,983,623	476,406	1,507,217
	1974-22	5000	Souris River Joint WRD	Broadway Pump Station Phases MI-1	3/29/2017	35,271,200	135,484	35,135,716
	1974-23	5000	Souris River Joint WRD	Peterson Coulee Outlet	3/29/2017	1,427,022	0	1,427,022
	1974-25	5000	Souris River Joint WRD	Flood Specific Emergency Action Plan for Ward Co.	7/20/2017	52,000	0	52,000
	1974-26	5000	Souris River Joint WRD	Phases MI-2, MI-3 Construction	8/23/2017	29,348,843	138,694	29,210,149
	1974-27	5000	Souris River Joint WRD	Corps of Engineers Section 408 Review Through Section 2145	8/23/2017	74,750	74,750	0
	1974	5000	Souris River Joint WRD	Phases MI-2, MI-3 Reallocation	4/12/2018	11,042,691	0	11,042,691
	2122-01	5000	US Army Corps of Engineers	Development of Comprehensive Plan for Souris Basin	9/5/2017	250,000	50,000	200,000
	1344-04	5000	Valley City	Sheyenne River Valley Flood Control Project PHII	8/29/2016	58,414	38,278	20,136
	1504-01	5000	Valley City	Permanent Flood Protection Project	5/1/2015	477,445	403,883	73,562
	1504-03	5000	Valley City	Permanent Flood Protection PH III	12/9/2016	13,157,600	1,735,323	11,422,277
	1504-06	5000	Valley City	Permanent Flood Protection PH III & PH V	12/8/2017	914,175	0	914,175
SB 2371	1344-02	5000	Lisbon	Sheyenne River Valley Flood Control Project	8/8/2016	1,000,582	827,590	172,992
	1991-01	5000	Lisbon	Permanent Flood Protection Project	5/29/2014	146,969	0	146,969
	1991-03	5000	Lisbon	Permanent Flood Protection - Levee C Project	3/11/2015	377,799	6,989	370,810
	1991-06	5000	Lisbon	Permanent Flood Protection - Levee E Project	3/9/2016	84,125	52,000	32,125
	1991-08	5000	Lisbon	Permanent Flood Protection - Levee D Project	4/12/2018	2,886,535	2,340,753	545,782
	1991-10	5000	Lisbon	Permanent Flood Protection - Levee F Project	4/12/2018	4,504,000	0	4,504,000
	2079-01	5000	Williston	West Williston Flood Control	12/9/2016	3,655,517	807,820	2,847,697
				Subtotal Flood Control		***227,172,523***	***31,402,970***	***195,769,553***
			Floodway Property Acquisitions:					
	1993-05	5000	Minot	Minot Phase 2 - Floodway Acquisitions	4/12/2018	11,258,529	7,943,229	3,315,300
SB 2371	1523-05	5000	Ward County/Minot	Ward County Phase 1, 2 & 3 - Floodway Acquisitions	1/27/2012	6,015,347	3,313,344	2,702,003
SB 2371	1504-05	5000	Valley City	Valley City Phase 1 - Floodway Acquisitions	12/8/2017	3,406,947	1,640,350	1,766,597
SB 2371	2000-05	5000	Sawyer	Sawyer Phase 1 - Floodway Acquisitions	6/13/2012	135,844	0	135,844
	1991-05	5000	Lisbon	Lisbon - Floodway Acquisition	12/9/2016	603,300	194,780	408,520
	1987-05	5000	Burlington	Mouse River Enhanced Flood Plan Property Acquistion	5/10/2017	2,166	0	2,166
				Subtotal Floodway Property Acquisitions		***21,422,133***	***13,091,702***	***8,330,431***
				TOTAL FLOOD CONTROL		***248,594,656***	***44,494,673***	***204,099,983***
			Revolving Loan Fund:					
			(General Water)					
	2077	1050	Valley City	Valley City Flood Protection - Phase II Construction (LOAN)	12/9/2016	3,289,400	0	3,289,400
	2077-15	1050	Valley City	Valley City Pre Design & Eng & Phase III Buyouts (LOAN)	12/9/2016	1,392,500	1,392,500	0
	2077-14	1050	Lisbon	Permanent Flood Control	8/23/2017	900,000	900,000	0
			(Water Supply)					
	2077-13	1050	North Central Rural Water Consortium II	Carpio Berhold Phase 2 (LOAN)	10/12/2016	215,000	215,000	0
	2077-12	1050	North Central Rural Water Consortium	Granville-Surrey-Deering Water Supply Project (LOAN)	10/12/2016	139,000	139,000	0
				REVOLVING LOAN TOTAL		***5,935,900***	***2,646,500***	***3,289,400***
				TOTAL		***254,530,556***	***47,141,173***	***207,389,383***

SWC Board Approved to Continue

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 Biennium
Resources Trust Fund

WATER CONVEYANCE

Approved By	SWC No	Dept	Approved Biennum	Sponsor	Project	Approved Date	Total Approved	Total Payments	Apr-18 Balance
				Drain & Channel Improvement Projects:					
SWC	1056	5000	2015-17	Bottineau Co. WRD	Tacoma Bitz Legal Drain	7/6/2016	210,572	49,978	160,594
SE	1056	2000	2015-17	Bottineau Co. WRD	Stead Legal Drain	2/16/2017	14,738	7,369	7,369
SWC	1064	5000	2013-15	Rush River WRD	Cass County Drain No. 2 Channel Improvements Proj	3/11/2015	41,683	0	41,683
SWC	1070	5000	2015-17	Maple River WRD	Drain #14 Channel Improvements	3/29/2017	741,562	0	741,562
SWC	1071	5000	2015-17	Maple River WRD	Cass County Drain #15 Channel Improvements	3/9/2016	282,561	179,516	103,045
SWC	1088	5000	2015-17	Maple River WRD	Cass Drain #37 Channel Improvements	3/9/2016	215,157	77,902	137,255
SWC	1089	5000	2015-17	Maple River WRD	Cass County Drain #39 Channel Improvements	3/9/2016	210,568	89,616	120,952
SE	1180	5000	2015-17	Richland Co WRD	Legal Drain No. 7 Channel Improvements	5/11/2017	24,926	0	24,926
SWC	1101	5000	2011-13	Dickey Co. WRD	Yorktown-Maple Drainage Improvement Dist No. 3	11/1/2017	798,562	0	798,562
SE	1140	5000	2015-17	Pembina Co. WRD	Drain 11 Outlet Extension Cost Overrun Project	7/7/2015	5,088	0	5,088
SWC	1176	5000	2015-17	Richland Co. WRD	Legal Drain #2 Reconstruction/Extension Project	3/9/2016	224,231	28,549	195,682
SWC	1222	5000	2015-17	Sargent Co WRD	Drain No 11 Channel Improvements	10/12/2016	1,378,376	0	1,378,376
SWC	1227	5000	2011-13	Traill Co. WRD	Mergenthal Drain No. 5 Reconstruction	9/15/2014	12,225	0	12,225
SWC	1231	5000	2015-17	Traill Co. WRD	Carson Drain No. 10 Channel Improvements	10/12/2016	141,322	102,966	38,356
SWC	1236	5000	2015-17	Traill Co. WRD	Murray Drain No. 17 Channel Improvements	10/12/2016	127,759	45,812	81,947
SWC	1311	5000	2015-17	Traill Co. WRD	Buxton Township Improvement District No. 68	3/9/2016	110,418	61,348	49,070
SWC	1314	5000	2015-17	Wells Co. WRD	Hurdsfield Legal Drain	3/29/2017	644,292	0	644,292
SE	1328	5000	2015-17	North Cass Co. WRD	Drain No. 23 Channel Improv Preliminary Engineering	9/30/2015	921	0	921
SWC	1328	5000	2015-17	North Cass Co. WRD	Drain #23 Channel Improvements	3/9/2016	81,612	53,103	28,509
SWC	1331	5000	2015-17	Richland Co WRD	Drain #14 Reconstruction	12/9/2016	252,738	138,492	114,246
SWC	1486	5000	2015-17	Griggs Co. WRD	Thompson Bridge Outlet No. 4 Project	10/6/2015	621,661	0	621,661
SWC	1520	5000	2015-17	Walsh Co. WRD	Walsh County Drain 30-1	3/29/2017	282,307	175,455	106,852
SWC	2087	5000	2015-17	Walsh Co. WRD	Drain #87/McLeod Drain	3/29/2017	5,273,586	91,217	5,182,369
SWC	1951	5000	2015-17	Maple River WRD	Lynchburg Channel Improvements	7/6/2016	1,131,338	0	1,131,338
SWC	1951	5000	2015-17	Maple River WRD	Lynchburg Channel Improvements	7/6/2016	23,412	0	23,412
SWC	1975	5000	2015-17	Walsh Co. WRD	Drain 31-1	10/12/2016	111,543	78,964	32,579
SE	1978	5000	2015-17	Richland-Sargent Joint WRD	RS Legal Dam #1 - Pre-Construction Engineering	10/24/2016	13,680	0	13,680
SWC	1978	5000	2015-17	Richland-Sargent Joint WRD	RS Legal Drain #1 Extension & Channel Improvement	3/29/2017	378,000	0	378,000
SWC	1990	5000	2011-13	Mercer Co. WRD	Lake Shore Estates High Flow Diversion Project	3/7/2012	43,821	0	43,821
SE	2016	5000	2015-17	Pembina Co. WRD	Establishment of Pembina County Drain No. 80	4/10/2017	74,965	0	74,965
SWC	2049	5000	2015-17	Grand Forks Co. WRD	Grand Forks Legal Drain No. 58	3/29/2017	1,481,850	0	1,481,850
SWC	2062	5000	2015-17	Traill Co. WRD	Traill Co. Drain #64	7/6/2016	19,549	13,729	5,820
SWC	2068	5000	2015-17	Traill Co. WRD	Stavanger-Belmont Drain No. 52 Channel Impr	10/12/2016	414,652	271,004	143,648
SWC	2080	5000	2015-17	Walsh Co. WRD	Sam Berg Coulee Drain	10/12/2016	182,775	82,374	100,401
SWC	2081	5000	2015-17	Walsh Co. WRD	Drain #70	10/12/2016	562,429	470,656	91,773
SWC	2088	5000	2015-17	Pembina Co. WRD	Drain No. 79	12/9/2016	875,428	0	875,428
SWC	2108	5000	2015-17	Walsh Co. WRD	Walsh Co Drain #22	6/22/2017	266,086	24,906	241,180
SE	2112	5000	2017-19	Pembina Co. WRD	Pembina Co Drain #81	7/30/2017	56,000	0	56,000
SE	2093/1427	5000	2015-17	Bottineau Co. WRD	Moen Legal Drain	9/6/2016	18,542	0	18,542
				Snagging & Clearing Projects:					
SWC	568	5000	2015-17	Southeast Cass WRD	Sheyenne River Snagging & Clearing Reaches I,II,III	12/9/2016	150,073	0	150,073
SE	662	5000	2015-17	Walsh Co. WRD	Park River Snagging & Clearing	2/17/2017	51,435	8,850	42,585
SE	1287	5000	2013-15	McHenry Co. WRD	Souris River Snagging & Clearing Project	2/3/2015	10,500	0	10,500
SE	1934	5000	2015-17	Traill Co. WRD	Elm River Snagging & Clearing	6/21/2017	47,500	0	47,500
SE	2095	5000	2015-17	Nelson Co WRD	Sheyenne River Snagging & Clearing	4/10/2017	19,700	0	19,700
SE	2110	5000	2015-17	Ward Co. WRD	Meadowbrook Snagging & Clearing	6/21/2017	33,000	0	33,000
					TOTAL		17,663,143	2,051,807	15,611,336
					SWC Board Approved to Continue				

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 Biennium
Resources Trust Fund

GENERAL PROJECTS

Approved By	SWC No	Dept	Approved Biennum	Sponsor	Project	Approved Date	Total Approved	Total Payments	Apr-18 Balance
				Hydrologic Investigations:					
SE	1400	3000	2015-17	Fireside Office Solutions	Document Conversion (Water Permit Scanning)	3/28/2018	21,125	19,330	1,795
SE	989	3000	2017-19	ND Dept of Health	Water Sampling Testing	9/25/2017	52,750	52,750	0
SWC	2041	3000	2017-19	USGS	Stream Gage Joint Funding Agreement	12/8/2017	553,790	276,895	276,895
					Subtotal Hydrologic Investigations		***627,665***	***348,975***	***278,690***
				Devils Lake Basin Development:					
SWC	416-10	4700	2015-17	Operations	Devils Lake Outlet Operations	3/9/2016	10,027,973	2,687,343	7,340,629
SE	416-01	5000	2017-19	Devils Lake Basin Joint WRB	Board Manager	6/14/2017	60,000	0	60,000
					Subtotal Devils Lake Basin Development		***10,087,973***	***2,687,343***	***7,400,629***
				General Water Management:					
SE	274	5000	2015-17	City of Neche	Neche Levee Certification Project	3/21/2016	54,000	0	54,000
SWC	346	5000	2015-17	Williams County WRD	Epping Dam Spillway Reconstruction	3/29/2017	19,499	0	19,499
SE	390	5000	2015-17	Logan County WRD	Beaver Lake Dam Rehabilitation Feasibility Study	6/8/2016	16,076	0	16,076
SE	394	5000	2015-17	Golden Valley Co WRD	Odland Dam Rehabilitiation Feasibility Study	10/13/2016	13,220	11,418	1,802
SE	420	5000	2015-17	Hettinger Park Board	Mirror Lake Dam Emergency Action Plan	12/2/2016	24,400	12,827	11,573
SE	460	5000	2015-17	Griggs Co. WRD	Ueland Dam Rehabilitation Feasibility Study	5/20/2016	17,500	0	17,500
SE	477	5000	2015-17	Valley City	Mill Dam Rehabilitation Feasibilty Study	6/8/2016	15,073	0	15,073
SE	494	5000	2017=19	Nelson Co. WRD	McVille Dam Emergency Action Plan	5/3/2018	10,000	0	10,000
SE	512	5000	2015-17	Emmons County WRD	Nieuwsma Dam Emergency Action Plan	11/28/2016	7,532	812	6,720
SE	531	5000	2015-17	Benson Co WRD	Bouret Dam Rehabilitiation Feasibilitly Study	10/11/2016	12,118	0	12,118
SWC	551	5000	2015-17	McHenry Co. WRD	Buffalo Lodge Lake Outlet	6/22/2017	134,915	61,054	73,861
SE	561	5000	2015-17	City of Tioga	Tioga Dam EAP	5/20/2016	40,000	0	40,000
SE	667	5000	2017-19	Burke Co WRD	Northgate Dam 2 Emergency Action Plan	9/5/2017	26,396	0	26,396
SE	841	5000	2013-15	Maple River WRD	Garsteig Dam Repair Project	1/26/2015	18,661	0	18,661
SE	848	5000	2015-17	Sargent Co WRD	Tewaukon WS-T-1-A (Brummond-Lubke) Dam EAP	12/18/2015	12,016	0	12,016
SE	848	5000	2015-17	Sargent Co WRD	Tewaukon WS-T-7 (Nelson) Dam EAP	12/18/2015	12,180	0	12,180
SE	849	5000	2015-17	Pembina Co. WRD	Renwick Dam Emergency Action Plan	9/29/2015	2,212	0	2,212
SWC	980	5000	2015-17	Cass Co. Joint WRD	Rush River Watershed Detention Study	1/7/2016	127,697	6,019	121,678
SWC	980	5000	2013-15	Cass Co. Joint WRD	Swan Creek Watershed Detention Study PHII	3/11/2015	122,666	0	122,666
SWC	980	5000	2015-17	Cass Co. Joint WRD	Upper Maple River Watershed Detention Study	1/11/2016	128,039	9,967	118,072
SE	1059	5000	2017-19	Bottineau Co WRD	Baumann Legal Drain	3/7/2018	41,427	0	41,427
SE	1264	5000	2013-15	Barnes Co WRD	Little Dam Repurposing Feasibility Study	6/17/2015	12,385	0	12,385
SE	1270	5000	2015-17	City of Wilton	Wilton Pond Dredging Recreation Project	12/29/2015	35,707	0	35,707
SWC	1273	5000	2015-17	City of Oakes	James River Bank Stabilization	12/11/2015	262,500	67,457	195,043
SE	1289	5000	2015-17	McKenzie Co. Weed Board	Control of Noxious Weeds on Sovereign Land	4/10/2017	44,010	11,378	32,632
SWC	1301	5000	2015-17	Richland Co. WRD	North Branch Antelope Creek NRCS Small Watershec	3/9/2016	113,400	4,790	108,610
SE	1303	5000	2013-15	Sargent Co WRD	Gwinner Dam Improvement Feasibility Study Program	4/17/2015	20,181	0	20,181
SWC	1303	5000	2015-17	Sargent Co WRD	Shortfoot Creek Watershed Planning Program	3/9/2016	109,047	0	109,047
SE	1303	5000	2015-17	Sargent Co WRD	Gwinner Dam Breach Project	3/21/2018	44,364	31,125	13,239
SE	1334	5000	2017-19	Traill Co WRD	Norway Drain No. 38	3/28/2018	61,917	0	61,917
SWC	1389	5000	2013-15	Bank of ND	BND AgPace Program	12/13/2013	170,365	60,000	110,365
SE	1396	5000	2017-19	USGS	Water Level Monitoring of Missouri River	9/7/2017	15,000	0	15,000
SWC	1401	5000	2015-17	Pembina Co. WRD	International Boundary Roadway Dike Pembina	7/20/2017	294,528	27,974	266,554
SE	1418	5000	2015-17	City of Bisbee	Big coulee Dam EAP	5/10/2017	11,320	0	11,320
SE	1444	5000	2015-17	City of Pembina	Flood Protection System Certification	4/19/2016	1,657	0	1,657
SE	1453	5000	2015-17	Hettinger County WRD	Karey Dam Rehabilitation Feasibility Study	5/23/2016	6,853	0	6,853
SE	1625	5000	2015-17	Carlson McCain, Inc.	Ordinary High Water Mark Delineations Left Bank of M	12/2/2016	2,000	0	2,000
SWC	1651-01	5000	2015-17	ND State Water Commission	Drought Disaster Livestock Water Supply Assistance	2/8/2018	2,025,000	941,943	1,083,057
SWC	1859	5000	2017-19	ND Dept of Health	NPS Pollution	8/23/2017	200,000	0	200,000
SWC	1932	5000	2015-17	Nelson Co. WRD	Michigan Spillway Rural Flood Assessment	3/9/2016	67,903	25,850	42,053
SWC	1968	5000	2015-17	Garrison Diversion	MM 15 Irrigation Project	3/29/2017	321,781	226,424	95,357
SWC	1968	5000	2015-17	Garrison Diversion	MM 42L Irrigation Project	8/23/2017	937,207	0	937,207
SWC	1991	5000	2013-15	City of Lisbon	Sheyenne Riverbank Stabilization Project	9/15/2014	47,768	0	47,768
SWC	2008	5000	2013-15	City of Mapleton	Recertification of Flood Control Levee System Project	4/12/2018	314,770	0	314,770
SE	2111	5000	2017-19	Maple River WRD	Davenport Flood Risk Reduction	7/20/2017	35,000	0	35,000
SWC	2050-68	5000	2017-19	Valley City	Valley City Membrane Replacement Project	2/8/2018	586,350	0	586,350
SE	2055	5000	2015-17	Red River Joint Water Resoun	Lower Red Basin Regional Detention Study	7/17/2015	45,500	0	45,500
SWC	2059	5000	2015-17	Park River Joint WRD	North Branch Park River NRCS Watershed Study	10/6/2015	81,200	0	81,200
SWC	2060	5000	2015-17	Walsh Co. WRD	Forest River Watershed Study	4/10/2017	154,012	0	154,012
SWC	2065	5000	2015-17	Cass Co. Joint WRD	Lake Bertha Flood Control Project No. 75	3/9/2016	201,350	39,040	162,310
SWC	2066	5000	2015-17	Southeast Cass WRD	Sheyenne-Maple Flood Control Dist #1 Mitigation Impr	3/9/2016	169,201	0	169,201
SE	2070	5000	2015-17	Garrision Diversion Conservan	Mile Marker 42 Irrigation Project	5/20/2016	29,741	0	29,741
SE	2071	5000	2015-17	Foster County WRD	Alkali Lake High Water Feasibilitly Study	4/19/2016	4,830	0	4,830
SE	2072	5000	2015-17	Barnes Co WRD	Ten Mile Lake Flood Risk Reduction Project	6/8/2016	36,812	0	36,812
SWC	2073	5000	2015-17	Walsh Co. WRD	Oslo Area Ag Levee Feasibility Study	7/6/2016	71,701	65,992	5,709
SWC	2074	5000	2015-17	City of Wahpeton	Flood Control - Levee Certification	7/6/2016	247,500	0	247,500
SWC	2074	5000	2015-17	City of Wahpeton	Breakout Easements	7/6/2016	265,000	0	265,000
SWC	2075	5000	2015-17	Ward Co. WRD	Second Larson Coulee Detention Pond	7/6/2016	602,307	0	602,307
SE	2076	5000	2015-17	Elm River Joint WRD	Elm River Dam #1 Modification Study	7/6/2016	9,503	0	9,503
SWC	2083	5000	2015-17	Pembina Co. WRD	Herzog Dam Gate & Catwalk Retrofit - Construction	10/12/2016	114,632	0	114,632
SE	2085	5000	2015-17	Adams Co WRD	Orange Dam Rehabilitation Feasibility Study	10/13/2016	10,770	1,930	8,840
SE	2089	5000	2015-17	Maple River WRD	Tower Township Improvement District No. 77 Study	12/19/2016	28,175	11,717	16,458
SE	2090	5000	2015-17	International Water Institute	River Watch Program	1/12/2017	24,150	6,603	17,547
SWC	2096	5000	2015-17	Southeast Cass WRD	Sheyenne-Maple Flood Control Dist #2 Improvements	3/29/2017	1,035,358	0	1,035,358
SE	2099	5000	2017-19	City of Hunter	Hunter Dam Emergency Action Plant	2/22/2018	46,108	0	46,108
SWC	2107	5000	2015-17	City of Minot	Levee Repair & Bank Stabilization Project	6/22/2017	950,254	0	950,254
SE	2109	5000	2017-19	Logan County WRD	McKenna Lake Feasibility Study	6/21/2017	2,247	0	2,247
HB1020	2114	5000	2017-19	HDR Engineering	Economic Analysis-Flood Control & Conveyance Proje	12/28/2017	74,093	60,921	13,172
HB1020	2119	5000	2017-19	HDR Engineering	Life Cycle Cost Analysis Guidelines & Process Develo	12/28/2017	59,263	47,660	11,602

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 Biennium
Resources Trust Fund

GENERAL PROJECTS

Apr-18

Approved By	SWC No	Dept	Approved Biennum	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
SE	1396-01	5000	2013-15	Trout, Raley, Montano, Witwer	Missouri River Recovery Program	11/17/2015	46,785	275	46,510
SE	1878-02	5000	2015-17	Maple-Steele Joint WRD	Upper Maple River Dam EAP	5/20/2016	12,800	0	12,800
SWC	849-01	5000	2015-17	Pembina Co. WRD	Tongue River NRCS Watershed Plan	3/9/2016	104,703	0	104,703
SE	AOC/IRA	5000	2017-19	ND Irrigation Association	Water Irrigation Funding	10/3/2017	50,000	50,000	0
SE	AOC/WRD	5000	2015-17	ND Water Resource Districts A	ND Water Managers Handbook	6/21/2017	24,750	15,876	8,874
SE	AOC/WEF	5000	2017-19	ND Water Education Foundatic	ND Water Magazine	8/2/2017	26,000	6,500	19,500
SWC	AOC/RRC	5000	2017-19	Red River Basin Commission	Red River Basin Commission Contractor	6/22/2017	200,000	50,000	150,000
SWC	AOC/ASS	5000	2017-19	Assiniboine River Basin Inititial	ARBI's Outreach Efforts	6/22/2017	100,000	25,000	75,000
SE	PS/WRD/UPP	5000	2017-19	Upper Sheyenne River Joint W	USRJWB Operational Costs	6/20/2017	6,000	1,082	4,918
SE	AOC/MIS	5000	2017-19	Missouri River Advisory Counc	MRAC Startup Funding	8/3/2017	2,000	0	2,000
SE	PS/WRD/MRJ	5000	2017-19	Missouri River Joint WRB	MRRIC Terry Fleck	6/7/2017	45,000	0	45,000
SE	PS/WRD/MRJ	5000	2017-19	Missouri River Joint WRB	Board Operational Costs	6/7/2017	10,000	0	10,000
SE	PS/WRD/LOW	5000	2015-17	Lower Heart WRD	Lower Heart Flood Contral Study	5/10/2017	21,140	0	21,140
					Subtotal General Projects		*11,509,523*	*1,881,633*	*9,627,891*
					TOTAL		22,225,161	4,917,951	17,307,210
					SWC Board Approved to Continue				

STATE WATER COMMISSION
PROJECT SUMMARY
2017-2019 Biennium
Resources Trust Fund

COMPLETED GENERAL PROJECTS

Approved By	SWC No	Dept	Approved Biennum	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Apr-18* Balance
					Hydrologic Investigations:				
SE	1396	3000	2017-19	USGS	Maintain Gaging Station East of Lisbon Sheyenne River	9/25/2017	10,500	10,500	0
SWC	2041	3000	2015-17	USGS	Stream Gage Joint Funding Agreement	10/12/2016	136,028	136,028	0
					Subtotal Hydrologic Investigations		***146,528***	***146,528***	***0***
SWC	322	5000	2009-11	ND Water Education Fou	ND Water: A Century of Challenge	2/22/2010	36,800	35,000	1,800
SWC	347	5000	2009-11	City of Velva	City of Velva's Flood Control Levee System Certification	3/28/2011	32,497	32,497	0
SE	399	5000	2013-15	Barnes Co WRD	Kathryn Dam Feasibility Study	9/19/2014	12,742	7,061	5,681
SE	479	5000	2017-19	Morton Co Parks & Recre	Fish Creek Dam Rehabilitiation	10/4/2017	62,970	62,970	0
SWC	620	5000	2007-09	Lower Heart WRD	Mandan Flood Control Protective Works (Levee)	6/22/2017	15,000	14,855	145
SE	1296	5000	2013-15	Pembina Co. WRD	Balhgate-Hamilton & Carlisle Watershed Study	10/17/2013	6,726	6,726	0
SE	1403	5000	2017-19	NDSU	ND Water Resource Institute grant student stipends	1/9/2018	25,000	25,000	0
SWC	1523	5000	2015-17	Ward Co. WRD	Robinwood Bank Stabilization Project	10/6/2015	98,648	18,238	80,410
SWC	1638	5000	2009-11	Mutiple	Red River Basin Non-NRCS Rural/Farmstead Ring Dike Progr	6/23/2009	177,864	0	177,864
SWC	1705	5000	2011-13	Red River Joint Water Re	Red River Joint WRD Watershed Feasibility Study - Phase 2	9/21/2011	19,218	0	19,218
SE	1808	5000	2015-17	Steele Co WRD	Beaver Creek Dam Safety Inspection	5/23/2016	2,625	2,625	0
SWC	1968	5000	2013-15	Garrison Diversion	McClusky Canal Mile Marker 10 & 49 Irrigation Project	3/17/2014	51,614	0	51,614
SE	1974	5000	2015-17	USGS	Installation of 5 Rapid Deployment Gages in the Mouse River	3/23/2017	23,200	23,200	0
SE	1974	5000	2015-17	USGS	Regulated Streamflow Frequency for the Upper Souris River B	12/16/2016	12,367	12,367	0
HB1009	1986	5000	2017-19	ND Dept Agriculture	Wildlife Services 17-201	8/22/2017	125,000	125,000	0
SE	2058	5000	2015-17	City of Grafton	Grafton Debris Removal Plan	4/10/2017	8,177	8,170	7
SE	2069	5000	2015-17	Center Township	Wild Rice River Bank Stabilization	4/19/2016	954	954	0
SWC	2074	5000	2015-17	City of Wahpeton	Toe Drain & Encroachment Project	7/6/2016	1,125,482	1,125,482	0
SE	2078	5000	2017-19	Southeast Cass WRD	Raymond-Mapleton Township Imp Dist #76	7/20/2017	3,043	3,043	0
SE	2094	5000	2015-17	McLean Co WRD	Lower Buffalo Creek Flood Management Feasibility	6/7/2017	7,539	7,534	5
SE	2079-01	5000	2015-17	City of Williston	West Williston Flood Control	10/24/2016	39,900	39,900	0
SE	AOC/WEF/TO	5000	2017-19	ND Water Education Fou	Summer Water Tours	4/30/2018	2,500	2,500	0
SE	NDAWN	5000	2017-19	NDSU	NDAWN CENTER	3/13/2018	1,500	1,500	0
SWC	PS/WRD/ELM	5000	2013-15	Elm River Joint WRD	Dam #3 Safety Improvements Project	9/15/2014	5,672	0	5,672
					Subtotal General Projects		***1,897,038***	***1,554,622***	***342,416***
					TOTAL		2,043,566	1,701,150	342,416

North Dakota State Water Commission
Water Supply Funding 2017-2019

May 17, 2018

	Project	Funding
Funding Budget		**$120,125,000**
Obligated This Biennium	Grand Forks - Water Treatment Plant	$30,000,000
	Lake Agassiz Water Authority - Red River Valley Water Supply	$17,000,000
	Lincoln - Water Supply Main	$1,130,000
	Mandan - Sunset Reservoir Transmission Line	$3,135,000
	Mercer - McLean Sheridan Connection	$166,950
	Minot - Northwest Area Water Supply	$10,000,000
	New Town - Water Tower	$1,040,000
	State Water Commission - Southwest Pipeline Project	$6,300,000
	West Fargo - Brooks Harbor Water Tower	$1,950,000
	West Fargo - North Loop Connection	$510,000
	West Fargo - West Loop Connection	$1,110,000
	Western Area Water Supply - Phase 5	$20,000,000
	Williston - US Highway 2 Water Main	$434,400
	Williston - 9th Ave E Water Main	$246,000
	Williston - 18th St Water Main	$2,090,000
	Wing - Water Tower	$72,000
	Total Approved	**$95,184,350**
Remaining Balance		**$24,940,650**
Pending	Lake Agassiz Water Authority - Red River Valley Water Supply	$13,000,000
	State Water Commission - Southwest Pipeline Project	$10,700,000
		$0
	Total August	**$23,700,000**
Remaining Balance		**$1,240,650**

North Dakota State Water Commission
Rural Water Supply Funding 2017-2019

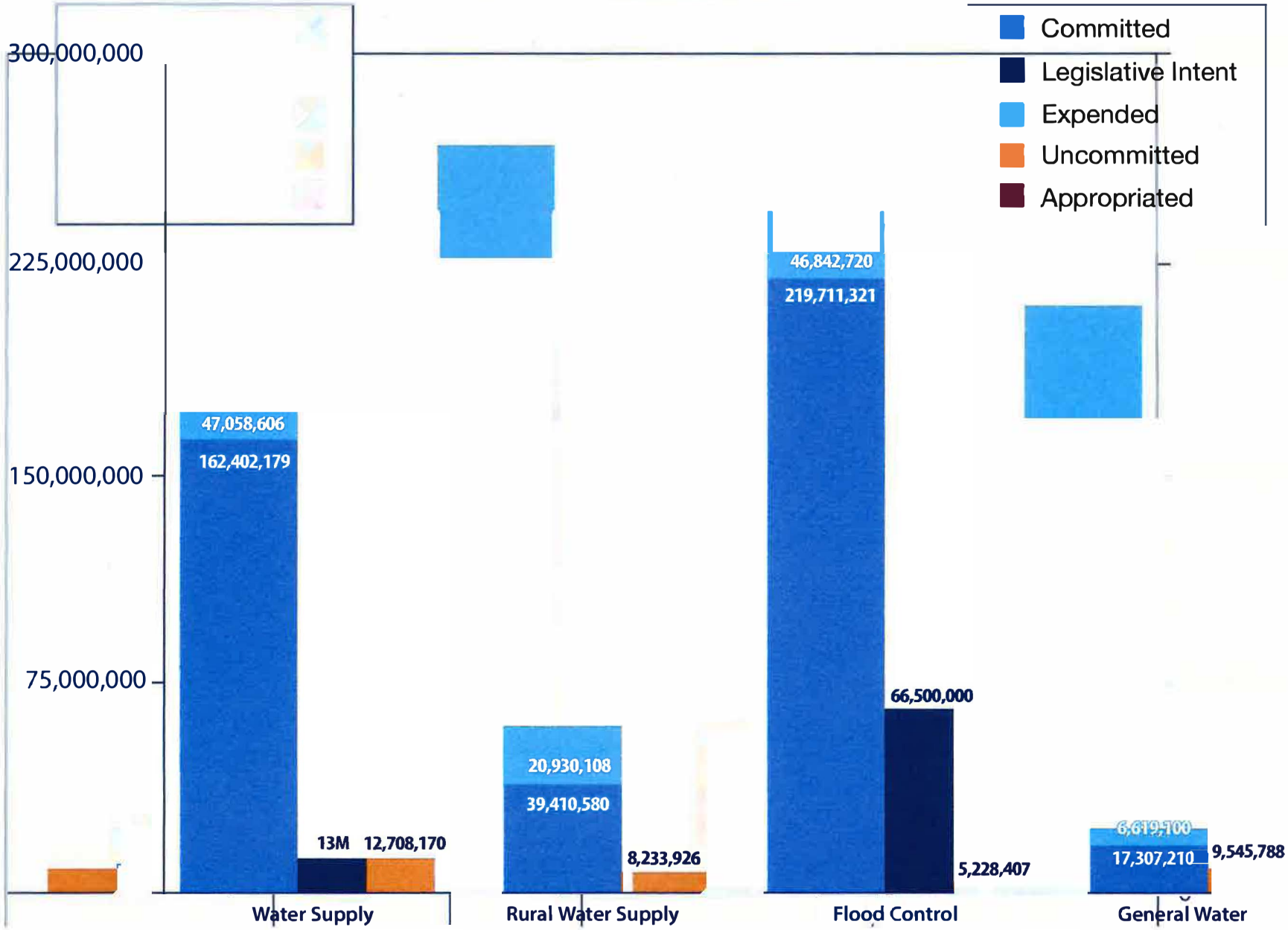
May 17, 2018

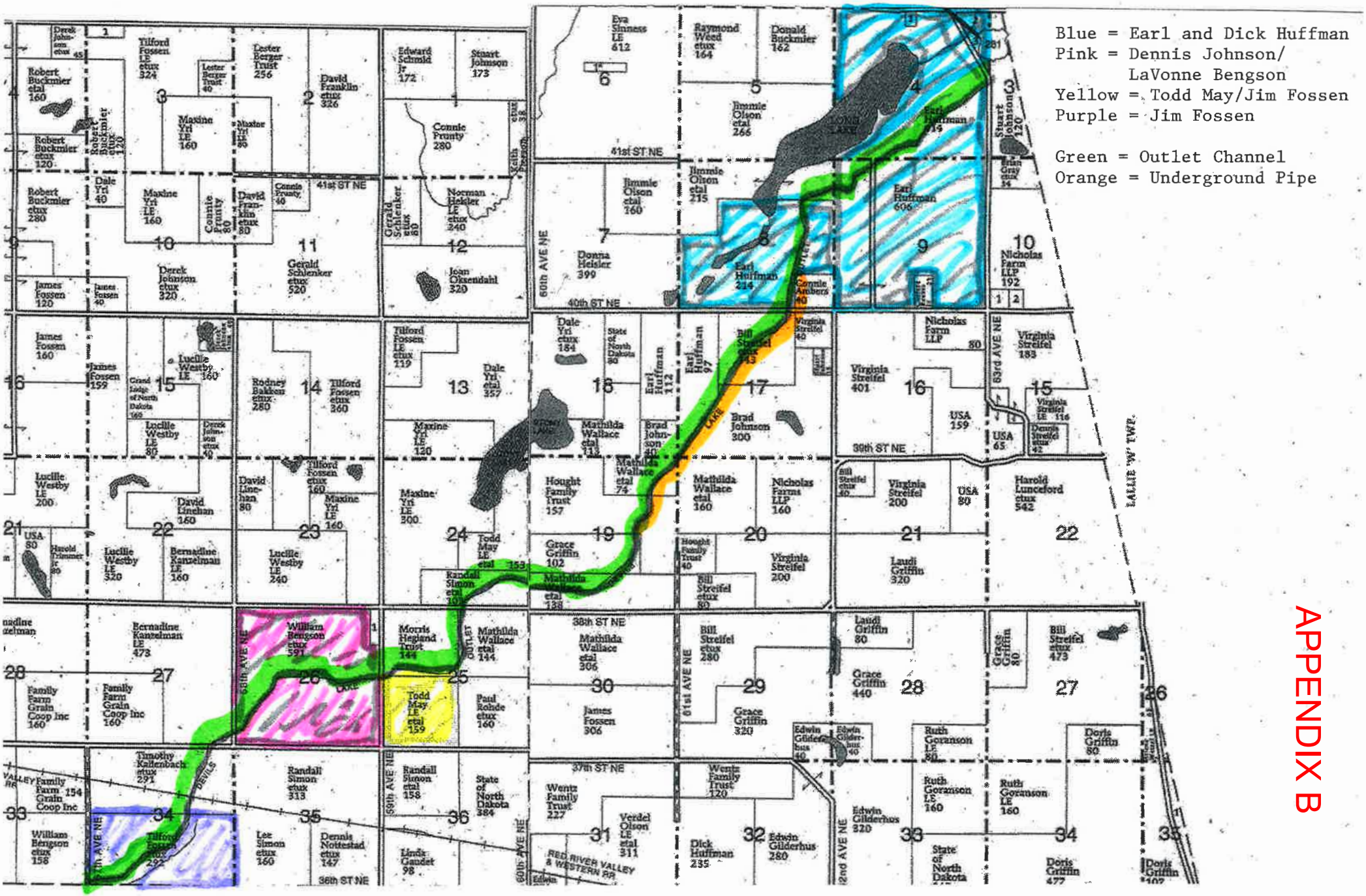
	Project	Funding
Funding Budget		**$27,000,000**
Obligated This Biennium	East Central Regional Water District - Grand Forks System	$4,150,000
	East Central Regional Water District - Traill System	$1,396,880
	Greater Ramsey Water District - Devils Lake Regionalization	$599,000
	North Prairie Rural Water District - Mountrail County	$6,516,000
	Southeast Water User District - Expansion System Wide	$2,749,000
	Stutsman Rural Water District - Phase 6 Pettibone	$2,100,000
	Walsh Rural Water District - System Improvements	$1,300,000
	North Prairie Rural Water District - Silver Spring Surrey	$5,950
	North Prairie Rural Water District - Reservoir 9	$91,000
	Cass Rural Water User District - Horace Tank	$26,950
	McLean-Sheridan Rural Water District - Turtle Lake Tower	$107,450
	Tri-County Rural Water District - McVille Connection	$103,250
	Total Approved	**$19,145,480**
Remaining Balance		**$7,854,520**
Planned for June 14	North Prairie Rural Water District - Silver Spring Surrey	$189,000
	North Prairie Rural Water District - Reservoir 9	$1,043,250
	Total June	**$1,232,250**
Remaining Balance		**$6,622,270**
Planned for August 9	Cass Rural Water User District - Horace Tank	$1,755,000
	McLean-Sheridan Rural Water District - Turtle Lake	$2,262,375
	Tri-County Rural Water District - McVille Connection	$2,665,750
	Total August	**$6,683,125**
Remaining Balance		**($60,855)**

Flood Control Bucket 2017-2019		
Bucket Total		**$136,000,000**
Obligated This Biennium	Mouse River Flood Control	$63,781,034
	Valley City Flood Control	$2,171,925
	Maple River WRD	$35,000
	Pembina Co. WRD	$56,000
	SE Cass WRD	$3,043
	Bottineau Co. WRD	$41,427
	Traill Co. WRD	$61,917
	Mapleton Re-Certification	$213,670
Remaining Balance		**$69,635,984**
Proposed for June Meeting	Mandan Flood Control	$480,000
Remaining Balance		**$69,155,984**
Planned Yet This Biennium	Fargo Flood Control	$66,500,000
	Valley City Flood Control	$1,500,000
Remaining Balance		**$1,155,984**
Unplanned Flood Control	Sheldon Subdivision Levee	$323,570
	Lake McKenna	$56,129
	City of Belfield	$35,000
	City of Minot SWIF	$756,211
Pending Conveyance	Various	$2,149,264

General Water Management Bucket 2017-2019		
Bucket Total		**$15,750,000**
Obligated This Biennium	Garrison Diversion Unit, Mile 42 Irrigation	$937,207
	Drought Disaster Livestock Water Supply	$500,000
	Drought Disaster Livestock Water Supply	$200,000
	Drought Disaster Livestock Water Supply	$500,000
	Valley City Water Treatment Plant	$586,350
	Morton County WRD, Fish Creek Dam	$56,000
	Burke County WRD, Northgate Dam EAP	$26,396
	USGS Cooperative Hydrologic Monitoring	$553,790
	Water Sampling and Testing	$52,750
	Missouri River Water Level Monitoring	$15,000
	HDR Engineering - Economic Analysis	$74,093
	HDR Engineering - Life Cycle Cost Analysis	$59,263
	ND Irrigation Association	$50,000
	ND WEF, Water Magazine	$26,000
	Missouri River Advisory Council	$2,000
	Sheyenne River Gage - East of Lisbon	$10,500
	Wildlife Services - ND Dept. of Agriculture	$125,000
Remaining Balance		**$11,975,651**
June Agenda	Lower Yellowstone Irrigation?	$700,000
Remaining Balance		**$11,275,651**
Planned Yet This Biennium	Devils Lake Outlet Operations	$5,000,000
	PMP Update	$500,000
Remaining Balance		**$5,775,651**
Other Requests	Barnes Co. WRD- Kathryn Dam	$1,006,100
	Painted Woods Creek	$426,000

PROJECT FUNDS




Blue = Earl and Dick Huffman
Pink = Dennis Johnson/
LaVonne Bengson
Yellow = Todd May/Jim Fossen
Purple = Jim Fossen
Green = Outlet Channel
Orange = Underground Pipe
41st ST NE
40th ST NE
39th ST NE
38th ST NE
37th ST NE
36th ST NE
60th AVE NE
63rd AVE NE
61st AVE NE
59th AVE NE
58th AVE NE
57th AVE NE
56th AVE NE
55th AVE NE
LONG LAKE
RED RIVER VALLEY & WESTERN RR
LALLIE "W" TWP.

APPENDIX B

Dennis Johnson Financial Impact from Devils Lake Outlet 2007-2017
All 26-152-68

Crop Year	Crop Planted	Impacted Acres	Yield	Price	Loss	PP Payments	Out of Pocket Loss
2007	Barley	49.5	60	$2.65	$7,870.50	$0.00	$7,870.50
2008	Winter Wheat	42.4	50	$6.45	$13,674.00	$0.00	$13,674.00
2009	Wheat	165.5	47	$7.19	$55,927.42	$73,841.00	-$17,913.59
2010	Canola	150.4	1600	$0.18	$43,315.20	$0.00	$43,315.20
2011	Soybeans	118.4	30	$10.90	$38,716.80	$0.00	$38,716.80
2012	Corn	80	115	$6.85	$63,020.00	$59,000.00	$4,020.00
2013	Soybeans	233	30	$14.00	$97,860.00	$22,592.00	$75,268.00
2014	Soybeans	60	30	$10.50	$18,900.00	$6,746.00	$12,154.00
2015	Barley	65	60	$3.50	$13,650.00	$5,021.00	$8,629.00
2016	Soybeans/Sunflowers	0	0	$0.00	$0.00	$0.00	$0.00
2017	Corn	116.5	131	$3.96	$60,435.54	$0.00	$60,435.54
TOTAL							**$246,169.46**

James Fossen Financial Impact from Devils Lake Outlet 2007-2017

SW1/4 25-152-68

Crop Year	Crop Planted	Impacted Acres	Yield	Price	Loss	PP Payments	Out of Pocket Loss
2007	soybeans	16.4	20	$8.09	$2,653.52	$0.00	$2,653.52
2008	Soybeans	16.4	20	$13.36	$4,382.08	$2,236.00	$2,146.08
2009	Soybeans	142.7	20	$9.90	$28,254.60	$0.00	$28,254.60
2010	Soybeans	61.7	20	$9.15	$11,291.10	$0.00	$11,291.10
2011	Soybeans	121.71	20	$13.49	$32,837.36	$0.00	$32,837.36
2012	Soybeans	38.7	22	$12.55	$10,685.07	$0.00	$10,685.07
2013	Corn	142.7	107	$5.65	$86,269.29	$30,432.00	$55,837.29
2014	soybeans	74.4	22	$11.36	$18,594.05	$0.00	$18,594.05
2015	Soybeans	39.4	24	$9.73	$9,200.69	$160.00	$9,040.69
2016	Corn	35	114	$3.86	$15,401.40	$6,029.00	$9,372.40
2016	Wheat	16.4	35	$5.13	$2,944.62	$1,162.80	$1,781.82
2017	Soybeans	51.4	24	$10.19	$12,570.38	$0.00	$12,570.38
							$195,064.35

S1/2 34-152-68

Crop Year	Crop Planted	Impacted Acres	Yield	Price	Loss	PP Payments	Out of Pocket Loss
2007	Soybeans	15.7	20	$8.09	$2,540.26	$0.00	$2,540.26
2008	Wheat	0	36	$11.11	$0.00	$0.00	$0.00
2009	Soybeans	172	26	$9.90	$44,272.80	$17,967.00	$26,305.80
2010	Soybeans	23.2	27	$9.15	$5,731.56	$2,383.00	$3,348.56
2011	Soybeans	26.1	27	$13.49	$9,506.40	$0.00	$9,506.40
2011	Corn	19.2	73	$6.01	$8,423.62	$0.00	$8,423.62
2012	Corn	19.2	91	$5.68	$9,924.10	$0.00	$9,924.10
2013	Corn	149.5	103	$5.65	$87,001.53	$27,071.00	$59,930.53
2014	Soybeans/Wheat	0	0	$0.00	$0.00	$0.00	$0.00
2015	Corn/Peas	0	0	$0.00	$0.00	$0.00	$0.00
2016	Peas/Wheat	8.7	1205	$0.21	$2,201.54	$0.00	$2,201.54
2017	Soybeans	19.2	26	$10.19	$5,086.85	$0.00	$5,086.85
							$127,267.64

	North Side of Canal		South Side of Canal	
	48 Acres Crop Land	119 Acres Pasture/Hay Land	62 Acres Crop Land	TOTAL
Land Value at $1,200 per acre Crop	$57,600		$74,400	$132,000
Land Value at $800 per acre pasture/hay land		$95,200		$95,200
				$227,200
Production Loss - Hay bales 46 per year $100 per bale, 10 yrs	$46,000			$46,000
Production Loss - Hay bales, 120 per year $100 per bale, for 10 yrs			$120,000	$120,000
Rent for replacement Pasture land @ $17 / acre for 10 yrs		$20,230		$20,230
				$186,230

Financial Impact due to loss of Cattle Production	
Herd total prior to canal was 275 cows	
Present day head count 155 cows	
Loss of 120 calves per year/ Avg wt 900 and at Avg. price of 1.50 /lb	$162,000
Less cost of production adjument	-$81,000
Net Loss per year	$81,000
Loss for 10 year period	$810,000

$810,000

June 14, 2018 State Water Commission Meeting
Devils Lake Outlet Seepage Agenda Item
WPC Presentation – Report Summary

The **purposes of the study** were to (1) determine if seepage has impacted soils, hydrology, and vegetation in the project area, and (2) if yes, delineate the extent of the impacts.

There is **no standard scientific procedure** for identifying seepage impacts in the complex case of the Devils Lake Outlet. WPC utilized objective measures and methods to compare the soils, hydrology, and vegetation conditions that existed before the Canal was constructed to the conditions that have existed since the Canal was built.

In the limited time available, I will attempt to cover some key parts of the Report.

1. METHODS

Soil salinity and groundwater comparison - before and after Outlet construction.

In 2015, WPC measured electrical conductivity – an indicator of soil salinity - and depth to groundwater at transect sample points evaluated in 2005 for the 2006 *Soil Classification and Salinity Inventory Report*. The 2005 data and 2015 data were compared to determine changes attributable to Canal seepage.

Electrical conductivity (EC) was measured with a field meter and sample holes were augered to depths of 60 inches to determine the presence or absence of groundwater. In the 2006 *Soil Classification and Salinity Inventory Report,* WPC only documented one sample point out of 13 sample points within the 2015 study area that had measureable groundwater, and that sampling point was in a low area near a wetland. In 2015, groundwater was recorded in 7 of the 13 sample holes. The 2018 Report also shows that the years from 2005 to 2015 were drier than the years from 1993 to 2005, indicating that the increased groundwater observed in 2015 was a direct result of seepage from the Canal.

Figure 20 portrays EC measurements on a transect on the Huffman land in 2015. **Figure 53** portrays 2015 groundwater measurements on a transect on the Fossen land. Please see the 2018 report for explanations of the figures. Transects provided EC and groundwater data that were instrumental in identifying changes in salinity and wetness on the lands of concern.

Photographic comparison of conditions before and after Outlet operation.

- For objective comparison, photos of pre-Outlet conditions covered a period of years that were on average just as wet as the years since the Outlet was constructed. (*in Table 13, page 358*)
- 2005 and 2006 were considered pre-Outlet years because the volume of water pumped was relatively small and thus seepage was much less than later years. (*in Table 22, page 378*)

Field delineation of wetlands created or impacted in the project area was based on the 1987 Corps of Engineers' Wetland Delineation Manual and Corps Supplement to the Manual. Pre-existing wetland acreage was determined by including the acres mapped as predominantly hydric (wetland) soil by the

USDA-NRCS Web Soil Survey and USFWS National Wetland Inventory delineations. (**Table 11**, page 354).

WPC also identified problem areas that did not meet wetland criteria but did have salinity and/or wetness problems created or worsened by Canal seepage. Those problem areas were determined by field observations, photographic evidence, or both (**Table 12,** page 358).

WPC acknowledges that some of the area impacted by Canal seepage had **wetness or salinity limitations prior to the construction of the Canal**. Those acres were identified with the NRCS Web Soil Survey and USFWS National Wetland Inventory.

WPC also evaluated **data available from the SWC**.

2. FINDINGS

WPC identified substantial impacts on all four land parcels. The cause is shown by comparing the natural water cycle before the Canal was built (**Figure 12**) to the altered water cycle resulting from Canal construction and operation. (**Figure 13**).

Impacted areas are shown on the **maps** *from Appendix K*. The yellow background areas were field-delineated by WPC as wetland. The orange background areas were identified by WPC as a being impacted by salinity and or wetness, but not necessarily meeting wetland criteria.

WPC identified Canal seepage as impacting the following acreages with salinity or wetness or both (**Table 12**, page 356);

Huffman.....**28.5 acres**
May..... **81.3 acres**
Bengson.....**197.1 acres**
Fossen.....**29.0 acres**

The SWC's 2013 West Outlet Seepage Report estimated that during operation, the Canal was leaking at a rate of 845 gpm by the May and Bengson properties. That is a rate of 162,662 cubic feet per day (*page 378*). By applying water quality data provided by the SWC, WPC calculated that Canal seepage deposited salts in the landscape in the May and Bengson vicinity equivalent to one semi-load (52,000 lbs.) per day for 70 days in the year 2012 (*page 379*). Obviously, the 2012 quantity is just a fraction of the salts that have seeped into the landscape since pumping began (**Figure 56**).

WPC identified additional acres that may be impacted now, but did not consider the evidence as conclusive. (*pink areas on maps*)

3. WPC PREDICTION

WPC predicts that without remedial action, the acreage of impacted area will increase with continued operation of the Canal.

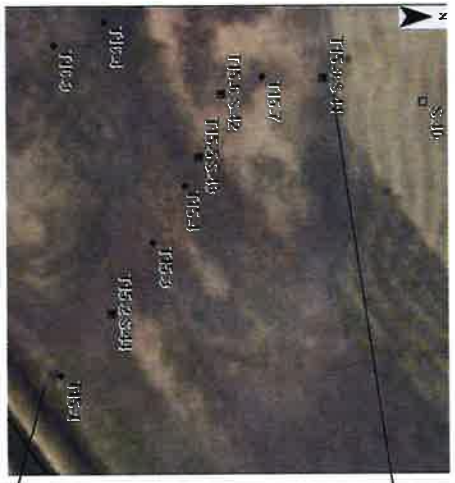
4. SUMMATION

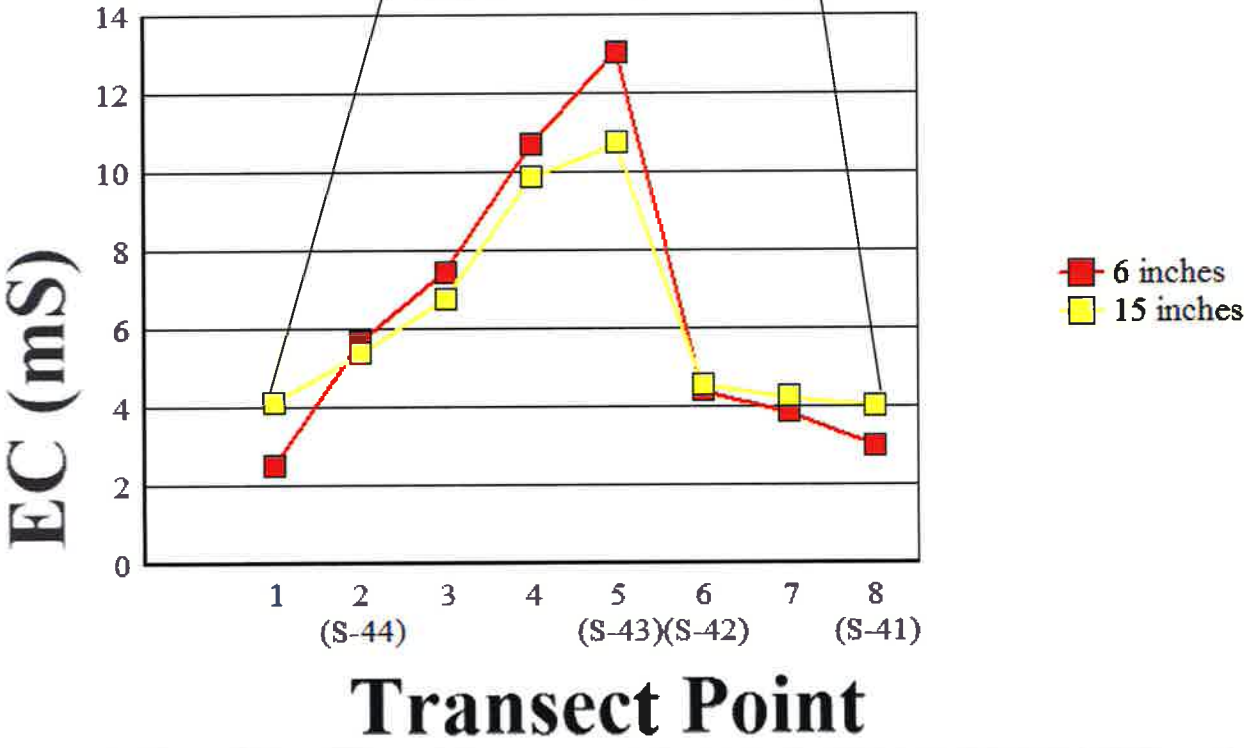
Devils Lake West End Outlet canal seepage is a very complex issue. To understand and document what has happened on the four concerned properties, WPC collected and evaluated a huge amount of data to objectively determine what has happened on the landscape, as you can see from the size of the report. WPC considers the acreages we identified as impacted by seepage to be conservative. Some reductions in land productivity may be occurring on acres that WPC did not address in the report.

Questions?

T-15 EC Meter Readings

Figure 20
Landowner - Huffman





T-25 Water Levels

Figure 53
Landowner - Fossen

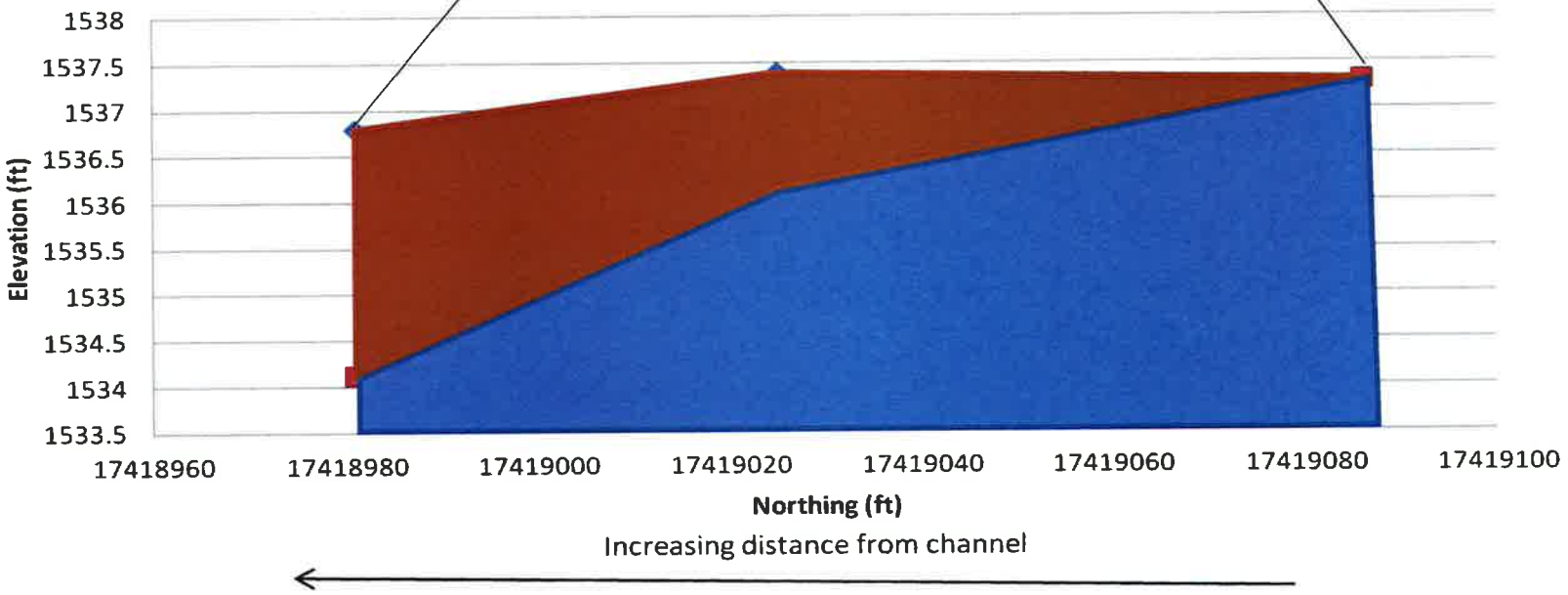


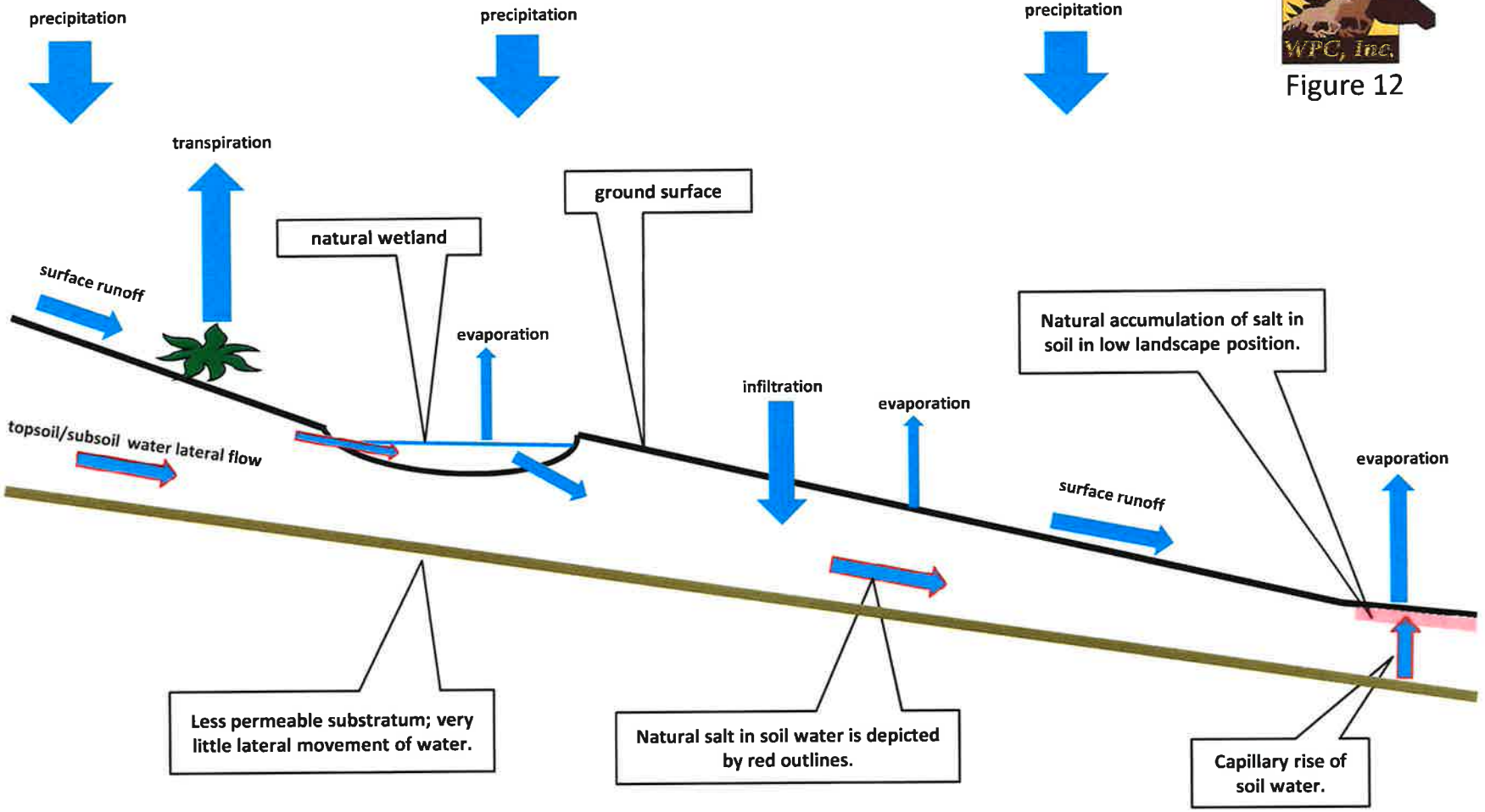
Table 11. Comparison of Wetland Acreage Before and After Canal Operation

WPC Field-delineated Area I.D.	WPC Field-delineated Wetland Acreage	Acres Within WPC-delineated Wetlands either Mapped by NRCS as Predominantly Hydric or Mapped by NWI as Wetland (pre-Canal wetland acreage)	Change in Wetland Acres	Acres Within WPC-delineated Wetlands either Mapped by NRCS as saline or sodic but not hydric	Acres Within WPC-delineated Wetlands with no Pre-Existing Limitations.
HW-1	0.71	0.19	0.52	0	0.52
HW-3	1.2	0	1.2	0	1.2
HW-4Basin	1.4	1.4	0	0	0
HW-4Slope	2.55	0.35	2.2	0	2.2
HW-5	0.67	0	0.67	0	0.67
HW-6	0.69	0	0.69	0	0.69
HW-Bore_N	0.54	0	0.54	0.54	0
HW-Bore_S	0.54	0.22	0.32	0.54	0
HW-7	0.26	0.01	0.25	0.26	0
HW-8	0.23	0	0.23	0	0.23
HW-9	0.52	0.08	0.44	0	0.44
HW-10	0.03	0	0.03	0	0.03
totals	*9.34*	*2.25*	*7.09*	*1.34*	***5.98***
Total leakage-induced wetland acres on Huffman property:			**7.09**		
MW-1	13.63	4.62	9.01	0	**9.01**
Total leakage-induced wetland acres on May property with no pre-existing limitations:			**9.01**		
BW-1	96.43	20.94	75.49	41.68	33.81
BW-2	3.53	2.59	0.94	0	0.94
BW-3	0.4	0	0.4	0	0.4
totals	*100.36*	*23.53*	*76.83*	*41.68*	***35.15***
Total leakage-induced wetland acres on Bengson property:			**76.83**		
FW-1	0.52	0	0.52	0.52	0
FW-2	0.37	0	0.37	0.37	0
FW-3	0.28	0	0.28	0.28	0
FW-4	0.24	0	0.24	0.24	0
totals	*1.41*	*0*	*1.41*	*1.41*	**0**
Total leakage-induced wetland acres on Fossen property:			**1.41**		

Table 12. Problem Area Comparison - Conditions Before and After Canal Operation

WPC-delineated Problem Area I.D.	Problem Area Acreage	Acres Within Field-Delineated Problem Area Mapped by NRCS as Saline, Sodic, Predominantly Hydric, or Mapped by NWI as wetland (now more saline/wetter than pre-Canal condition)	Created Problem Area Acres (Not Mapped by NRCS as Saline, Sodic, Predominantly Hydric, Nor Mapped as Wetland by NWI)
HPA-1	10.92	0.61	10.31
HPA-2	0.14	0	0.14
HPA-3	3.38	0.14	3.24
HPA-4	0.43	0	0.43
HPA-5	0.54	0	0.54
HPA-6	0.62	0	0.62
HPA-7	1.57	0	1.57
HPA-8	1.59	0.86	0.73
totals	***19.19***	*1.61*	*17.58*
Sum of **new acres** with salinity/wetness problem and new wetland acres due to seepage on Huffman property:			**24.7**
Total acres with salinity and/or wetness problem due to seepage or worsened by seepage on Huffman property:			**28.5**
MPA-1	**67.71**	19.87	47.84
Sum of **new acres** with salinity/wetness problem and new wetland acres due to seepage on Huffman property:			**56.85**
Total acres with salinity and/or wetness problem due to seepage or worsened by seepage on May property:			**81.3**
BPA-1	19.47	11.86	7.61
BPA-2	12.08	1.78	10.3
BPA-3	64.07	40.54	23.53
BPA-4	1.08	0.03	1.05
totals	***96.7***	*54.21*	*42.49*
Sum of **new acres** with salinity/wetness problem and new wetland acres due to seepage on Huffman property:			**79.1**
Total acres with salinity and/or wetness problem due to seepage or worsened by seepage on Bengson property:			**197.1**
FPA-1	22.24	19.1	3.14
FPA-2	4.18	3.46	0.72
FPA-3	1.15	1.15	0
totals	***27.57***	*23.71*	*3.86*
Sum of **new acres** with salinity/wetness problem and new wetland acres due to seepage on Fossen property:			**5.27**
Total acres with salinity and/or wetness problem caused or worsened by Canal seepage on Fossen property:			29.0

Figure 12



Natural Water Cycle - Before West End Outlet was Built

Water movement in the atmosphere and landscape includes precipitation, evaporation, transpiration (plants "exhaling" water), surface flow (run-off), and vertical infiltration. There is also sub-surface lateral flow through the soil profile. Some naturally-occurring salts are dissolved and transported in the soil water. Features shown are not to scale.

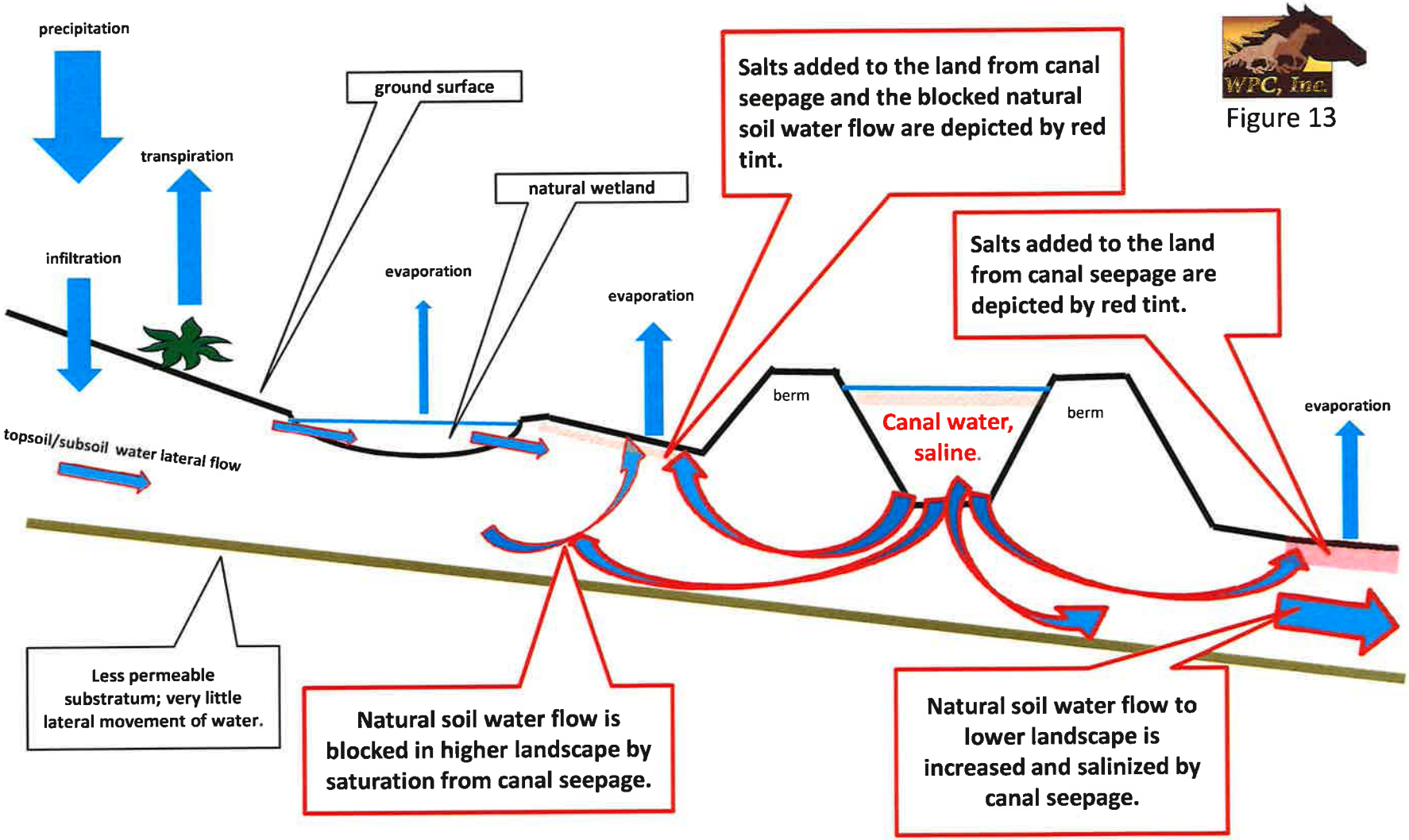
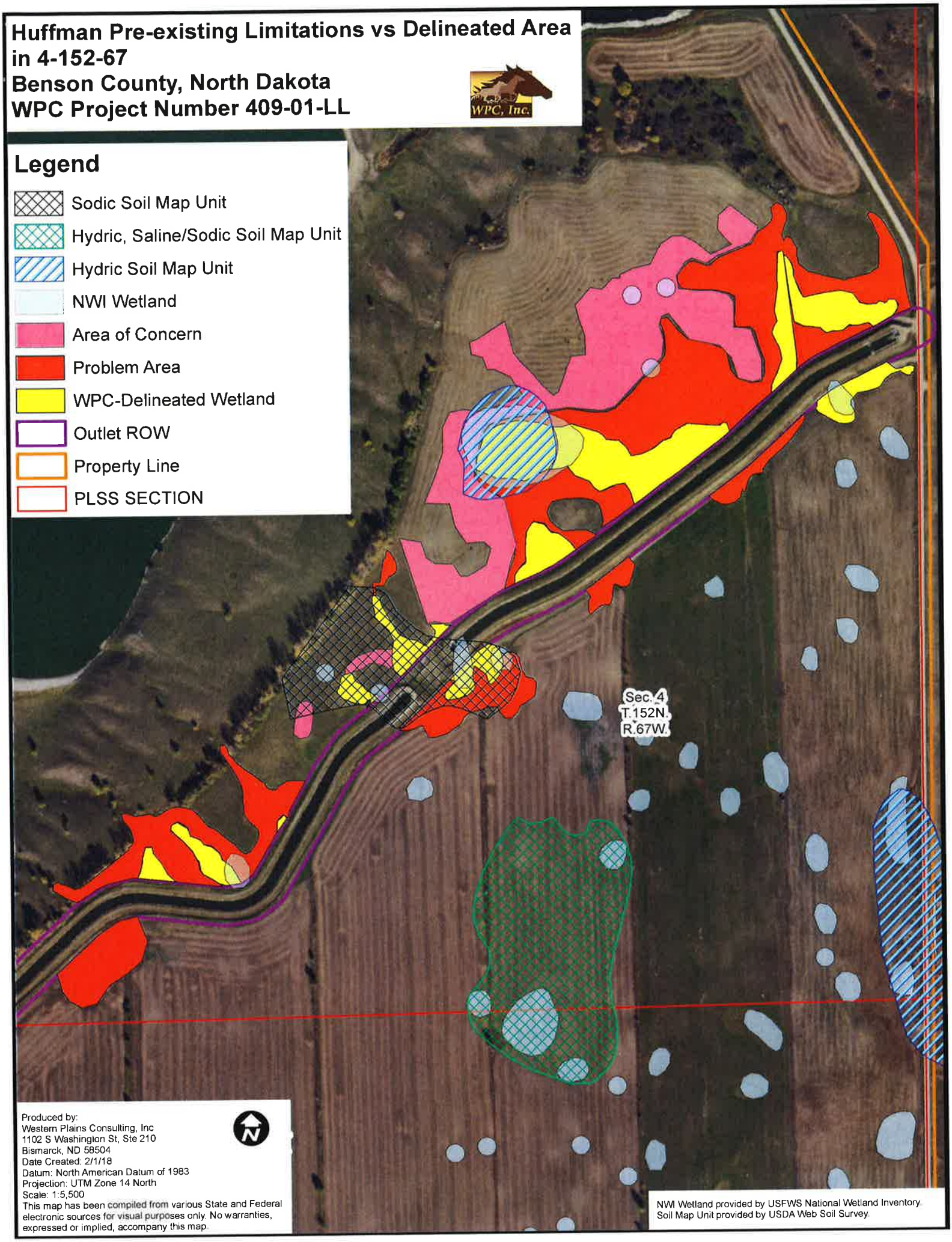


Figure 13

Water Cycle Impacts from Devils Lake West End Outlet Seepage

The diagram above illustrates some natural flow of water through the soil and subsoil, and how it is impacted by Canal seepage. The seepage saturates the soil and blocks natural sub-surface lateral flow from upslope source. The seepage adds water and salts to the soil/subsoil network, and will continue to do so unless the Canal is effectively sealed or is not operated. Features shown are not to scale.

Huffman Pre-existing Limitations vs Delineated Area in 4-152-67
Benson County, North Dakota
WPC Project Number 409-01-LL



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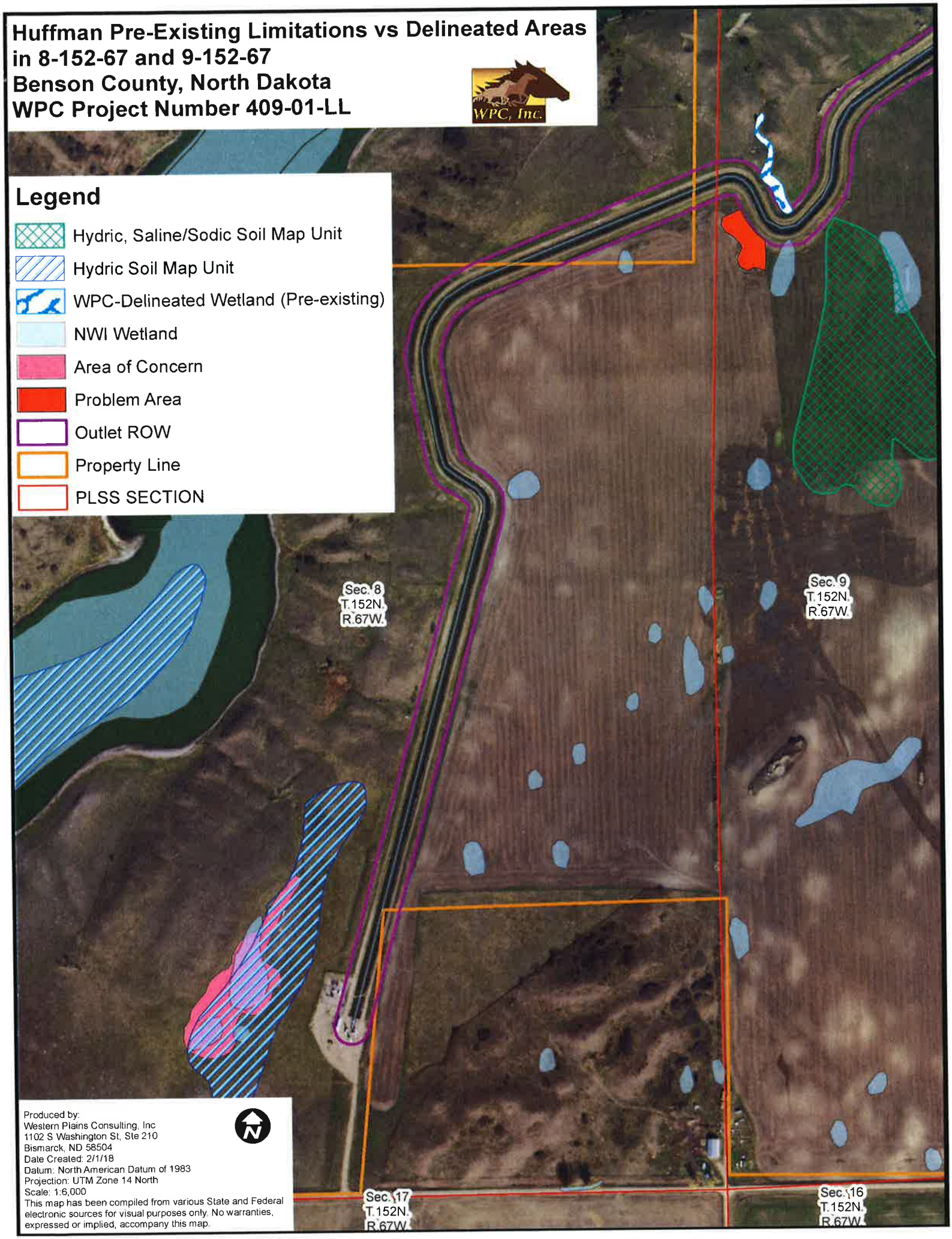
Western Plains Consulting, Inc
1102 S Washington St, Ste 210
Bismarck, ND 58504
Date Created: 2/1/18
Datum: North American Datum of 1983
Projection: UTM Zone 14 North
Scale: 1:5,500
This map has been compiled from various State and Federal electronic sources for visual purposes only. No warranties, expressed or implied, accompany this map.

NWI Wetland provided by USFWS National Wetland Inventory.
Soil Map Unit provided by USDA Web Soil Survey.

Huffman Pre-Existing Limitations vs Delineated Areas in 8-152-67 and 9-152-67
Benson County, North Dakota
WPC Project Number 409-01-LL



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Bismarck, ND 58504
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Datum: North American Datum of 1983
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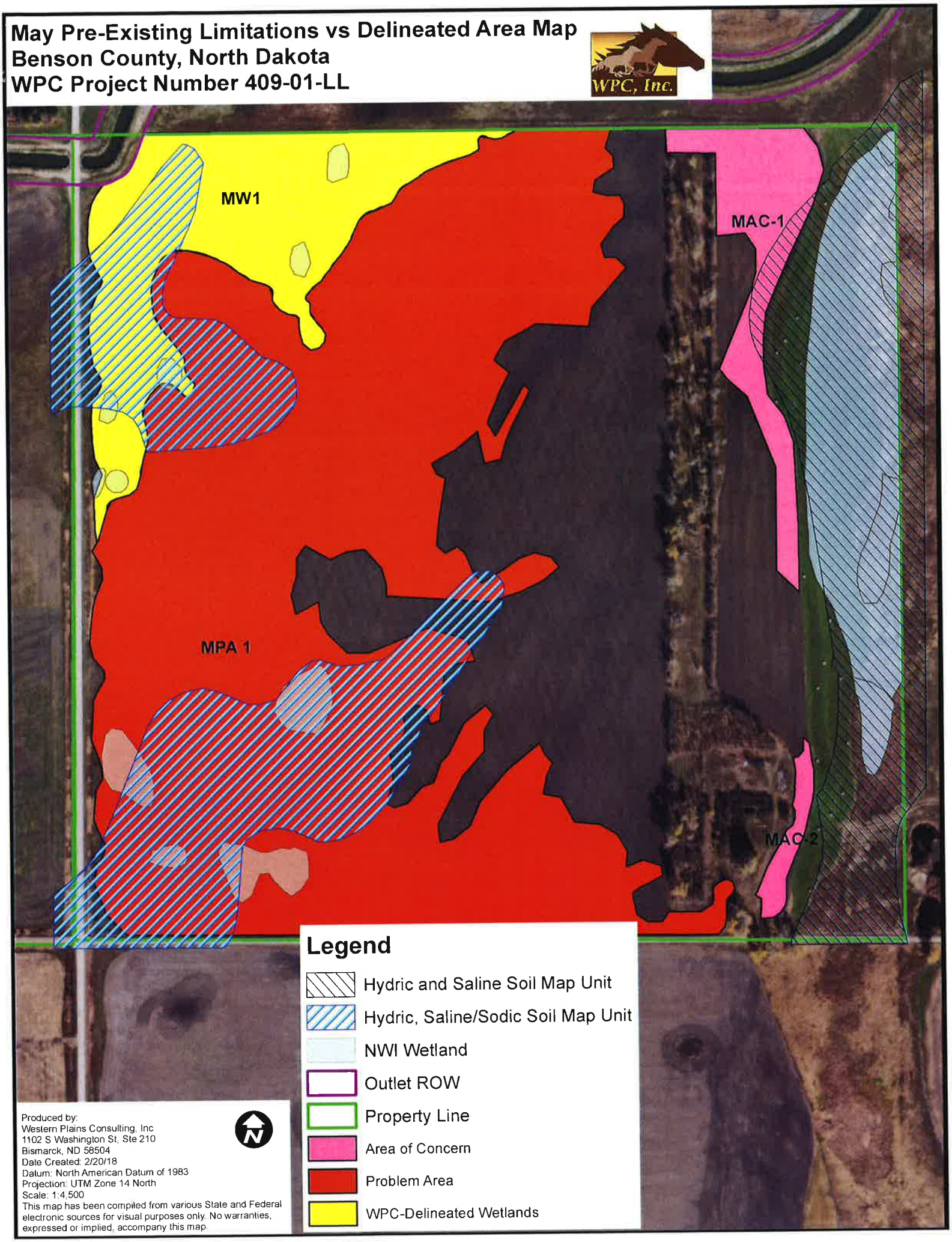
May Pre-Existing Limitations vs Delineated Area Map
Benson County, North Dakota
WPC Project Number 409-01-LL



Legend

- Hydric and Saline Soil Map Unit
- Hydric, Saline/Sodic Soil Map Unit
- NWI Wetland
- Outlet ROW
- Property Line
- Area of Concern
- Problem Area
- WPC-Delineated Wetlands

Produced by:
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Projection: UTM Zone 14 North
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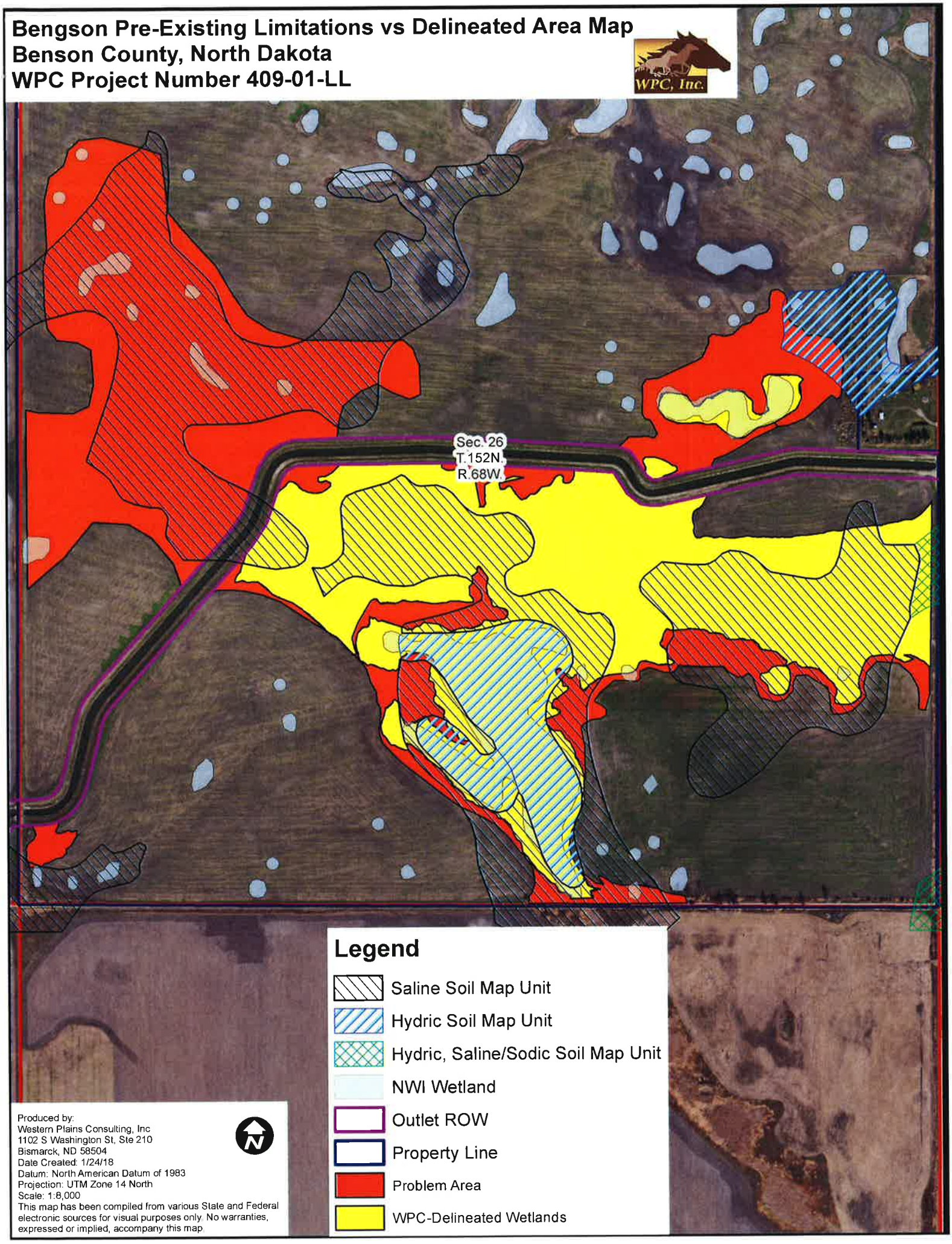
Bengson Pre-Existing Limitations vs Delineated Area Map
Benson County, North Dakota
WPC Project Number 409-01-LL



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Scale: 1:8,000
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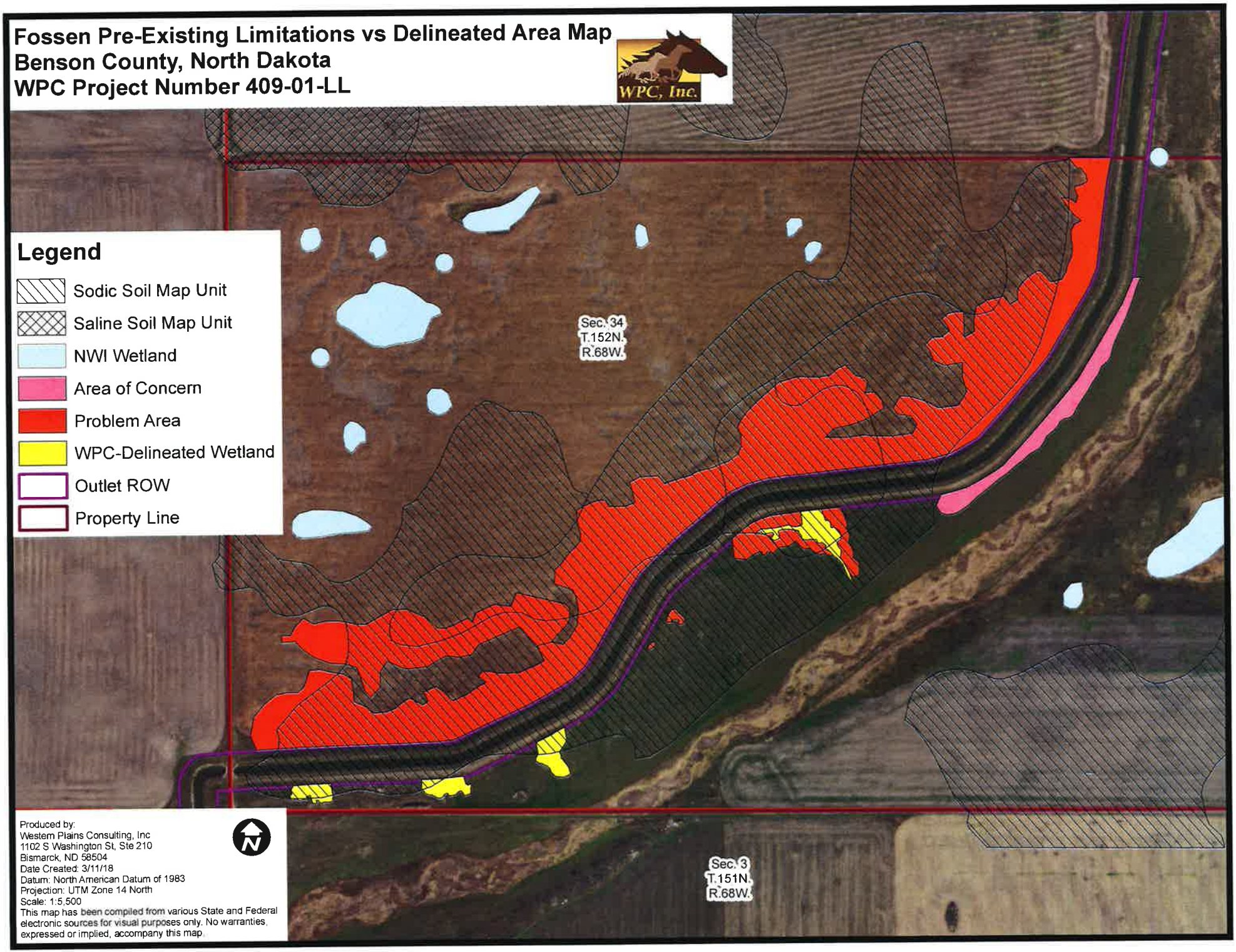
Fossen Pre-Existing Limitations vs Delineated Area Map
Benson County, North Dakota
WPC Project Number 409-01-LL



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Datum: North American Datum of 1983
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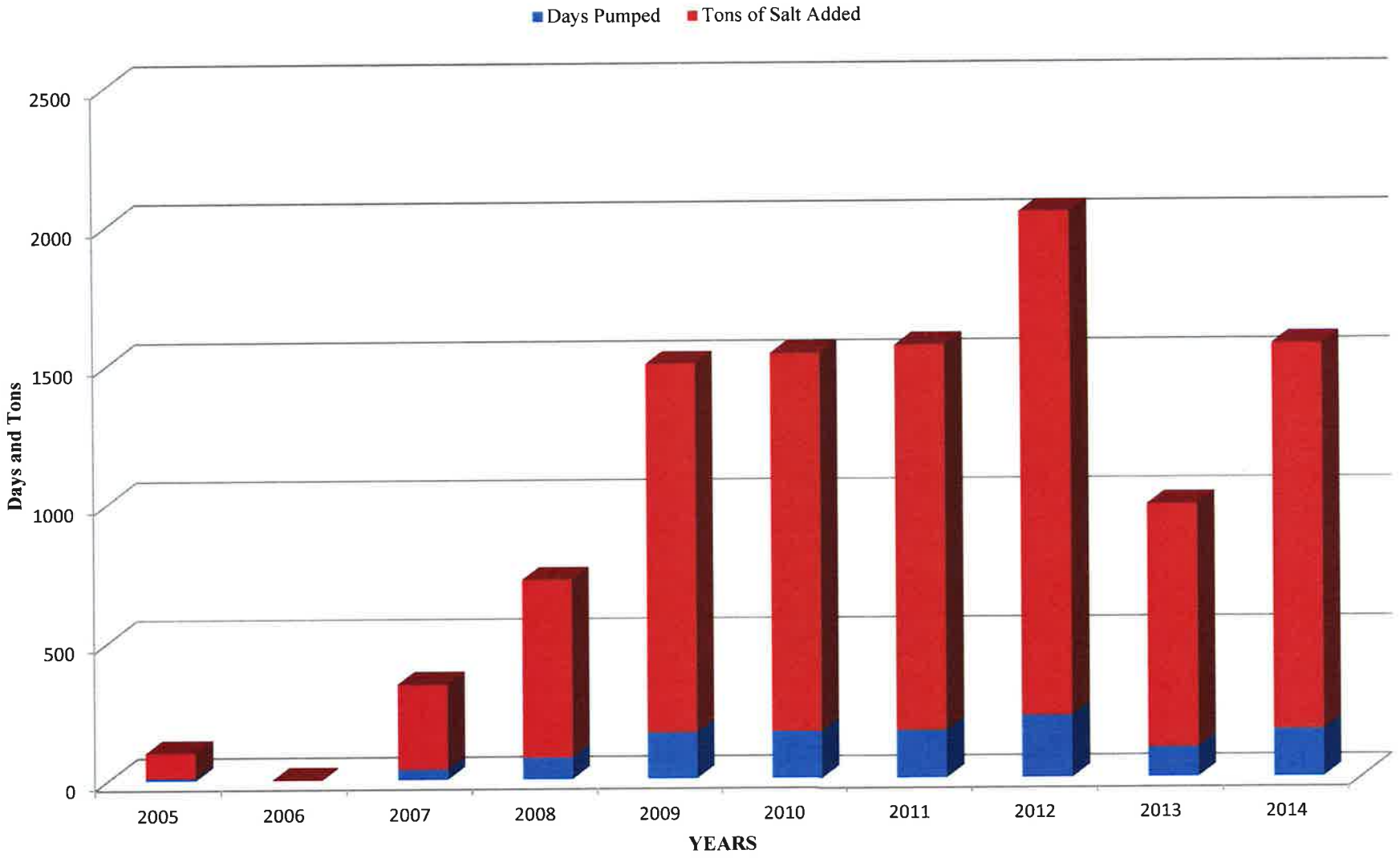
Scale: 1:5,500
This map has been compiled from various State and Federal electronic sources for visual purposes only. No warranties, expressed or implied, accompany this map.

FIGURE 56. OUTLET PUMPING DAYS AND TONS OF SALT PUT INTO LANDSCAPE ON OR NEAR BENGSON AND MAY LAND FROM 2005 THRU 2014



APPENDIX C

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701) 328-2750 • TTY 1-800-366-6888 or 711 • FAX (701) 328-3696 • http://swc.nd.gov

MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Garland Erbele P.E., Chief Engineer – Secretary
SUBJECT: Devils Lake West End Outlet Impact Assessment
DATE: May 24, 2018

A report titled *"Devils Lake West End Outlet Impact Assessment"* was delivered to the State Water Commission at the April Meeting. The report was submitted by the Gibbens Law Firm and is currently under review.

The Assessment was prepared by Western Plains Consulting, Inc., formerly High Plains Consortium, Inc. which also prepared the Wetland Delineation Report in 2002 for the Devils Lake West End Outlet.

The report focuses on 4 landowners along the West End Outlet open canal portion of the route. Two of these landowners are in Section 25 and 26 of Township 152 North, Range 68 West, Benson County, and this area has been identified as an area of ground water influence from seepage of the open canal portion. The NDSWC has installed 7 monitoring wells and completed an evaluation of seepage report in 2013. Results showed an area of influence of 62 acres, with 44 acres in section 25 and 18 acres in Section 26.

Some crop damages were paid in 2012 to renters for this seepage, but it was decided that any future compensation for seepage would go directedly to the landowners as rent or mitigation and the State Water Commission would not participate in crop damage payments.

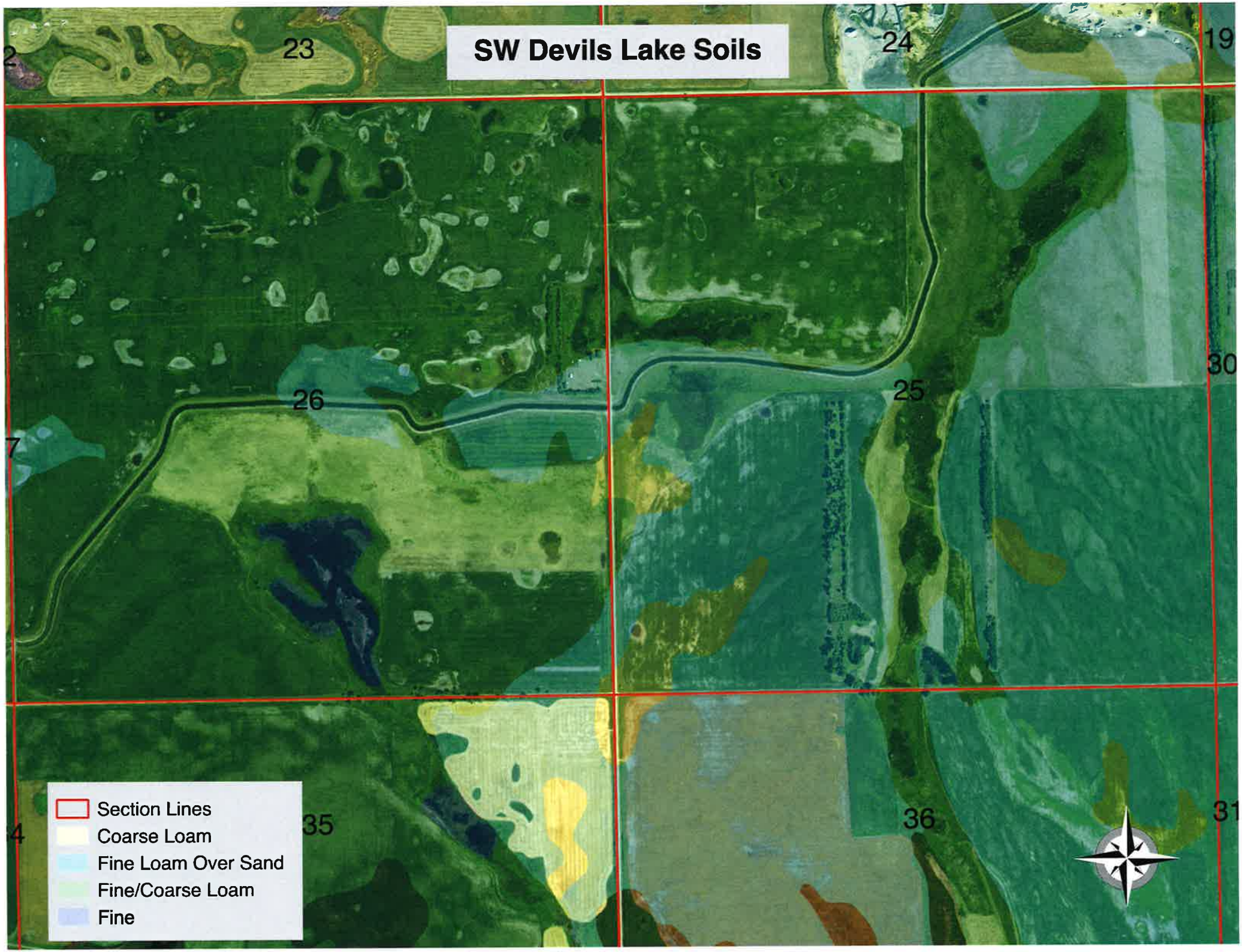
We currently have a 5-year agreement to rent 50 acres in Section 25. A similar offer was made to the land owner in Section 26, which was not responded to, but we were informed by the renter, Mr. Johnson, that the offer was not acceptable.

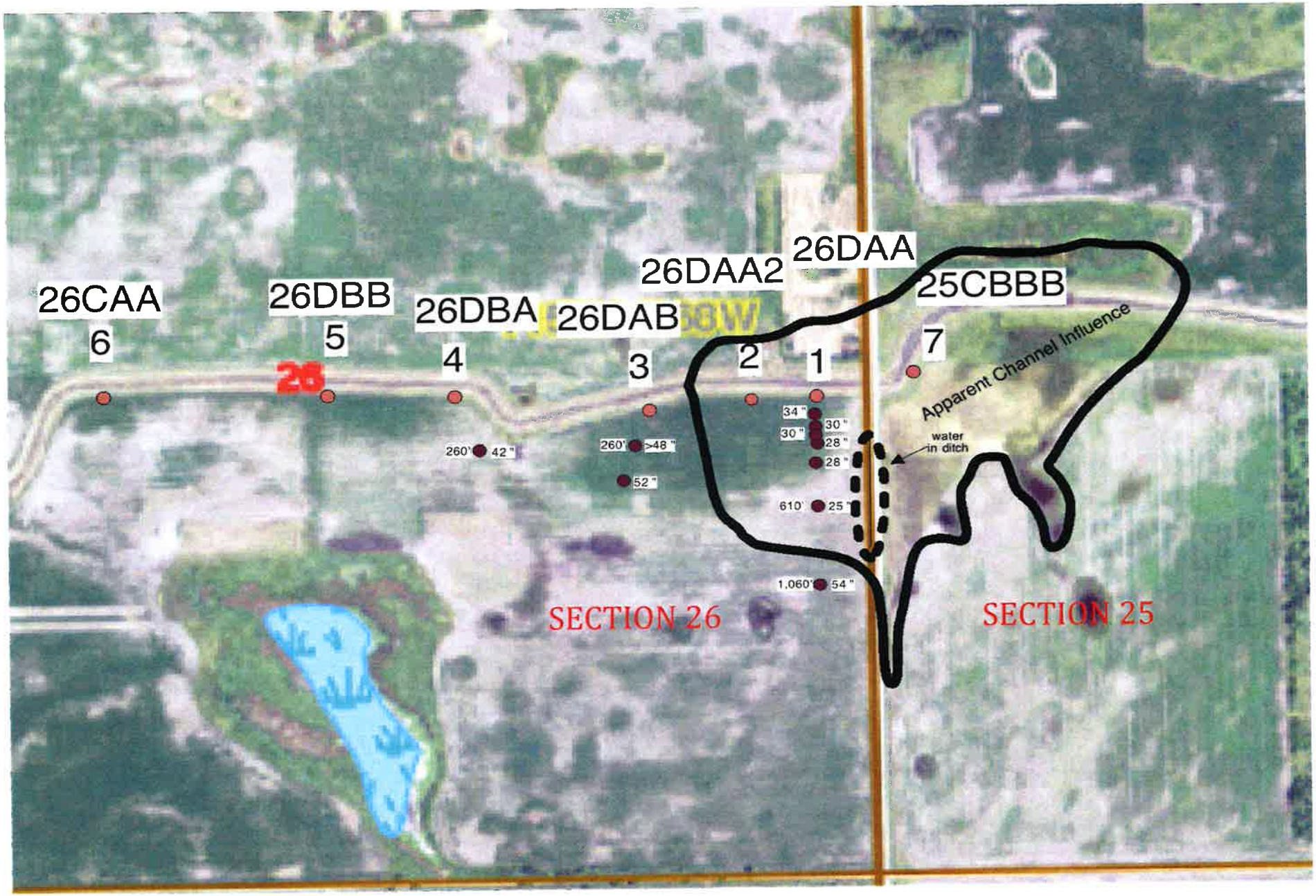
We have not verified any other seepage locations from the Outlet but can understand that uncertainty exists in some areas because of high water tables in the entire region and subjectivity in determining the origin.

We have and will continue to address impacts that are shown to be impacts from the Devils Lake Outlets.

It is recommended that any discussion on this topic be held in executive session because of possible litigation. A more detailed response and action plan can be provided at the August Meeting.

GE:JK:ph/416-10


SW Devils Lake Soils
23
24
19
26
25
30
7
35
36
31
Section Lines
Coarse Loam
Fine Loam Over Sand
Fine/Coarse Loam
Fine


26CAA
6
26DBB
5
26DBA
4
26DAB
3
26DAA2
2
26DAA
1
25CBBB
7
Apparent Channel Influence
water in ditch
260' 42 "
260' >48 "
52 "
34 "
30 "
30 "
28 "
28 "
610' 25 "
1,060' 54 "
SECTION 26
SECTION 25

SWC Cost Share Policy Changes Summary

#	Sec	Change Made	Discussion
1	I	**Definitions** Definitions for "Water Conveyance Project", "Cost Share", "Grant", and "Loan" are provided in accordance with statutory language.	Provides conformity between policy and statute.
2	I-A	**Definition of Construction Costs** Added "water supply works" to the list of project types included in construction costs.	This was a suggestion from the League of Cities
3	I-F	**Engineering Selection Process** Old Language: "If cost-share is expected to be greater than $25,000, the local sponsor must follow the engineering selection process…" New Language: "If the total anticipated cost share from the State Water Commission for a specific project is anticipated to be greater than $1,000,000, the local sponsor must follow the engineering selection process…"	Raises the threshold for requiring an engineering selection process. With both the existing and proposed language, the selection process requirement is considered to have been satisfied if the sponsor has completed an engineering selection process for general engineering services in the last three years.
4	I-F	**Engineering Services** Replaces "project inspection" with "construction observation" in definition of construction engineering.	This is largely a housekeeping issue, using the descriptor more commonly used today.
5	I-G	**Definition of Improvements** Adds "…or redundancy…" to the definition of improvements.	This addition is in response to discussions during the sub-committee meetings.
6	I, II	**Definitions and Ineligible Items** Changed the outline so that these are two separate headings.	This was a suggestion from the Water Users Association.
7	II	**Ineligible Items** Prior Language: 1 Administrative and easement costs, including those related to permits;	Changes provide additional clarification of what constitutes ineligible administrative costs. Clarifies that it is the property and easement costs to the landowner that are ineligible and provides that the removal of vegetative

APPENDIX D

		2 Property acquisitions, property surveys, and legal expenses unless specifically identified as eligible within the Flood Recovery Property Acquisition Program, the Flood Protection Program, or the Water Retention Projects; 3 Work and costs incurred prior to a cost-share approval date, except for emergencies as determined by the Chief Engineer; 4 Project related operation and regular maintenance costs; 5 Funding contributions provided by federal, other state, or other North Dakota state entities that supplant costs; 6 Work incurred outside the scope of the approved study or project. Proposed Language: 1 Administrative costs, including salaries for local sponsor members and employees as well as consultant services that are not project specific and other incidental costs incurred by the sponsor. 2 Property and easement acquisition costs paid to the landowner unless specifically identified as eligible within the Flood Recovery Property Acquisition Program, the Flood Protection Program, or the Water Retention Projects; 3 Work and costs incurred prior to a cost-share approval date, except for emergencies as determined by the Chief Engineer; 4 Project related operation and regular maintenance costs; 5 Funding contributions provided by federal, other state, or other North Dakota state entities that supplant costs; 6 Work incurred outside the scope of the approved study or project. 7 The removal of vegetative material and sediment for water conveyance projects.	materials and sediment for water conveyance projects is ineligible in accordance with statute.
8	**III-A**	**Application Required** Added language to change the lead time required for consideration at a SWC meeting from 30 days prior to 45 days prior, “unless specifically exempted by the Chief Engineer”.	This was discussed to allow time for sub-committee consideration while still providing some flexibility.

		Added a requirement for a map. Added the requirement for a specific timeline from preliminary study through final closeout. Added the specific requirement of documentation of an engineering selection process if cost share is anticipated to be greater than $1,000,000.	This was in response to the carryover issue.
9	**III-C**	**Review** Existing Language: If the Chief Engineer is satisfied that the proposal meets all requirements, the Chief Engineer will present the application along with a recommendation to the State Water Commission for its action. Proposed Language: If the Chief Engineer is satisfied that the proposal meets all requirements, the local sponsor will be asked to present the application, and the Chief Engineer will provide a recommendation to the State Water Commission for its action.	These proposed changes are in response to feedback received from the Commissioners.
10	**III-C**	**Chief Engineer Approval** Existing Language: The Chief Engineer is authorized to approve cost-share up to $75,000 and also approve cost overruns up to $75,000 without State Water Commission action. Proposed Language adds the following sentence: The Chief Engineer will respond to such requests within 60 days of receipt of the request. A final decision may be deferred if warranted by funding or regulatory considerations.	In response to suggestions from Commissioners.
11	**III-D**	**Notice**	

		New language provides that the Chief Engineer will provide local sponsors with a 10-day notice of their project being considered by the State Water Commission.	In response to suggestions from Commissioners.
12	**III-E**	**Agreement and Distribution of Funds** New paragraph added: The project sponsor must provide a progress report to the Commission at least once every four years if the term of the project exceeds four years. If a progress report is not received in a timely fashion or, if after a review of the progress report the Commission determines the project has not made sufficient progress, the Commission may terminate the agreement for project funding. The project sponsor may submit a new application to the Commission for funding for a project for which the Commission previously terminated funding.	This is in response to the statutory requirement for four year reviews.
13	**IV**	**Cost Share Categories** In the existing policy document there were seven cost share categories: Pre-Construction, Water Supply, Flood Control, Rural Flood Control, Recreation, Irrigation, and Bank Stabilization. The proposed outline includes six categories with Rural Flood Control and Bank Stabilization being sub- categories under a new category of Water Conveyance.	This change is proposed in light of the statutory language creating a "Water Conveyance" category which is defined as Rural Flood Control, Bank Stabilization and Snagging and Clearing.
14	**IV-A**	**Pre-Construction** Existing Language A. **PRE-CONSTRUCTION EXPENSES.** The State Water Commission supports local sponsor development of feasibility studies, engineering designs, and mapping as part of pre-construction activities to develop support for projects within this cost-share policy. Pre-construction expenses approved by the State Water Commission are cost-shared up to 35 percent. The following projects and studies are eligible. Proposed Language: A. **PRE-CONSTRUCTION EXPENSES.** The State Water Commission supports local sponsor development of feasibility studies, engineering designs, and mapping as part of pre-construction activities to develop support for projects within this cost-share policy. The following projects and studies are eligible.	The proposed language would result in the pre-construction engineering costs being eligible at whatever percentage the resulting construction would be eligible for rather than the current policy which only cost shares in pre-construction engineering at 35%.

15	**IV-B**	**Water Supply** Existing Language: 1 **WATER SUPPLY PROJECT**. The State Water Commission supports water supply efforts and will use a grant and loan program. The local sponsor may apply for water supply funding, and the application will be reviewed to determine project priority. Projects within category (1) may be considered for grant funding up to 75 percent cost-share. Projects in category (2) may be considered for grant funding up to 60 percent of cost-share. Grant funding within category (3) will be on a case-by-case basis. Projects within categories (1) through (4) may be considered for loan funding. After cost-share for grant funding has been determined, the local sponsor may be considered for loan funding in addition to the grant funding. The combination of grant and loan funding will not exceed 80 percent from the State Water Commission. (1) In most cases a 75% cost-share is intended to address improvements to meet primary drinking water standards or expansion into new rural water service areas. Factors considered include: (a) Connection of communities to the regional system as part of this expansion as determined by the Chief Engineer. (b) Willingness of water users at far reaches of the system to pay additional costs for water service as an indicator of greater need for access to water and local commitment in the project as determined by the Chief Engineer. (c) Affordable and sustainable water rate as determined by the Chief Engineer. Lower rates of cost-share up to 60% may be made available to address other necessary improvements in rural water systems as defined in I-D. (2) Supports improvements or connection of new customers within the existing service area of a municipal water system. Population growth and affordability may be used in prioritizing projects in this category. (3) Water treatment improvements that address impacts from other State Water Commission projects. Grant funding is based on level of impact as determined by the State Water Commission. (4) Addresses extraordinary repairs or replacement needs of a water supply system due to damages from a recent natural disaster.	Proposed changes are an attempt to simplify the language describing the split between those projects eligible for 75% funding and those eligible for 60% funding. This language is a compromise between feedback received from Commissioners and comments received from the public.

		Debt per capita, either actual or anticipated, may be used as an additional determinant of financial need. Water Depots for industrial use receiving water from facilities constructed using State Water Commission funding or loans have the following additional requirements: a) Domestic water supply has priority over industrial water supply in times of shortage. This must be explicit in the water service contracts with industrial users. b) If water service will be contracted, public notice of availability of water service contracts is required when the depot becomes operational. c) A portion of the water supply at any depot must be available on a non-contracted basis for public access. Proposed Language: 1 **WATER SUPPLY PROJECT**. The State Water Commission supports water supply efforts. The local sponsor may apply for funding, and the application will be reviewed to determine project priority. Projects within category (1) may be considered for cost-share funding up to 75 percent. Projects in category (2) may be considered for cost-share funding up to 60 percent. Cost-share funding within category (3) will be on a case-by-case basis. All projects may be considered for loan funding. (1) In most cases a 75 percent cost-share is intended to address improvements to meet primary drinking water standards or expansion into new rural water service areas or connection of communities to the regional system. (2) Up to a 60 percent cost-share is intended for projects to support improvements or connection of new customers within the existing service area of a municipal water system or other improvements to rural water systems. Population growth and affordability may be used in prioritizing projects in this category. (3) Water treatment improvements that address impacts from other State Water Commission projects. Funding is based on level of impact as determined by the State Water Commission.	

		Debt per capita, either actual or anticipated, may be used as an additional determinant of financial need. Water Depots for industrial use receiving water from facilities constructed using State Water Commission funding or loans have the following additional requirements: a) Domestic water supply has priority over industrial water supply in times of shortage. This must be explicit in the water service contracts with industrial users. b) If water service will be contracted, public notice of availability of water service contracts is required when the depot becomes operational. c) A portion of the water supply at any depot must be available on a non-contracted basis for public access.	
16	**IV-2**	**Flood Protection Program** Added the following language: The cost-share application must include the return interval or design flow for which the structure will provide protection. The Commission will calculate the amount of its financial assistance, based on the needs for protection against: One-hundred-year flood event as determined by a federal agency; The national economic development alternative; or The local sponsor's preferred alternative if the Commission first determines the historical flood prevention costs and flood damages and the risk of future flood prevention costs and flood damages, warrant protection to the level of the local sponsor's preferred alternative.	This language was added to make the policy consistent with statutory language from last session.
17	**IV-2**	**Storm Water Management**	

		The following language was added: Storm water management is not an eligible cost-share category. In order to differentiate between a flood control project and storm water management, the Commission may reduce the cost-share provided by the percentage of the contributing watershed that is located within the community's corporate limits as calculated on an acreage basis	This language documents the approach that has been used to differentiate between storm water management and flood control projects.
18	**IV-D**	**Rural Flood Control** The following paragraph was added: A sediment analysis must be provided with any application for cost-share assistance for reconstruction of an existing drain. The analysis must be completed by a qualified professional engineer and must clearly indicate the percentage volume of sediment removal involved in the project. The cost of that removal must be deducted from the total for which cost-share assistance is being requested.	This language is intended to help us comply with the statutory requirement that sediment removal is an ineligible cost share item for water conveyance projects.
19	**IV-F**	**Irrigation** The following clarification was added: "The items eligible for cost-share are those associated with <u>the off-farm portion of</u> new central supply works… " The following sentence was added: "The Commission will only enter into cost share agreements with political sub-divisions, including irrigation districts, and not with individual producers."	This was intended to formalize a long-standing approach.

June 14, 2018

SWC Project Prioritization Guidance Changes Summary

Item No.	Changes	Discussion
1	Struck the following from the introduction: "Projects that do not meet local cost-share match requirements, (per SWC cost-share policies), will be dropped to the next lowest priority."	In practice, project sponsors that were not able to meet cost-share match requirements were actually given higher percentages because of financial hardship.
2	Added the following to the introduction: "In the interest of strategically investing in the state's highest water development priorities, the Water Commission will give funding preference to projects designated as higher priorities for the first 12 months of each budget cycle."	Addresses the timing of funding for projects with varying levels of priority within purpose funding categories.
3	Removed snagging and clearing projects from prioritization guidance.	2017 amendments to NDCC Section 61-02-01.4 prohibit the Commission from providing cost-share for removal of vegetative materials and sediment for water conveyance projects.
4	Added "New rural flood control drains, ditches, diversion channels, or outlets" to the "Moderate Priority Projects" category.	Differentiates between new vs improved or extraordinary maintenance projects of that type.
5	Added "extraordinary maintenance" of water supply projects to the "Low Priority Projects."	Extraordinary maintenance is an eligible cost-share item, so it is appropriate to include in the prioritization guidance.
6	In the "Low Priority Projects," struck "construction" and added "extraordinary maintenance" of rural flood control drains, ditches, diversion channels, or outlets.	Differentiates between new vs improved or extraordinary maintenance projects of that type.

APPENDIX E

APPENDIX F

2018 WATER SYSTEM IMPROVEMENTS B17-00-132

NORTH PRAIRIE RURAL WATER DISTRICT WARD COUNTY, ND

A. Need for the Project

The area south of Minot has grown from approximately 100 users to over 500 users. In addition, several large parcels of land have recently sold for planned development. The current growth has averaged a 4% growth each year for the 2009 to 2014 and 2% for the years 2015 to 2017. The population of Ward County has dropped off the last two years but is still at 12% above the 2010 census.

The combination of the growth in the project area and the increased use of agricultural demand for water use due to the new farming technologies has created a all-time high use of water. Additional water transmission is required to meet the demand of the population growth in this area.

Due to the growth there are numerous times in which the system cannot maintain adequate pressure and flow from reservoir 10 to reservoir 9 during the spring of the year. The system usage results in reports of low water pressure and low flow on peak days. In the spring of 2018 NPRWD has set up a temporary inline pump to keep up with demand.

Reservoir 10 has a 16,000-gallon underground storage tank and pump station that serves as the supply point from the City of Minot for the southern portion of Ward County. From there the water is pumped to Reservoir 9, 8 and 7 to the west of Minot and south to Reservoir 6 which is a 300,000 elevated tank.

The current supply transmission line from Minot is a 2 mile 6-inch water line with a peak influent of 400 gallons per minute.

The water line from Reservoir 10 to Reservoir 9 is a 3” in which head loss of over 40 psi have been measured at Reservoir 9 in addition to the 42 psi loss due to the elevation differential between Reservoir 10 and Reservoir 9.

In the Surrey area a large subdivision that is served by North Prairie Rural Water District in cooperation with the City of Surrey. The subdivision is served by a 4-inch water line from the city. The increased flow causes low pressure in the north portion of the city.

B. Selected Plan

Portion A- The three-inch distribution south west of Minot experience high friction loss and drop in pressure due to flow demand. This project would construct a 6" water main connected to the system's Reservoir 10 to Reservoir 9, and a 8" water line connecting the supply from the City of Minot to Reservoir 10. See Figure 1 for proposed improvement map.

The proposed water line would be constructed on the North side of county road west of Hwy 83 and connect Reservoir 10 and Reservoir 9. This route would allow potable water to two existing sub-divisions This would also supply a redundant method to supply the area from either the City of Minot or the NPRWD water treatment plant.

Portion B - The Silver Spring line would be located on the west side of 97th Street from the Surrey Pump Station to the west side of Silver Springs sub-division with a 12-inch water main. See Figure 2 for the proposed improvement map.

C. Time line

Bid June 21, 2018
Award early July
Construction August 2018 – October 2018

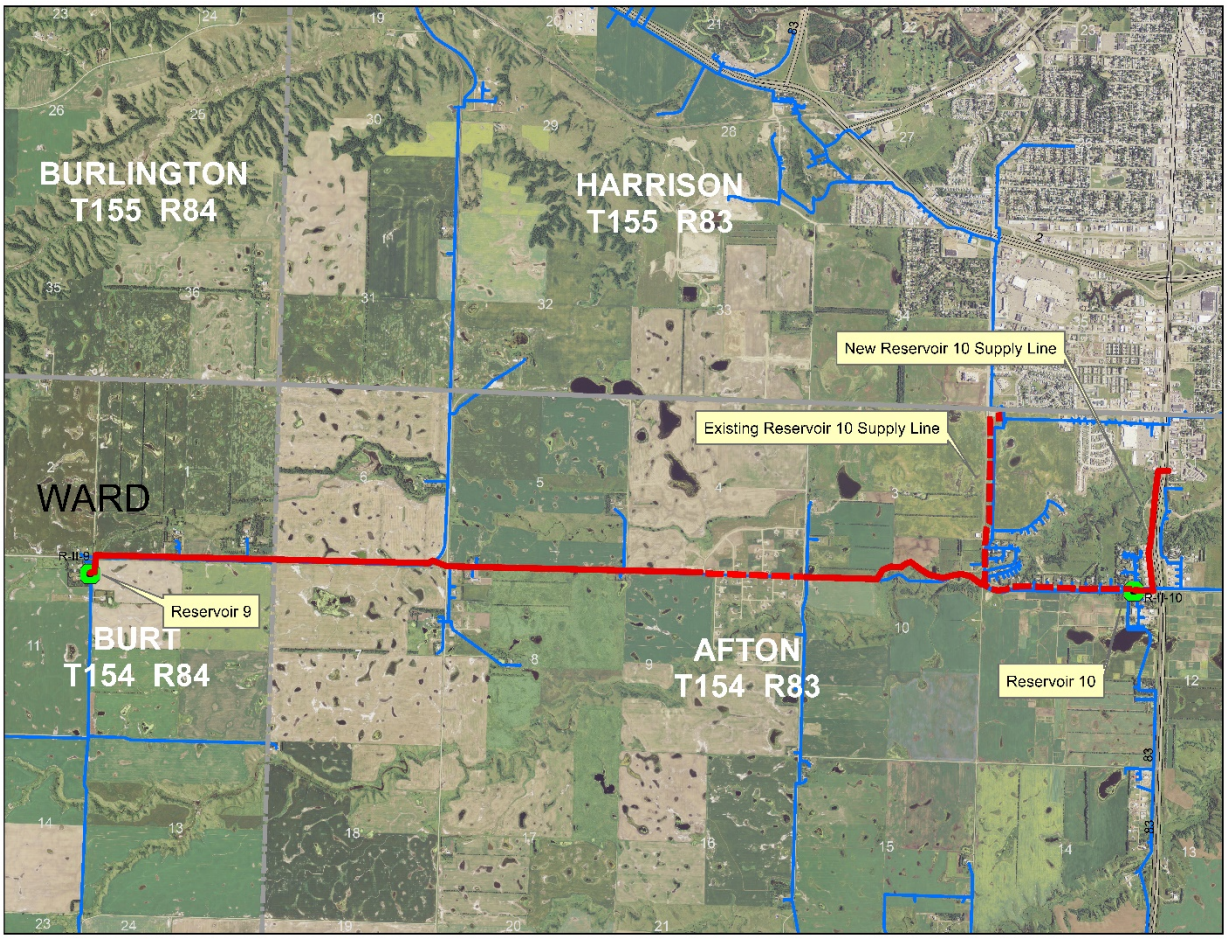


FIGURE 1 – RESERVOIR 10 TO 9 PROJECT LOCATION

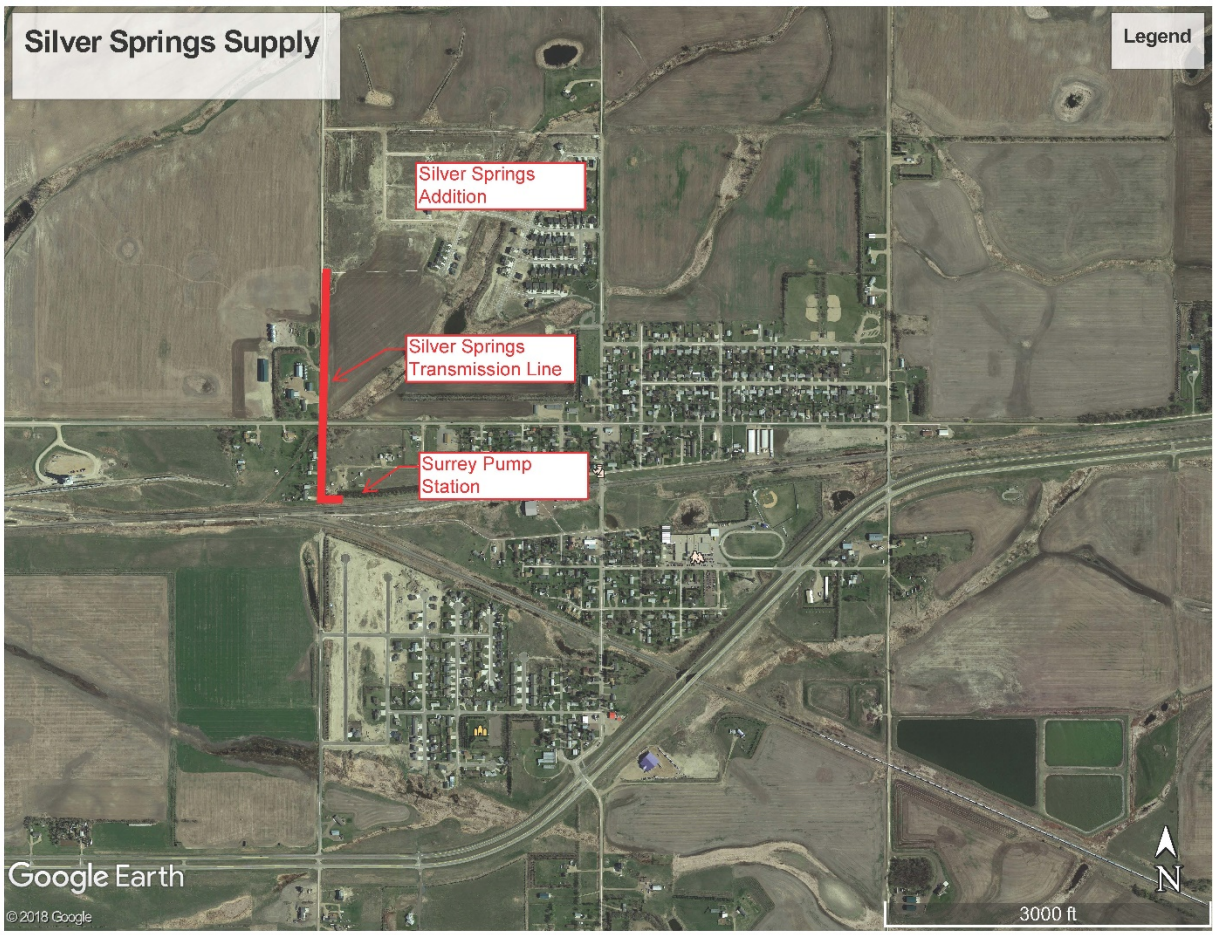


Figure 2 – Silver Springs Supply Line

North Prairie Rural Water District
Transmission Line Res. #9 to Res. #10
Ward County, ND
Opinion of Probable Costs
May-18

Section A

Item No.	Description	Unit	Quantity	Unit Price	Extended Price
1	6" Class 200 PVC	LF	22,575	$25.00	$564,375.00
2	8" Class 200 PVC	LF	2,806	$35.00	$98,210.00
4	3" Gate Valve and Box	LF	3	$1,200.00	$3,600.00
5	6" Gate Valve and Box	EA	8	$2,000.00	$16,000.00
6	8" Gate Valve and Box	EA	7	$3,000.00	$21,000.00
6	2" Flush Hydrant	EA	1	$1,500.00	$1,500.00
6	Rock Excavation	EA	10	$25.00	$250.00
6	6" DR 11 Directional Drilling	EA	1,200	$46.00	$55,200.00
6	8" DR 11 Directional Drilling	CY	800	$50.00	$40,000.00
6	Mobilization	EA	1	$20,000.00	$20,000.00
6	Seeding	LF	6,400	$1.25	$8,000.00
6	Erosion Control Straw Mulch	LF	6,400	$1.40	$8,960.00
6	Erosion Control Hydro Mulch	LF	6,500	$2.40	$15,600.00
6	Fiber Roll	LF	2,440	$10.00	$24,400.00
6	Removal of Fiber Rolls	LF	2,000	$0.50	$1,000.00
6	Silt Fence Supported	LF	1,940	$2.00	$3,880.00
6	Removal of Silt Fence	LF	1,940	$0.50	$970.00
6	Connection to Existing Watermain	LF	5	$2,500.00	$12,500.00
6	6" Type I Road Boring	LF	1	$12,200.00	$12,200.00
6	6" Type II Road Boring	EA	7	$5,500.00	$38,500.00
6	8" Type I Road Boring	EA	3	$12,400.00	$37,200.00
6	8" Type II Road Boring	EA	4	$5,800.00	$23,200.00
6	City of Minot meter vault	LS	1	$120,000.00	$120,000.00
6	Aggregate Class 5	TON	4	$14.00	$56.00
	Subtotal				**$1,126,601.00**

	Total Opinion of Probable Construction Cost				$1,126,601.00
	Construction Contingency(10%)				$112,660.10
	Total Construction Cost + Construction Contingency				**$1,239,261.10**
	Legal and Administrative				$5,500.00
	Crop Damage				$30,000.00
	Design Engineering (6.9%)				$85,619.46
	Construction Engineering Services(14%)				$176,943.19
	Total Opinion of Probable costs				**$1,537,323.75**

North Prairie Rural Water District
Transmission Line Surrey
Ward County, ND
Opinion of Probable Costs
May-18 Section B

Item No.	Description	Unit	Quantity	Unit Price	Extended Price
1	12" Class 200 PVC	LF	1,170	$50.00	$58,500.00
3	12" Gate Valve and Box	LF	1	$4,000.00	$4,000.00
7	Rock Excavation	CY	10	$25.00	$250.00
9	12" DR 11 Directional Drilling	LF	350	$75.00	$26,250.00
10	Mobilization	LS	1	$20,000.00	$20,000.00
11	Seeding	LF	100	$1.25	$125.00
12	Erosion Control Straw Mulch	LF	100	$1.40	$140.00
13	Erosion Control Hydro Mulch	LF	100	$2.40	$240.00
14	Fiber Roll	LF	60	$10.00	$600.00
16	Silt Fence Supported	LF	60	$2.45	$147.00
18	Connection to Existing Watermain	EA	2	$3,500.00	$7,000.00
19	12" Type I Road Boring	EA	1	$13,000.00	$13,000.00
20	12" Type II Road Boring	EA	1	$6,500.00	$6,500.00
21	Aggregate Class 5	TON	1	$14.00	$14.00
	Subtotal				**$136,766.00**

	Total Opinion of Probable Construction Cost				$136,766.00
	Construction Contingency(10%)				$13,676.60
	Total Construction Cost + Construction Contingency				**$150,442.60**
	Legal and Administrative				$1,400.00
	Crop Damage				$4,500.00
	Design Engineering (6.9%)				$10,380.54
	Construction Engineering Services(12%)				$18,053.11
	Total Cost				**$184,776.25**

Total Section A + B **$1,722,100.00**

APPENDIX G

SWC Date Received : 5/18/18

COST-SHARE REQUEST FORM

NORTH DAKOTA STATE WATER COMMISSION
DEVELOPMENT DIVISION
SFN 60439 (5/2017)

This form is to be filled out by the project or program sponsor with State Water Commission staff assistance as needed. Applications for cost-share are accepted at any time. However, applications received less than 30 days before a State Water Commission meeting will be held for consideration at the next scheduled meeting.

Please answer the following questions as completely as possible. Supporting documents such as maps, detailed cost estimates, and engineering reports should be attached to this form. If additional space is required, please use extra sheets as necessary.

For information regarding cost-share program eligibility see the *State Water Commission Cost-Share Policy, Procedure, and General Requirements* – available upon request or at www.swc.nd.gov.

Project, Program, Or Study Name
Lower Heart River Flood Risk Reduction Project

Sponsor(s)
Lower Heart River Water Resource District

County	City	Township/Range/Section
Morton	Mandan	

Description Of Request ☑ New ☐ Updated (previously submitted)

Specific Needs Addressed By The Project, Program, Or Study
Preliminary Engineering Scope of Services

If Study, What Type ☐ Water Supply ☐ Hydrologic ☑ Floodplain Mgmt. ☐ Feasibility ☐ Other

If Project/Program

☑ Flood Control	☐ Multi-Purpose	☑ Bank Stabilization	☐ Dam Safety/EAP
☑ Recreation	☐ Water Supply	☐ Snagging & Clearing	☑ Property Acquisition
☐ Irrigation	☐ Water Retention	☐ Rural Flood Control	☐ Other

Jurisdictions/Stakeholders Involved
The City of Mandan and portions of Morton County

Description Of Problem Or Need And How Project Addresses That Problem Or Need
A previous DFIRM effort, through the NDSWC and FEMA, determined that the existing Lower Heart River levees are no longer in compliance with regulatory standards. FEMA has yet to pursue formal de-accreditation of these levees and the City of Mandan is currently in a seclusion status. With the levees no longer certified a majority of downtown Mandan and a large community growth area in Southeast Mandan would be placed into the designated floodplain or affected by revised floodplain mapping. These properties are then considered at risk and will be required to carry flood insurance, resulting in a considerable expense. Project rehabilitating would bring the system into compliance through the levee certification process. Currently in downtown Mandan there are 1831 structures at risk valued at around $248 Million. Damages from excessive levee overtopping or a breach event are estimated to exceed $115 Million. Based on the proposed Hydraulic Concept Plan new ROW and increased system conveyance is required to achieve certification. In addition, geotechnical evaluations and internal drainage considerations are required to develop the 30% and 60% preliminary plan documents for agency review.

Has Feasibility Study Been Completed?	☑ Yes	☐ No	☑ Ongoing	☐ Not Applicable
Has Engineering Design Been Completed?	☐ Yes	☑ No	☑ Ongoing	☐ Not Applicable
Have Land Or Easements Been Acquired?	☑ Yes	☐ No	☑ Ongoing	☐ Not Applicable

Have You Applied For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Applied For Any Local Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any Local Permits?	☐ Yes	☐ No	☑ Not Applicable
If Yes, Please Explain			

Briefly Explain The Level Of Review The Project Or Program Has Undergone

A Hydraulic Concept Plan and a reconnaissance review of internal drainage have been completed. This along with the future work to be completed under a Flood Hazard Mitigation Grant will provide the foundation to develop the preliminary engineering plans and reports, and to pursue the project through the next level (see scope of services with this request).

Do You Expect Any Obstacles To Implementation (i.e., problems with land acquisition, permits, funding, local, opposition, environmental concerns, etc.)? Land acquisition and creating special assessment districts will require careful consideration.

Funding Timeline (carefully consider when SWC cost-share will be needed)

Source	Total Cost	2015-2017 7/1/15-6/30/17	2017-2019 7/1/17-6/30/19	Beyond 7/1/19
Federal	$	$	$	$
State Water Commission	$	$ 10,570.00	$ 243,845.00	$
Other State	$	$	$	$ 21,600,000.00
Local	$	$ 19,630.00	$ 525,955.00	$ 14,400,000.00
Total	$ 0.00	$ 30,200.00	$ 769,800.00	$ 36,000,000.00

List All Other State Of North Dakota Funding Sources (Grant or Loan), For Which You Have Applied

Funding will be provided primarily through the Lower Heart Water Resource District as the local sponsor, along with anticipated requests for assistance from the City of Mandan and possibly the Morton County Water Resource District. Construction is anticipated to be funded through the creation of special assessment districts, but remains to be determined.

Please Explain Implementation Timelines, Considering All Phases And Their Current Status

Work in 2017-2019 includes preliminary engineering design to define system hydraulics and alternative configurations on which to pursue regulatory compliance. Geotechnical evaluations will be completed to determine levee conditions for certification. Internal drainage studies for areas within the City of Mandan will be further evaluated.

Have Assessment Districts Been Formed? ☐ Yes ☑ No ☑ Ongoing ☐ Not Applicable

Submitted By William (Bill) Robinson, Chairman Lower Heart River Water Resource District			Date May 14, 2018
Address PO Box 395	City Mandan	State ND	ZIP Code 58554-0395
Telephone Number 701-471-8398 (c) 701-250-8377 (w)	Sponsor Email b.robinson@choicefinancialgroup	Engineer Email mgunsch@houstoneng.com	

I Certify That, To The Best Of My Knowledge, The Provided Information Is True And Accurate.

Signature Bill Robinson Chairman	Date May 14, 2018

MAIL TO:

ND State Water Commission • ATTN: Cost-Share Program
900 E Boulevard Ave. • Bismarck, ND 58505-0850

LHRWRD
LOWER HEART RIVER
Water Resource District

PO Box 395, Mandan, ND 58554

May 11, 2018

Garland Eberle, PE
North Dakota State Engineer
North Dakota State Water Commission
900 East Boulevard Avenue
Bismarck, ND 58505

RE: Lower Heart River Flood Risk Reduction Project
Cost Share Request

Dear Mr. Eberle:

The Lower Heart River Water Resource District is requesting cost share funding to assist them in further developing a project to rehabilitate their existing flood control levee system. Attached is a preliminary Hydraulic Concept Plan with a brief project history outlining FEMA's determination that our system is deficient and no longer adequate to be certified, and the proposal to achieve hydraulic compliance.

Based on the attached scope and budget in the amount of $800,000 we are requesting sixty percent (60%) or $480,000, pursuant to the State Water Commission's proposed cost share policy. Should you require additional information, please let me know. Your support of this request at this level is greatly appreciated.

Respectfully,

William Robinson, Chairman
Lower Heart Water Resource District

C: Honorable Governor Doug Burgum
Representative Jim Schmidt, District 31
Tim Helbling, Mayor City of Mandan
Bruce Strinden, Chairman Morton County Commission
Wade Bachmeier, Chairman Morton County Water Resource District
Lower Heart River WRD Board Members

Lower Heart River Flood Risk Reduction Project

Preliminary Engineering Scope of Services

May 10, 2018

Asset Inventory and Property Boundaries **$55,000**

Research and document existing specific or blanket easements and properties under the jurisdictional authority or ownership of Lower Heart River Water Resource District (LHRWRD) and utilized for the Lower Heart River Flood Control Project. Prepare preliminary boundary and parcel mapping, including in the potential project expansion areas, and create a functional GIS digital inventory. This mapping will not include title work and documents for status revisions or transfer.

Research, document and inventory known drawings associated with the existing project plans, past modifications and maintenance, including all structures; then attribute this data into a GIS database for future use in a digital inventory system and the rehabilitation and certification project. The updated O&M Manual will be incorporated into this GIS effort.

Deliverable: Project preliminary boundary easement and ownership maps for the existing and proposed features in the expanded project area. The GIS database and inventory system shall include existing structures and their locations.

Geotechnical Services **$70,000**

After completing the FEMA Flood Mitigation Assistance Grant scope of services, the rehabilitation project requires additional geotechnical evaluation on the levees from the Trolley Bridge downstream to the Missouri River, and upstream from the I-94 Bypass to the end of a selected point in the Sunny Unit. The levees east and south of the Trolley Bridge will be evaluated for FEMA certification. Those levees in the Sunny Unit will be evaluation for certification to a point to the west of the I-94 Bypass bridge identified as a cutoff levee.

Deliverable: A geotechnical report documenting existing deficiencies in the levee system and recommendations to achieve FEMA compliance and certification.

Alternative Development Assessment **$100,000**

Utilize the previously developed Hydraulic Concept Plan and other selected alternative configurations to optimize conveyance, functionality, land use and future construction costs. This assessment includes a review of the entire project reach and develops the preliminary plan and profile sheets for project implementation. These plans to include, o extent practical at this design stage, the findings associated with the FEMA grant geotechnical findings and required modifications identified through that effort. The updated alternative assessment will be used to create a 30% plan set for submittal to FEMA and SWC for consideration, as well as to the USACE related to an initial Section 408 review process.

This task includes an updated Opinion of Probable Cost (OPC) to be utilized for discussion with North Dakota Legislative representatives in October 2018. The purpose is to provide information for use in funding decisions and direction in the next legislative session, and considering options associated with a single season or potential phased construction over a period of years. The OPC shall include budgetary figures associated with the require System-wide Improvement Framework (SWIF) compliance costs.

Deliverable: A recommendation associated with a preferred alternative to be utilize in the preliminary design.

Internal Drainage Considerations **$75,000**

Continue and extend the previous evaluation of the internal drainage considerations at the identified locations to control internal drainage pursuant to FEMA's guidelines. This is to include an opinion of probable costs for these systems and separation of the eligible and ineligible costs for State Water Commission cost share finding, and alternative funding considerations to equitably distribute costs.

Deliverable: A preliminary design recommendation and sizing for modifications to the gravity culvert system through the levee, as well the needed upgrades and expansion of the stormwater lift stations. Opinions of probable costs will be provided for these systems.

Preliminary Plan Set Development **$200,000**

This task includes preparing a 60% set of Plans and Specifications for the preferred project alternative for submittal to FEMA, the SWC and USACE. These documents will be used as base drawings for development of the final design and rehabilitation plan set as well as for the FEMA Conditional Letter of Map Revision (CLOMR) submittal.

Deliverable: Preliminary Plan and Profile Drawings (60%)

Landowner Communication and Value Determinations **$25,000**

Assist in communicating with landowners related to existing easements for consideration of ownership status, and those properties being considered for easement or acquisition to implement the preferred alternative. Preliminary easement and boundary documents will be prepared for future use. This task does not include the completion of property appraisals or final parcel documents.

Deliverable: Recommendations regarding the status of each parcel and a projected Opinion of Probable Cost for easement and land acquisition.

Consider Funding Alternatives **$45,000**

Provide guidance and assistance to the LHRWRD in coordination with the City of Mandan to evaluate and determine a process to equitably assign and distribute project costs to the applicable benefiting properties. This includes consideration and evaluation of alternative means and processes to raise adequate revenues through one or several available funding methods. This includes use of available City and County GIS parcel data to create potential special assessment districts. This process considers messaging of the project benefits to those who might be assessed, and the public, including the long-term savings associated potential flood insurance premiums and reduced flood risks. This task will not include resolutions, advertisement or voting process that might occur under NDCC funding processes.

Deliverable: Provide a recommendation for local funding alternative(s) for consideration and acceptance by the LHRWRD and City of Mandan.

Hydrology and Hydraulic Considerations **$65,000**

Complete a final evaluation of the hydrology and hydraulics for the selected features and a preferred alternative for the preliminary design and CLOMR submittal. Utilize this modeling to calibrate and refine the results to achieve the desired project functionality and benefits. The findings and information of this work to be communicated with the federal and state agencies for concurrence and acceptance prior to proceeding with the preliminary design plans.

Deliverable: A Hydrology and Hydraulics Report to submit to the NDSWC, FEMA and the USACE for consideration and approval for implementation and project certification.

Conditional Letter of Map Revision (CLOMR) **$40,000**

Prepare documentation as required for a Conditional Letter of Map Revision (CLOMR) submittal to FEMA. This includes completion of the FEMA MT-2 form and all required supporting documentation for the preferred alternative.

Deliverable: A complete Conditional Letter of Map Revision submittal document for the preferred alternative.

Wetland and Environmental Inventory **$35,000**

Conduct a wetland and environmental inventory of all properties within the existing and the proposed expanded project boundaries. This task includes discussions and communications with the USACE and USDA regarding the completed delineations and documentation, and a draft of an Environmental Assessment.

Deliverable: A completed Wetland Delineation Report and draft EA document.

Community Communications **$40,000**

Assist the LHRWRD and City of Mandan in strategically providing information to the federal, state and local political subdivisions, beneficiaries who could be assessed for the project costs, as well as to the public. This to include selected websites, Facebook, emails, Mandan Messenger, other electronic means, and up to two public informational meetings.

Deliverable: Provide specific recommendations and messaging and communication efforts associated with project development.

General Project Management and Development Services **$50,000**

Provide on-going project management services related to project development and task completion as noted within this scope of services.

Provide assistance and guidance in discussions with federal and state agencies, and political subdivisions as necessary for the development, permitting and project funding.

Providing routine updates to the LHRWRD, Mandan City Commission, Morton County Commission and Morton County WRD at their regular or special meetings.

Assist the LHRWRD in securing funding for the next stages of project development through implementation.

Deliverable: Ongoing project management services as required.

Total Budget $800,000

Lower Heart Flood Control Project Technical Memorandum

HoustonEngineering Inc.

To: Board of Managers
Lower Heart River Water Resource District
From: Michael Gunsch PE, CFM
C. Gregg Thielman PE, CFM
Bret Zimmerman PE
Houston Engineering, Inc.
Subject: Lower Heart River Levees Hydraulic Assessment
Date: October 11, 2017
Project: HEI No: R176809-001

PURPOSE

The purpose of this technical memorandum is to document the results of a hydraulic evaluation of the Lower Heart River near Mandan, ND. This hydraulic evaluation was performed to assess the freeboard for the Lower Heart River levee system originally constructed in the late 1950's, consisting of three segments known as the Lower Unit, Mandan Unit, and Sunny Unit as shown on **Figure 1**. The hydraulic evaluation extended from the Interstate 94 Business Loop crossing west of County Road 82 to the Heart River confluence with the Missouri River. The primary focus was to determine if physical channel and floodplain modifications could be made to lower the 1-percent annual chance (100-year) water surface profile, so that the existing levees would meet freeboard requirements for Federal Emergency Management Agency (FEMA) accreditation in accordance with Title 44, Chapter 1, Section 65.10 of the Code of Federal Regulations (44 CFR 65.10).

BACKGROUND

The Lower Heart River in the evaluation reach is highly susceptible to ice flow and ice jams during spring flood events. River ice forms along the channel during the winter months. In the spring as snowmelt runoff flows through the river channel, ice sheets breakup and the ice is carried downstream. The ice then jams along the channel at bridges and in the floodplain where floodwaters overtop the channel banks.

In 2009, the North Dakota State Water Commission in cooperation with FEMA initiated a map modernization project for Morton County, ND. The map modernization project includes updates to the digital Flood Insurance Rate Maps (DFIRM) for Morton County and development of a new detailed Flood Insurance Study for the Lower Heart River. As part of the map modernization project, the study contractor Ulteig/Atkins, completed a hydrologic and hydraulic analysis for the Heart River, which included examining ice jams along the Lower Heart River. The results of this study are summarized in the technical memorandum titled *Morton County, ND – Heart River Ice Jam and Levee Analysis*, dated June 20, 2011. As part of the study, Ulteig/Atkins simulated three modeling scenarios in order to determine the critical scenario resulting the in highest water surface elevation.

The three scenarios were open water, ice cover, and ice jam. For the ice jam scenario, a modeled lateral structure that simulated breakout flows to the south, between North Dakota State Highway 1806 (ND Hwy 1806) and the Trolley Bridge, as shown on **Figure 1** was turned off (no flows breakout out of the channel into the downstream overbank area). Due to the ice thickness and based on local stakeholder comments, the right overbank in this area typically fills with large pieces of ice which effectively obstruct breakout flows to the south. As a result of the modeling performed for the Ulteig/Atkins study, it was determined that the ice jam scenario was the critical or controlling scenario. Under the ice jam conditions, all three levee segments do not meet levee freeboard requirements for FEMA accreditation in accordance with 44 CFR 65.10.

In October 2016, Bolton and Menk, consultant for the Lower Heart Water Resource District, competed an amended report titled *Lower Heart River Hydraulic Analysis*. The report summarized the study results that examined if channel modifications could be used to lower the 100-year water surface elevation enough to meet FEMA freeboard requirements, without modifying the existing levees. The components examined included the following:

- Channel modifications in the right overbank downstream of the Trolley Bridge.
- Channel modifications in the right overbank between Trolley Bridge and ND Hwy 1806.
- Removing the ice jam between the Trolley Bridge and ND Hwy 1806. The lateral structure that was turned off under the Atkins/Ulteig study was turned on to allow for breakout flows between the Trolley Bridge and ND Hwy 1806.
- Channel improvements between ND Hwy 1806 and ND Hwy 6 including excavating and widening the existing channel.
- Shifting the right/west levee further to the west between ND Hwy 6 and the Burlington Northern Santa Fe (BNSF) Railroad.

This study builds off the features identified in the Bolton and Menk study and expands the concept to evaluate alternatives to help ensure the right overbank conveyance between the Trolley Bridge and ND Hwy 1806 can be maintained during ice jam conditions.

MAP MODERNIZATION PROJECT HYDROLOGY AND HYDRAULIC MODELING

As part of the 2009 map modernization project, a hydrologic analysis was completed by Ulteig/Atkins for the Heart River in Morton County, ND. The hydrologic and hydraulic analysis performed by the Ulteig/Atkins team is summarized in a Technical Memorandum titled *Morton County, ND – Heart River Ice Jam and Levee Analysis*, dated June 20, 2011. This analysis utilized the PeakFQ

computer program to calculate flood frequency discharges at USGS Gage 06349000 Heart River near Mandan, ND. The analysis used a period of record from 1951 to 2009. Flood records prior to 1951 were not included in the analysis due to the construction of Heart Butte Dam in 1950. The flood frequency discharges from this report are shown as "All Season" in **Table 1** below.

Due to the ice jams that occur on along the Lower Heart River, a hydraulic ice jam analysis was completed by the Ulteig/Atkins team. The analysis followed the procedures as outlined in *Appendix F: Guidance for Ice-Jam Analyses and Mapping* from the FEMA publication *Guidelines and Specifications for Flood Hazard Mapping*. According to the FEMA publication, mapping partners are to use either a "direct" or "indirect" approach for conducting an ice jam analysis, depending on the situation. The Ulteig/Atkins team used the "direct" approach to develop Ice Affected and Open Water stage exceedance probabilities at USGS Gage 06349000 which is at the upstream extent of the study reach, and then used an "indirect" approach to estimate peak water surface elevations throughout the Lower Heart River downstream of the USGS gage.

The "direct" approach is to develop exceedance probabilities for ice jam events and open water or free flow events independently, and then combine the probability curves to determine the joint probability. Ulteig/Atkins completed this process and concluded that the combined peak stage is controlled by the ice affected floods and the open water season floods have minimal effect on the combined peak stages. An "indirect" approach was then used to compute stage-discharge relationships throughout the study reach. This was done by utilizing the hydraulic modeling computer program Hydrologic Engineering Center River Analysis System (HEC-RAS). The open water condition and discharges were used to calibrate the hydraulic model. Once the model was calibrated, the hydraulic model was simulated using the ice affected discharges and the ice cover and ice jam parameters within the HEC-RAS modeling software to develop the stage-discharge relationship downstream of the USGS gage. This methodology was approved by FEMA in a correspondence email from their review contractor, Michael Baker Jr., to Ulteig Engineering dated August 18, 2010.

This Lower Heart River Hydraulic Assessment uses the ice affected discharges as developed by Ulteig/Atkins. The discharges are shown below in **Table 1**.

Table 1 : Flows

Condition	10-Year (10% Chance)	50-Year (2% Chance)	100-Year (1% Chance)	500-Year (0.2% Chance)
All Season	17,080	36,970	47,280	74,670
Ice Affected	14,870	35,110	45,350	71,070

HYDRAULIC ANALYSIS AND ALTERNATIVE EVALUATION

This hydraulic evaluation uses the HEC-RAS (version 5.0.3) hydraulic modeling computer program and the base hydraulic model developed by Ulteig/Atkins. The existing conditions and proposed alternative are discussed in detail in the following sections. All elevations in this technical memorandum reference the North American Vertical Datum of 1988 (NAVD88).

EXISTING CONDITIONS

The existing conditions analysis utilized the ice affected discharges as well as the ice cover with ice jam parameters within HEC-RAS. The lateral structure between ND Hwy 1806 and the Trolley Bridge, shown on **Figure 1,** was turned off for the existing conditions analysis. This is consistent with the Map Modernization Project modeling.

The 100-year water surface elevation profile for the ice jam conditions is shown on **Figure 2**. Also shown are the top of levee elevations for both the left and right levees (where right levees exist). These elevations were based on LiDAR elevation data acquired in 2016. Based on 44 CFR 65.10, *"Riverine levees must provide a minimum freeboard of three feet above the water-surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures (such as bridges) riverward of the levee or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required."* The levee elevations minus required freeboard based on 44 CFR 65.10 are shown on **Figure 2**. For the levees to meet freeboard requirements, the water surface elevation must be below the "without freeboard" elevation shown. Based on the existing conditions hydraulic model results, the 100-year water surface elevation is above the without freeboard elevation from the I94 Business Loop to the Trolley Bridge, therefore these levees do not comply with the freeboard requirement.

PROPOSED ALTERNATIVE

In order for the levees to meet freeboard requirements, either the levees would need to be raised or the modeled 100-year water surface profile has to be lowered. A strategy to lower the water surface profile would be to implement varying project components that could increase channel or overbank conveyance. The project components included in the proposed alternative are shown on **Figure 3**. Typical cross sections for certain project components are also shown in the Figures section of this report. The locations of these typical cross sections are shown on **Figure 4**.

- ***Bypass Channel*** – This component includes excavating a bypass channel in the overbank area south of the Heart River east of ND Hwy 1806 to maintain overflow conveyance during ice jam conditions. The bypass channel would divert flows from Heart River and convey floodwaters downstream in the overbank, then east through an existing railroad bridge back

into the Heart River, downstream/south of the Trolley Bridge. The proposed bypass channel overflow inlet is set just above the 10-year all season water surface elevation, as shown on **Figure 5**. The bypass would have a 350-foot bottom width resulting in around a 600-foot footprint, as shown on **Figure 6**. This feature will require additional consultation with FEMA to ensure the bypass channel adequately addresses their concerns with potential blockage of the overflow during ice flow conditions.

- ***Overbank Excavation Approximately 250-foot Footprint (~2-Year Elevation)*** – This component includes excavating the right/south overbank of the Heart River between ND Hwy 1806 and ND Hwy 6. The proposed overbank excavation would be set above the 2-year all season water surface elevation as shown on **Figure 7**. The excavation would have a maximum footprint of 250 feet from the edge of the channel to the natural ground tie-in location for the majority of the reach. On the eastern portion of the excavation near ND Hwy 1806, the excavation would be less than the 250-foot footprint due to the old municipal landfill site, that has been closed, approximately 500 feet upstream of ND Hwy 1806.

- ***Remove Existing Levee and Excavate Overbanks (~5-year Elevation)*** – This component includes removing the existing levee on the right/west side of the Heart River upstream of ND Hwy 6 and downstream from the BNSF Railroad near the North Dakota Youth Correctional Center. The existing levee alignment is along the banks of the Heart River. The existing levee area would be lowered to the approximate 5-year all season water surface elevation.

- ***Move Existing Levee Alignment Further West*** – This component would reconstruct a levee upstream of ND Hwy 6 and downstream of the BNSF Railroad further west from the existing levee to be removed as part of the above alternative. The component along with the above shifts the line of protection away from the channel west toward the North Dakota Youth Correctional Center. **Figure 8** illustrates the relocated levee alignment.

- ***Raise Existing Levee*** – This component consists of raising a portion the existing levee system between ND Hwy 6 and the BNSF Railroad. The left bank levee profile shown on **Figure 2** indicates a portion of the levee is approximately 2 feet lower than the downstream profile. This component would raise the existing levee along the west side of the Municipal Golf Course to establish a consistent levee profile.

After incorporating all the components described above, the 100-year ice affected water surface profile is measurably reduced from existing conditions. **Figure 9** illustrates both the existing conditions and proposed alternative water surface profiles. These profiles indicate if all proposed project components are implemented the new water surface elevation would be near or below the without freeboard profile and the levees would meet 44 CFR 65.10 freeboard requirements. **Figure 10** illustrates the water surface profile as well as an annotation of the project components. Minor levee grade raises or modifications to the improvements described above may be necessary in some areas in order to meet the freeboard requirements.

During the course of the study the option to modify the Trolley Bridge and excavating the Heart River overbanks between ND1806 and the Trolley Bridge was examined as an alternative to constructing the bypass channel. The Trolley Bridge modification included removing the bridge and abutments near the Heart River channel and excavating the southern overbank to the 2-year all season water surface elevation to the extents shown on **Figure 11**. After further review it was determined this option was less effective in providing the desired water surface reductions, and resulted in the loss of the bridge or requirement for a new one at considerable cost.

SUMMARY OF RESULTS AND NEXT STEPS

The proposed alternative as described above results in the modeled 100-year water surface profile being lowered to meet levee freeboard requirements in most areas as highlighted in **Figure 9** and **Figure 10**.

The evaluation performed identified several other areas that require additional consideration that were not examined as part of this study. These areas are shown on **Figure 12** and include:

- This analysis assumed the levee alignment continues through the BNSF railroad grade. Additional consideration will be required to determine the feasibility of continuing the line of protection through the railroad grade and whether additional system modifications are required.

- Evaluate the potential use of 3rd Street to replace a portion of the existing earthen levee system around an old river oxbow. This relocation of the line of protection could reduce future O&M costs, improve the ability to battle flooding, and potentially increase the internal stormwater detention storage to control upstream runoff.

- In order for the west levee of the Mandan Unit to tie into high ground, a portion of the Sunny Unit levee would need to meet NFIP levee requirements. The I-94 Business Loop functions as the levee in the Sunny Unit. Additional analysis would need to be completed to determine if the roadway was constructed in such a manner that would meet 44 CFR 65.10 requirements.

- The Sunny Unit would tie into high ground utilizing the West Tie-Back Levee as shown on **Figure 12**. This analysis assumed that levee would meet all NFIP levee requirements.

The components in the proposed alternative were conceptually sized to lower the water surface profile to meet the 44 CFR 65.10 freeboard requirement. Further hydraulic analysis on these components is necessary to optimize the sizing and location of proposed project components.

This analysis assumed that the existing levees would meet all requirements for stability, seepage, etc. in accordance with 44 CFR 65.10. A full geotechnical evaluation is needed to determine if the existing levees would meet these requirements, or if any additional modifications or improvements are required.

Morton County Emergency Management is in the process of applying for a FEMA Grant to further evaluate the Lower Heart Flood Control Project. This new evaluation will include a geotechnical exploration of the levees from the Trolley Bridge upstream to the I-94 Business Loop (Mandan Unit), the alternative levee alignment along 3rd Street, the overflow bypass channel, expanding overbank conveyance on the south side of the river, relocating the western levee and increasing overbank conveyance between ND Hwy 6 and I-94 Business Loop. Surveys will be completed to determine current levee elevations and structure locations.

Based on the geotechnical condition assessment and proposed hydraulic improvements an opinion of probable construction costs for compliance will be developed, along with regulatory agency coordination. In addition, a hydrologic review will be completed upstream from the I-94 Business Loop (Sunny Unit) to determine the need for improvements in this reach. The project overall purpose is to determine the viability to certify these levees or the alternatives in accordance with Section 65.10 of the National Flood Insurance Program regulations for existing levees. This will allow the Lower Heart Water Resource District to advance the rehabilitation/certification project to the next stage of design and implementation.

Figures

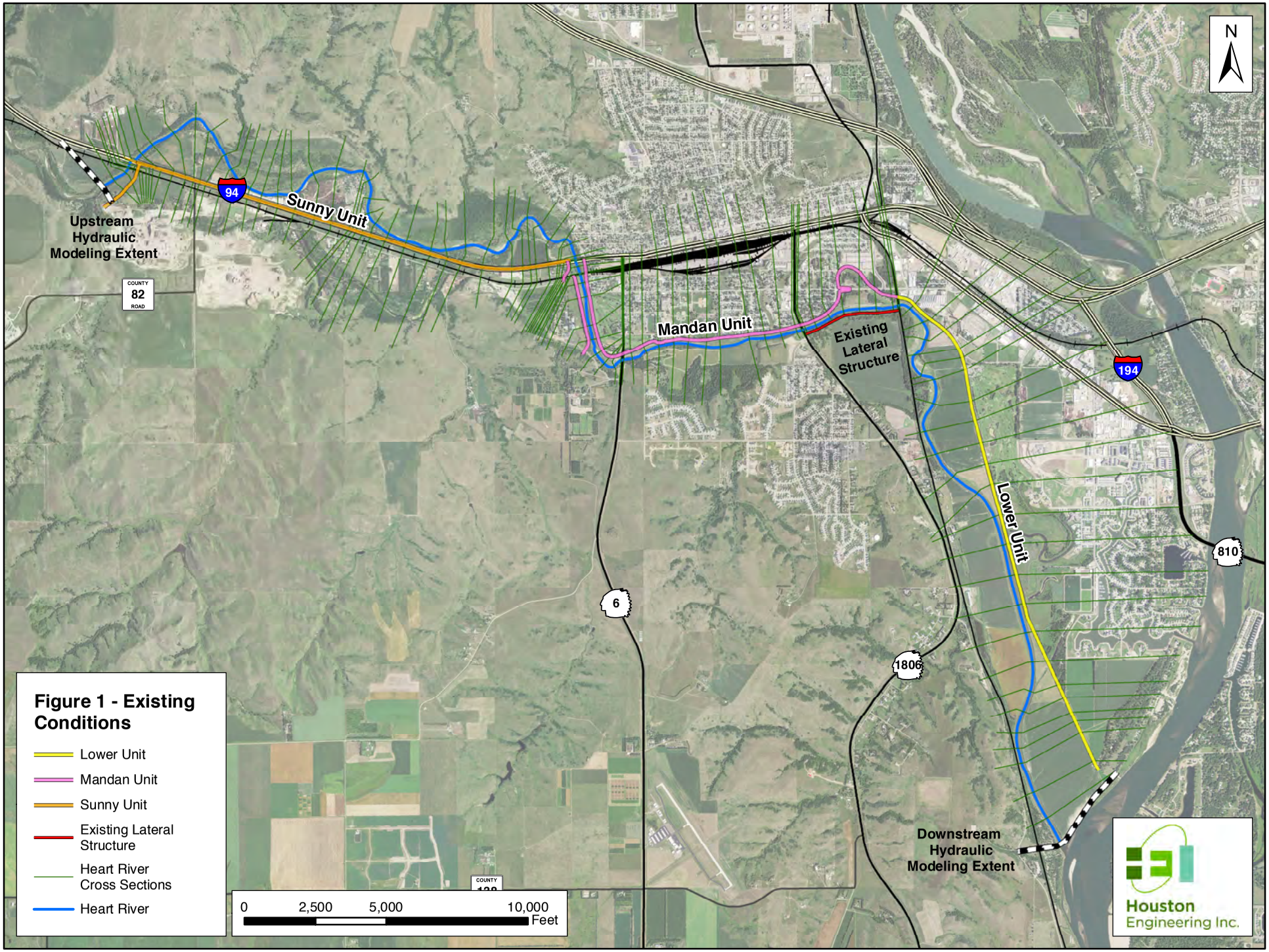
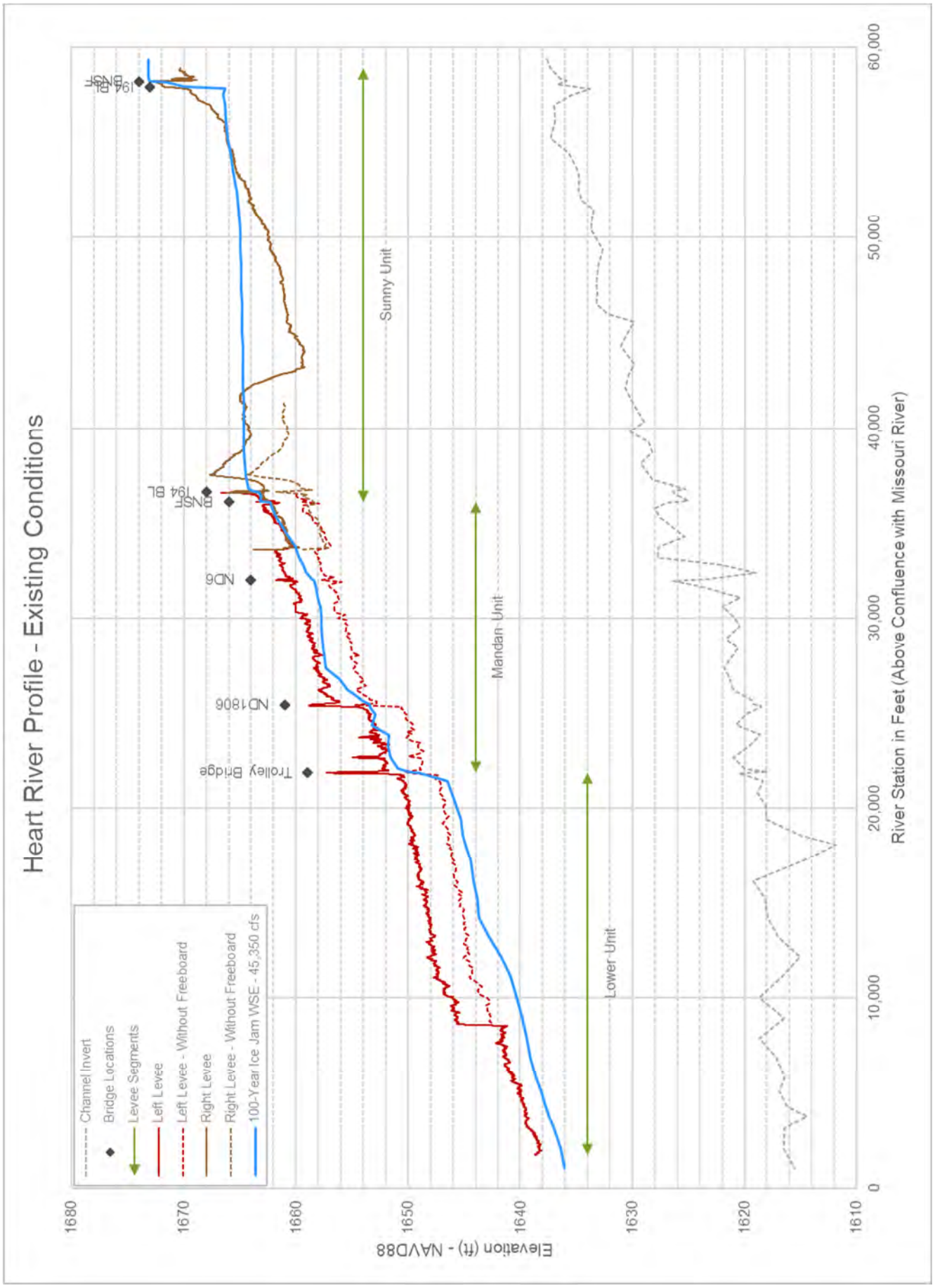

N
94
Sunny Unit
Upstream
Hydraulic
Modeling Extent
COUNTY
82
ROAD
Mandan Unit
Existing
Lateral
Structure
194
Lower Unit
810
6
1806
Downstream
Hydraulic
Modeling Extent
Figure 1 - Existing Conditions
Lower Unit
Mandan Unit
Sunny Unit
Existing Lateral Structure
Heart River Cross Sections
Heart River
0
2,500
5,000
10,000
Feet
Houston
Engineering Inc.

Figure 2: Heart River Profile – Existing Conditions



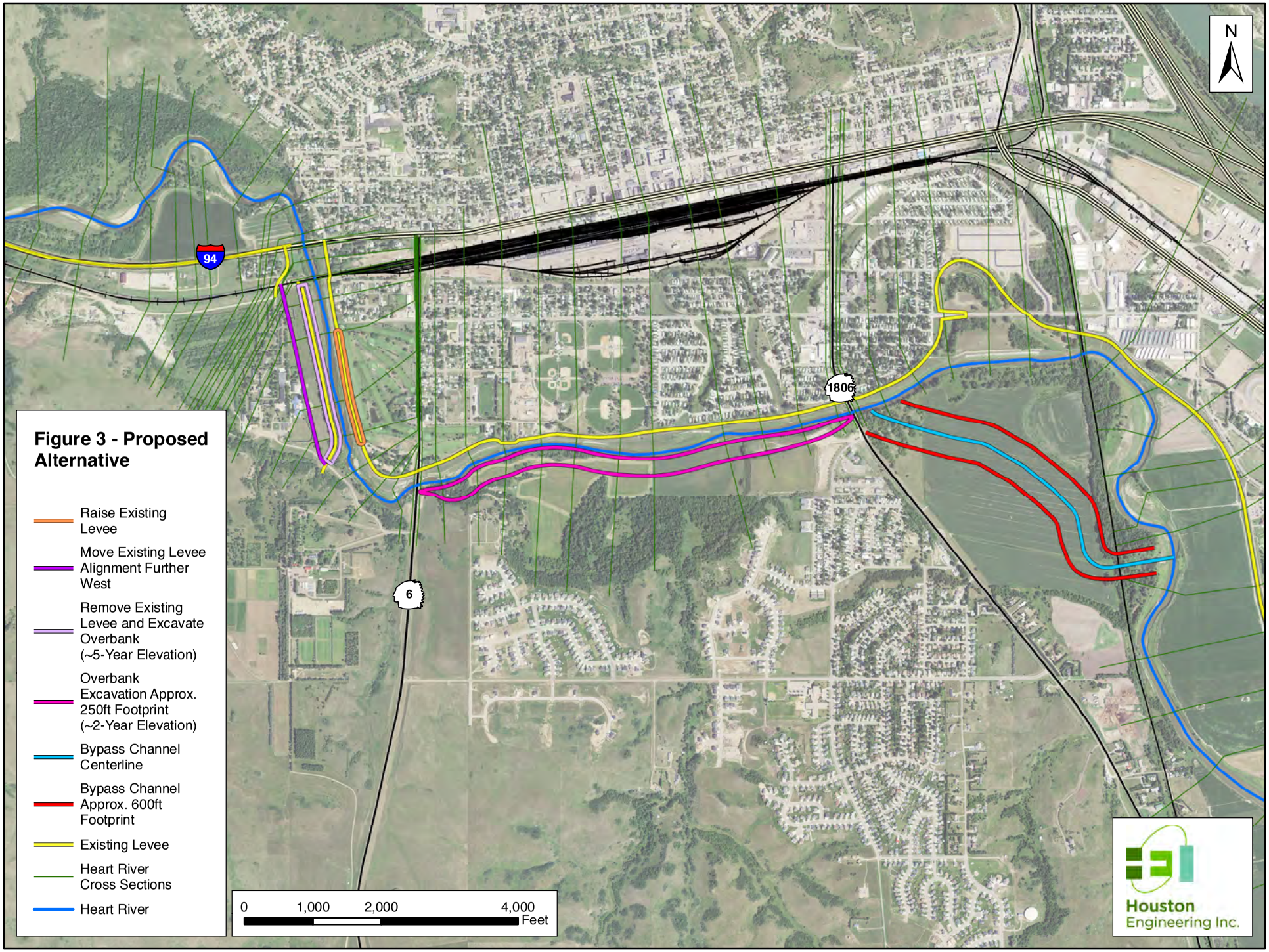


Figure 3 - Proposed Alternative
Raise Existing Levee
Move Existing Levee Alignment Further West
Remove Existing Levee and Excavate Overbank (~5-Year Elevation)
Overbank Excavation Approx. 250ft Footprint (~2-Year Elevation)
Bypass Channel Centerline
Bypass Channel Approx. 600ft Footprint
Existing Levee
Heart River Cross Sections
Heart River
0
1,000
2,000
4,000
Feet
N
94
1806
6
Houston Engineering Inc.

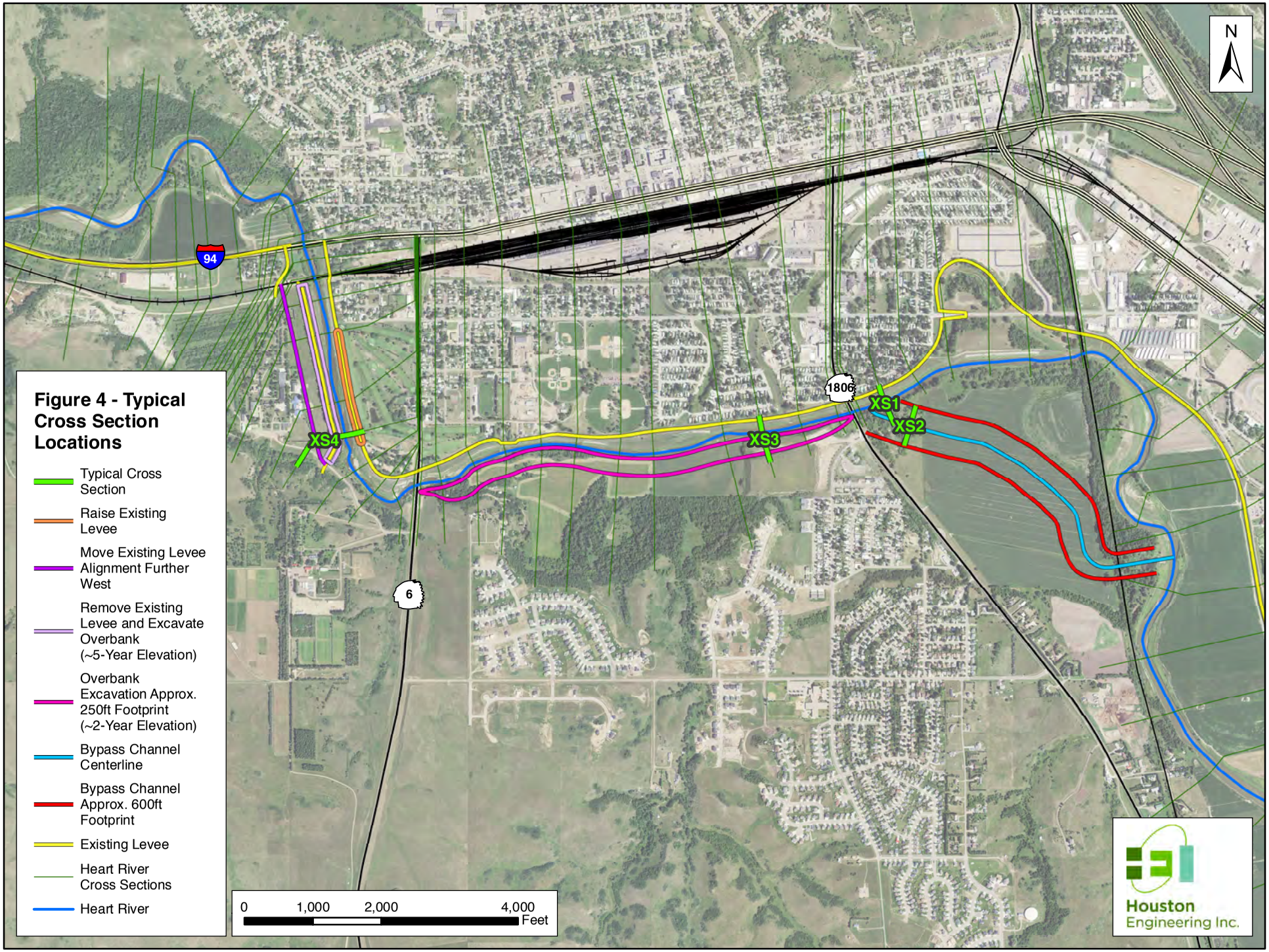


Figure 4 - Typical Cross Section Locations
Typical Cross Section
Raise Existing Levee
Move Existing Levee Alignment Further West
Remove Existing Levee and Excavate Overbank (~5-Year Elevation)
Overbank Excavation Approx. 250ft Footprint (~2-Year Elevation)
Bypass Channel Centerline
Bypass Channel Approx. 600ft Footprint
Existing Levee
Heart River Cross Sections
Heart River
XS1
XS2
XS3
XS4
1806
94
6
N
0
1,000
2,000
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Feet
Houston Engineering Inc.

Figure 5: XS1: Heart River 500 feet Downstream of ND Hwy 1806 – Bypass Inlet Location

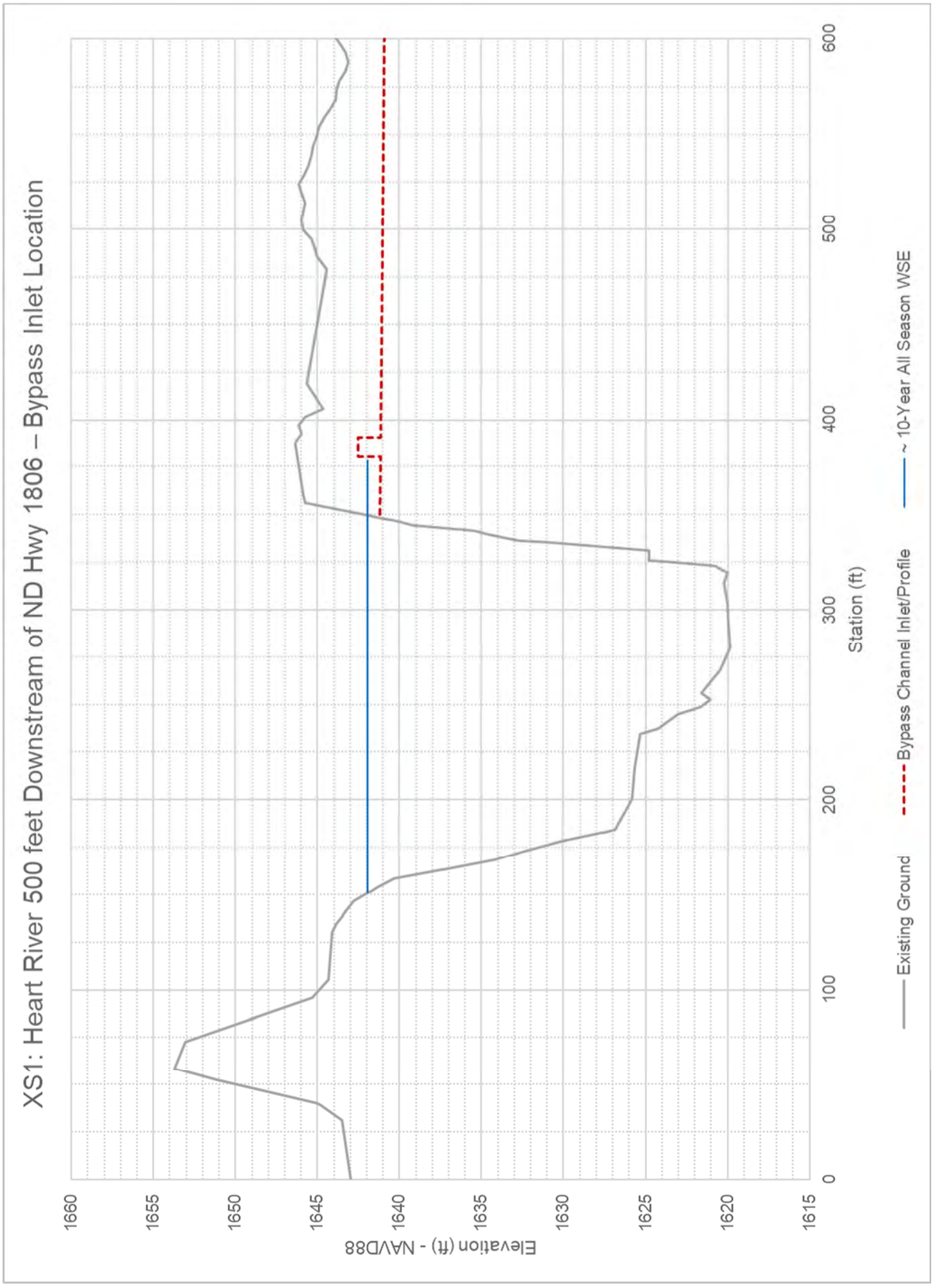


Figure 6: XS2: Bypass Channel Cross Section

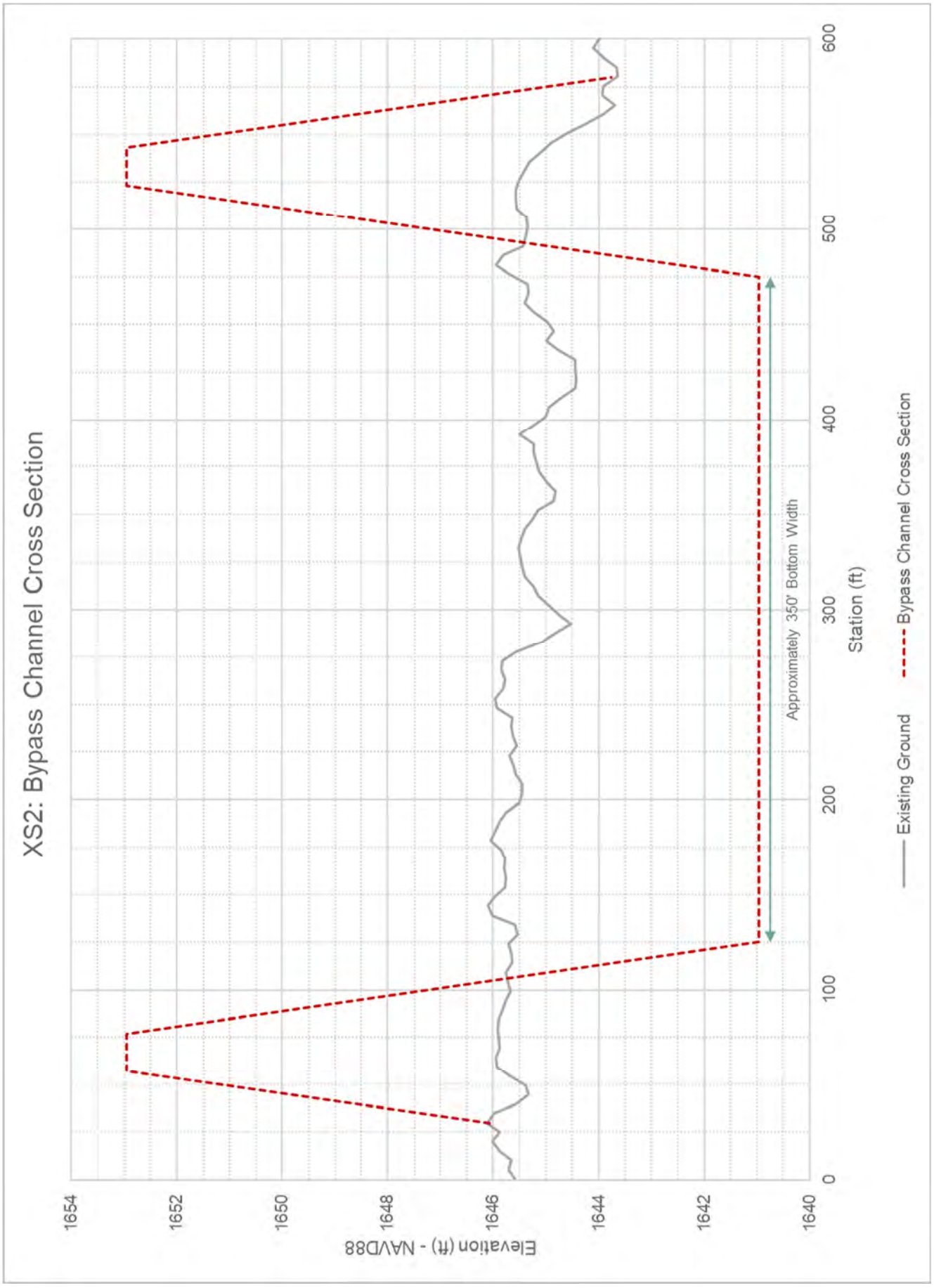


Figure 7: XS3: Heart River 1,300 feet Upstream of ND Hwy 1806

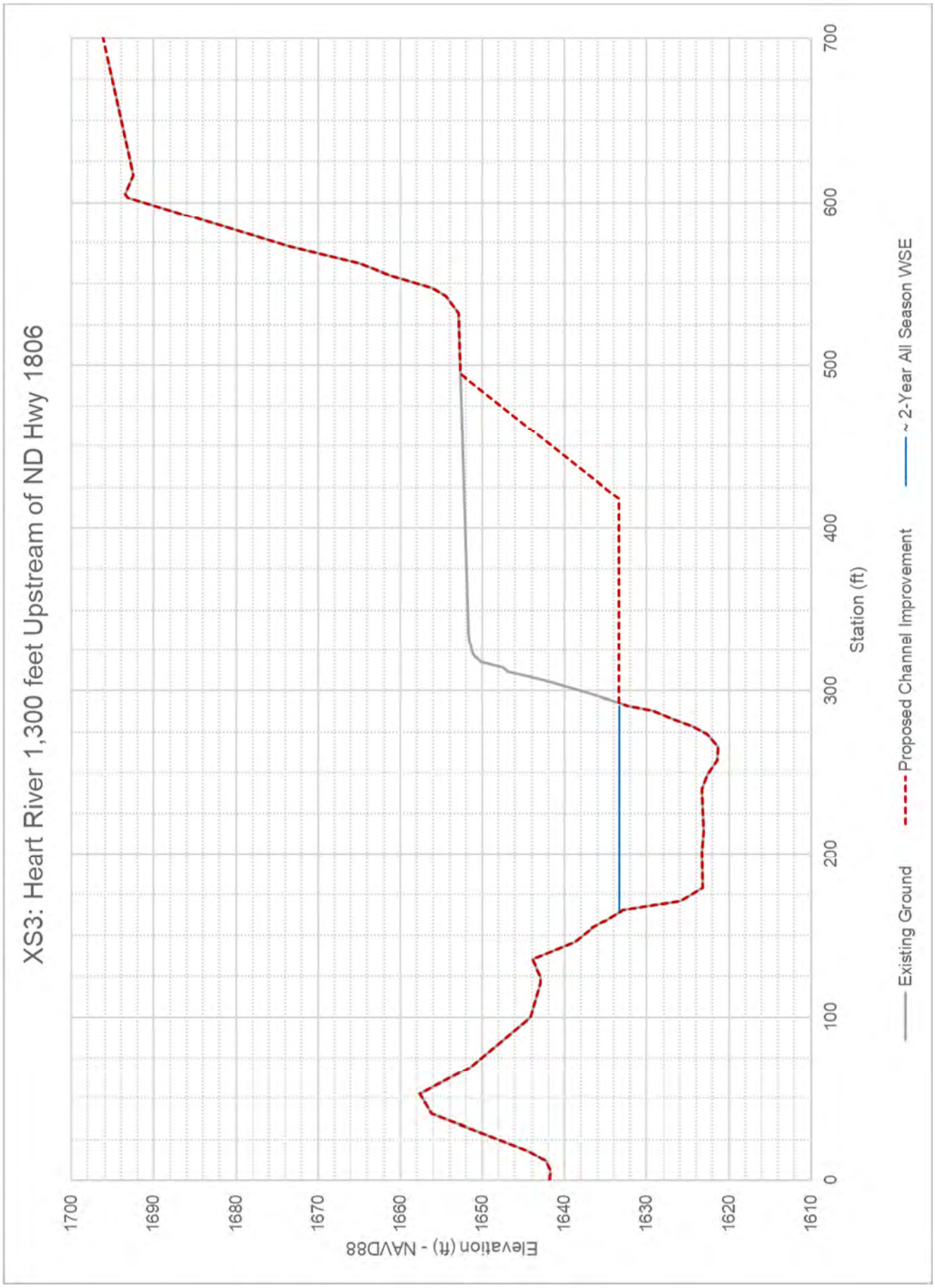


Figure 8: XS4: Heart River 1,700 feet Upstream of ND Hwy 6

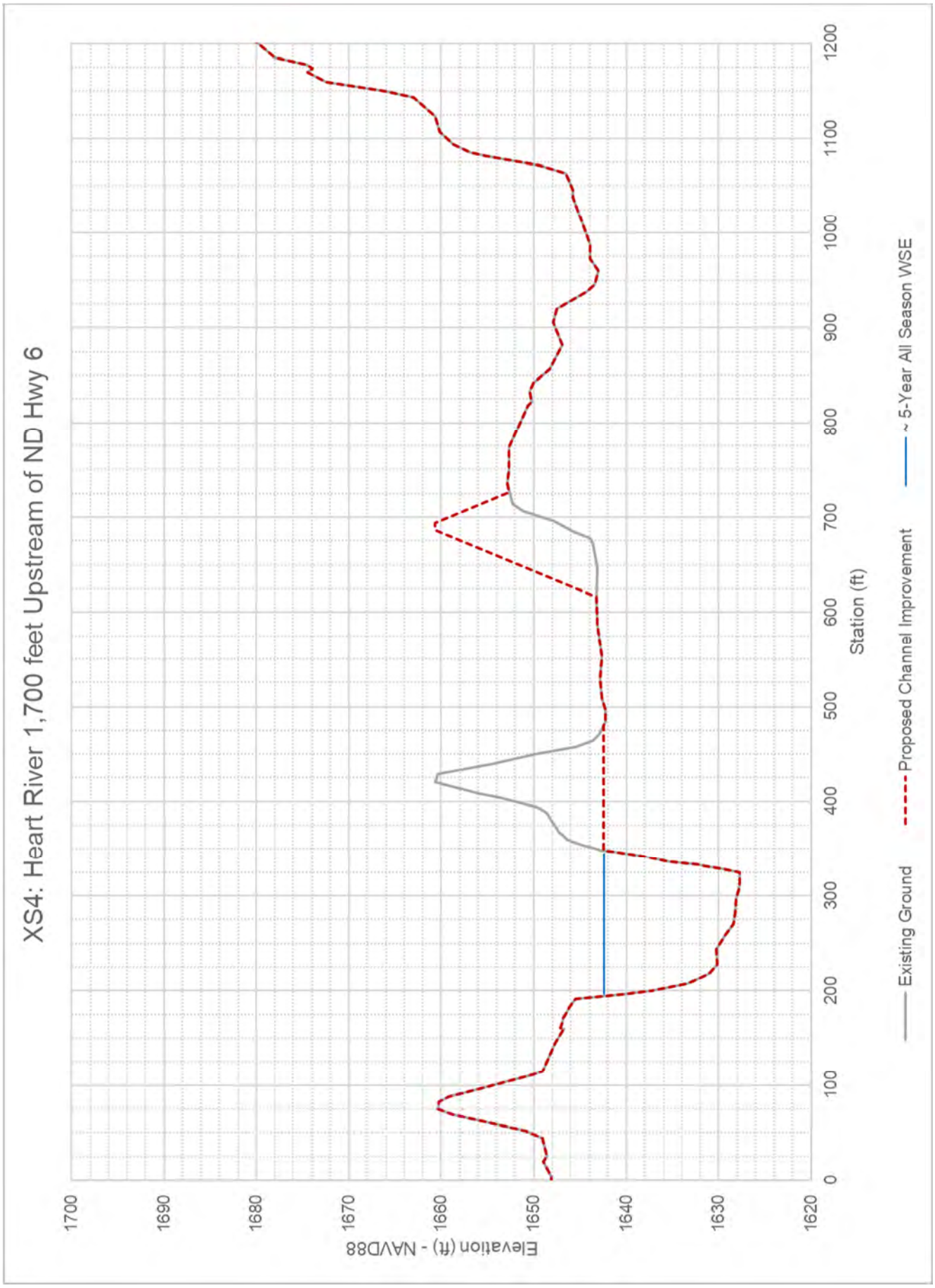


Figure 9: Heart River Profile – Proposed Alternative

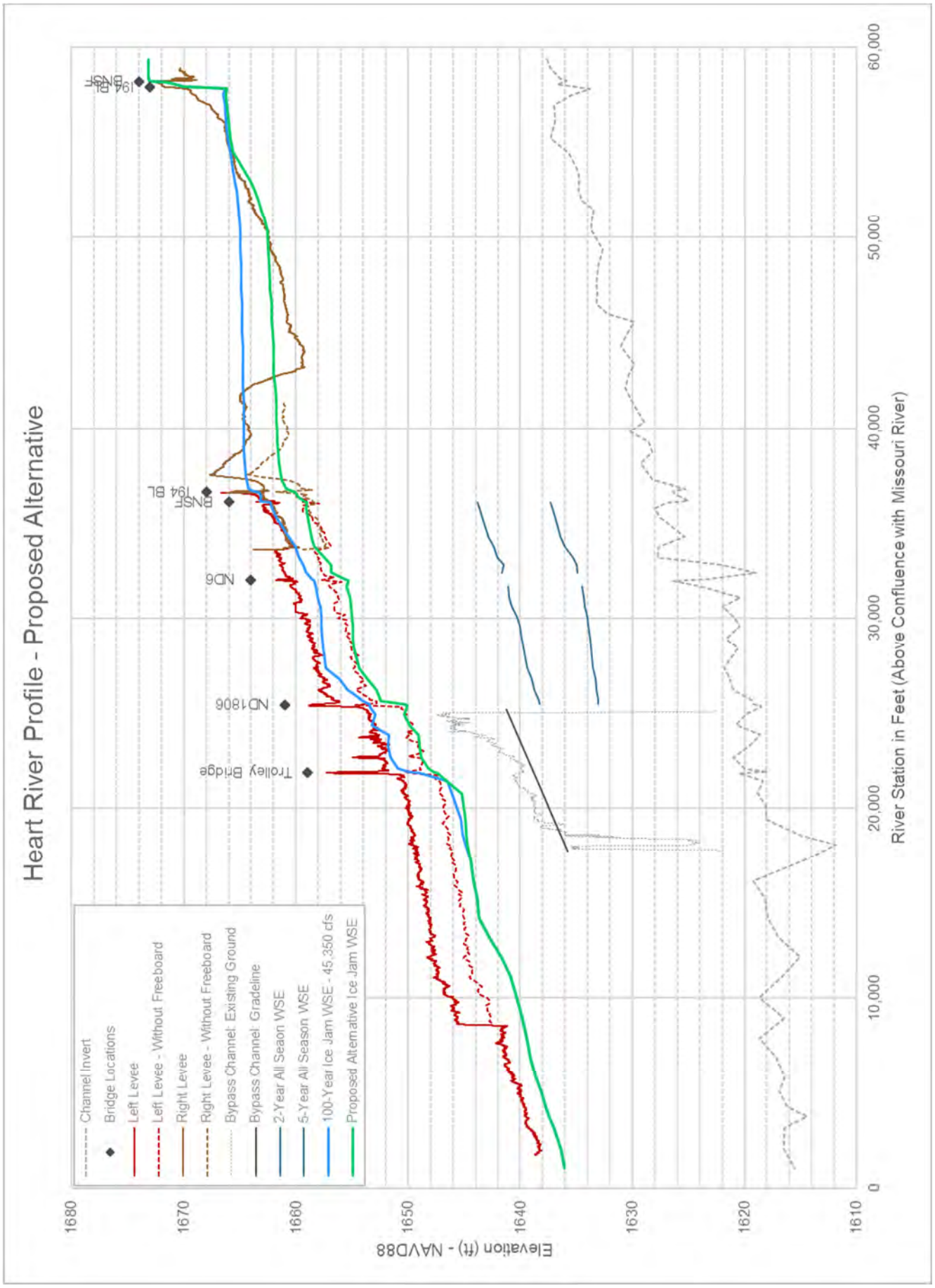
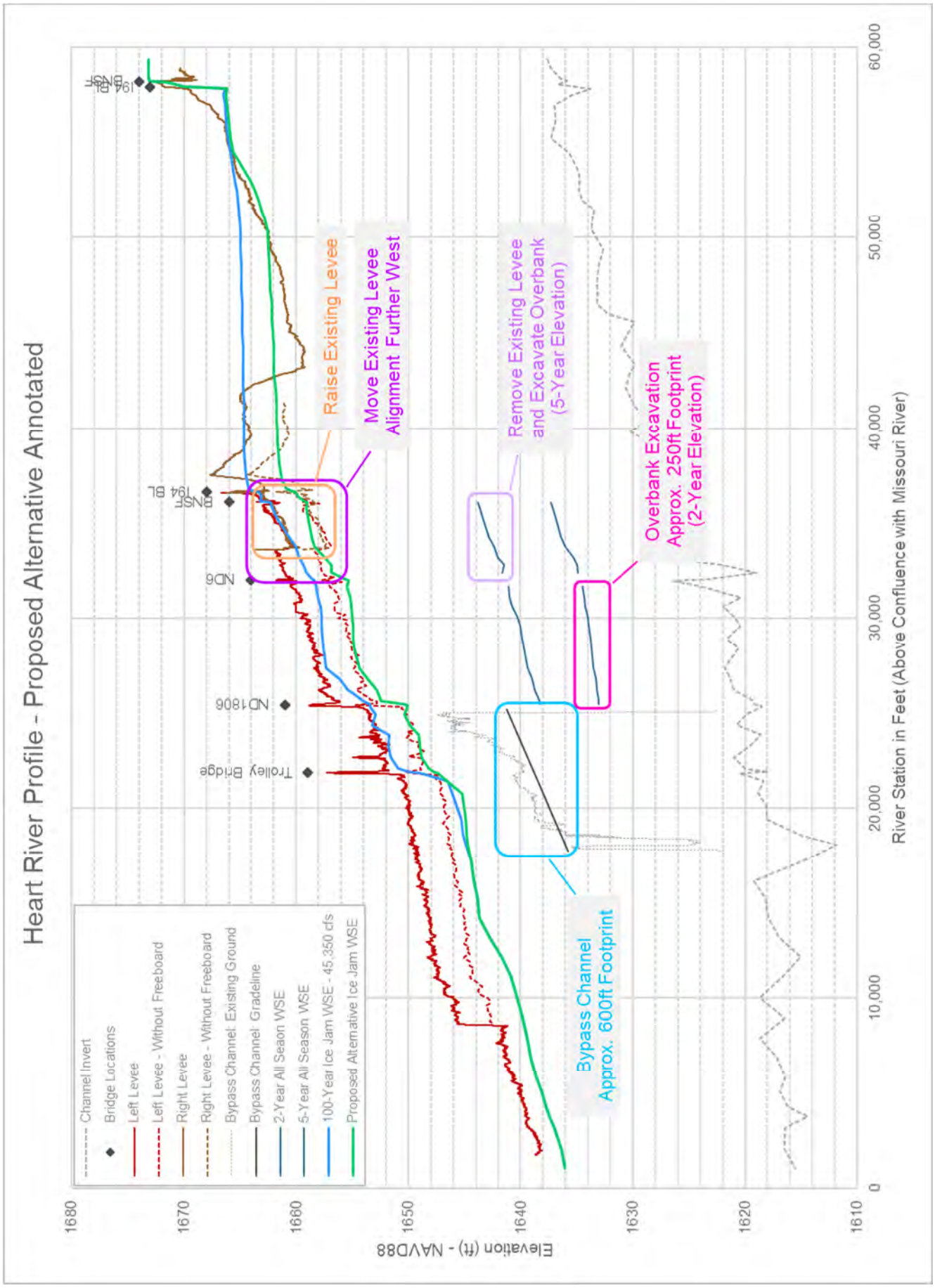
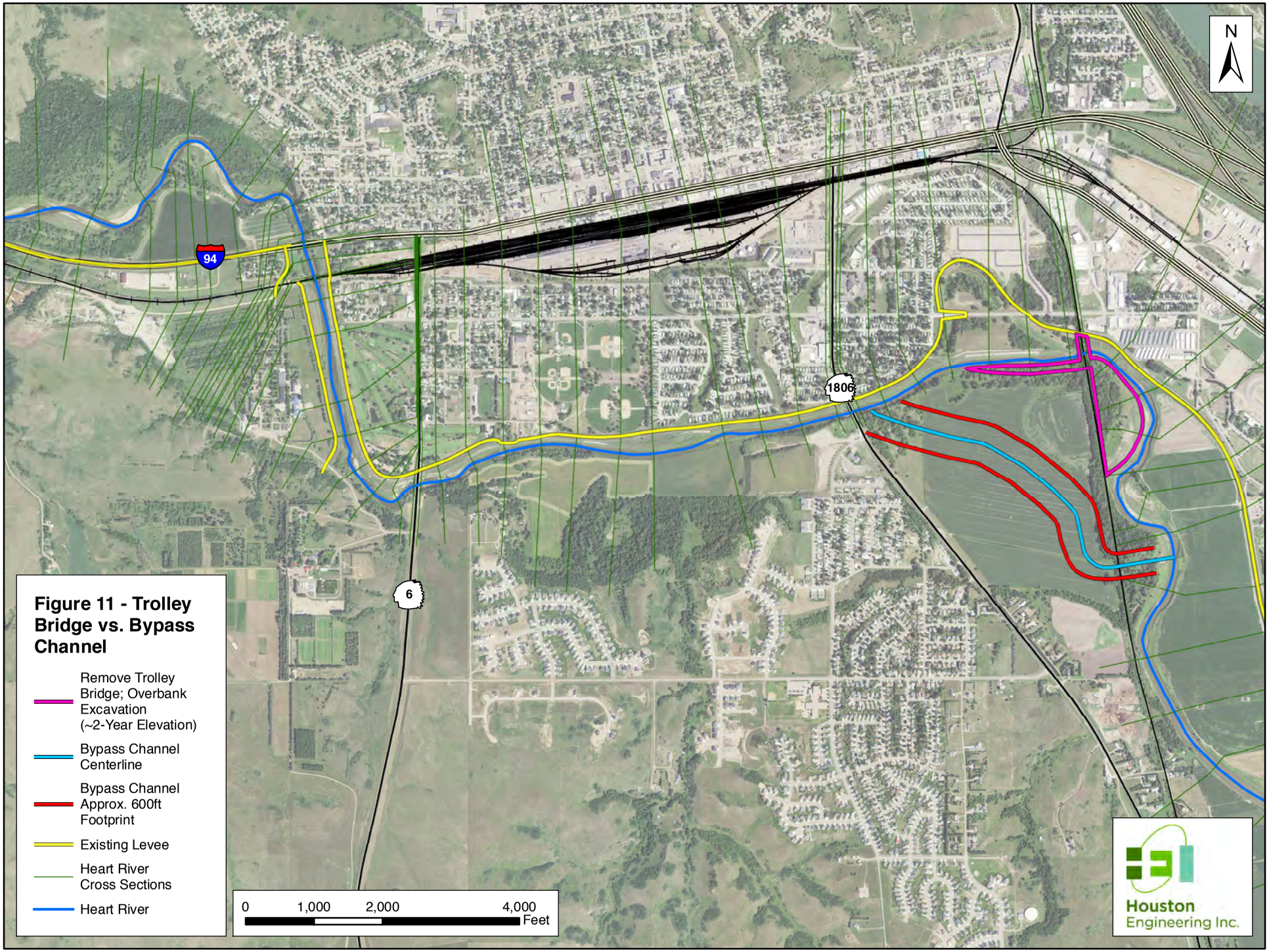


Figure 10: Heart River Profile – Proposed Alternative Annotated




N
94
1806
6
Figure 11 - Trolley Bridge vs. Bypass Channel
Remove Trolley Bridge; Overbank Excavation (~2-Year Elevation)
Bypass Channel Centerline
Bypass Channel Approx. 600ft Footprint
Existing Levee
Heart River Cross Sections
Heart River
0
1,000
2,000
4,000
Feet
Houston Engineering Inc.


I94 Business Loop Roadway Functions as Levee
Sunny Unit
94
Line of Protection Through BNSF Railroad
West Tie-Back Levee
Mandan Unit
6
N
Figure 12 - Additional Consideration Areas
Mandan Unit
Sunny Unit
Heart River Cross Sections
Heart River
0 250 500 1,000 Feet
Houston Engineering Inc.

APPENDIX H

COST-SHARE REQUEST FORM

NORTH DAKOTA STATE WATER COMMISSION
DEVELOPMENT DIVISION
SFN 60439 (5/2017)

This form is to be filled out by the project or program sponsor with State Water Commission staff assistance as needed. Applications for cost-share are accepted at any time. However, applications received less than 30 days before a State Water Commission meeting will be held for consideration at the next scheduled meeting.

Please answer the following questions as completely as possible. Supporting documents such as maps, detailed cost estimates, and engineering reports should be attached to this form. If additional space is required, please use extra sheets as necessary.

For information regarding cost-share program eligibility see the *State Water Commission Cost-Share Policy, Procedure, and General Requirements* – available upon request or at www.swc.nd.gov.

Project, Program, Or Study Name
City of Minot 2018 Outfall Pipe Rehabilitation Project, Minot SWIF Action D, Project No. 3135.2D

Sponsor(s)
City of Minot

County	City	Township/Range/Section
Ward	Minot	(See Attached)

Description Of Request ☑ New ☐ Updated (previously submitted)

Specific Needs Addressed By The Project, Program, Or Study
Stabilize bank erosion and provide flood protection for areas of Minot.

If Study, What Type ☐ Water Supply ☐ Hydrologic ☐ Floodplain Mgmt. ☐ Feasibility ☐ Other

If Project/Program

☑ Flood Control	☐ Multi-Purpose	☑ Bank Stabilization	☐ Dam Safety/EAP
☐ Recreation	☐ Water Supply	☐ Snagging & Clearing	☐ Property Acquisition
☐ Irrigation	☐ Water Retention	☐ Rural Flood Control	☐ Other

Jurisdictions/Stakeholders Involved
City of Minot and Ward County Water Resource Board

Description Of Problem Or Need And How Project Addresses That Problem Or Need
The USACE performs annual inspections on the Mouse River flood control system through Minot. These inspections identified multiple deficiencies that pose a risk to the integrity of the flood control system. The deficiencies proposed to be resolved by this project include a deteriorated flood control structure (Area 4), an existing outfall without backflow protection (Area 9), and a channel bank failure effecting system stability (Area 22). This project will replace portion of the existing flood control structure that has reached the end of its life (Area 4), install a closure structure on an existing unprotected 60" outfall pipe (Area 9), and stabilize an existing bank erosion area threatening the stability of a flood control levee (Area 22). The work included in this cost share request is consistent with the System Wide Improvement Framework (SWIF) developed for the Mouse River Systems in Minot that has been reviewed and accepted by the USACE.

Has Feasibility Study Been Completed?	☐ Yes	☑ No	☐ Ongoing	☐ Not Applicable
Has Engineering Design Been Completed?	☑ Yes	☐ No	☐ Ongoing	☐ Not Applicable
Have Land Or Easements Been Acquired?	☐ Yes	☐ No	☑ Ongoing	☐ Not Applicable

Have You Applied For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Applied For Any Local Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any Local Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			

Briefly Explain The Level Of Review The Project Or Program Has Undergone

The project components have been identified as being necessary by the SWIF which has gone through multiple levels of review by the USACE.

Do You Expect Any Obstacles To Implementation (i.e., problems with land acquisition, permits, funding, local, opposition, environmental concerns, etc.)? No

Funding Timeline (carefully consider when SWC cost-share will be needed)

Source	Total Cost	2015-2017 7/1/15-6/30/17	2017-2019 7/1/17-6/30/19	Beyond 7/1/19
Federal	$	$	$	$
State Water Commission	$ 756,211.10	$	$ 680,589.99	$ 75,621.11
Other State	$	$	$	$
Local	$ 541,387.90	$	$ 487,249.11	$ 54,138.79
Total	$ 1,297,599.00	$	$ 1,167,839.10	$ 129,759.90

List All Other State Of North Dakota Funding Sources (Grant or Loan), For Which You Have Applied

None

Please Explain Implementation Timelines, Considering All Phases And Their Current Status

Engineering design is complete and project has been advertised for bids. Construction is anticipated to begin in the Summer of 2018 and be completed in the Fall of 2019.

Have Assessment Districts Been Formed? ☐ Yes ☐ No ☐ Ongoing ☑ Not Applicable

Submitted By Dan Jonasson, Public Works Director, City of Minot			Date
Address PO Box 5006	City Minot	State ND	ZIP Code 58701
Telephone Number 701-857-4140	Sponsor Email Dan.Jonasson@minotnd.org	Engineer Email mlove@houstoneng.com	

I Certify That, To The Best Of My Knowledge, The Provided Information Is True And Accurate.

Signature Dan Jonasson Date 5/15/18

MAIL TO:

ND State Water Commission • ATTN: Cost-Share Program
900 E Boulevard Ave. • Bismarck, ND 58505-0850

Cost-Share Request Form North Dakota State Water Commision Development Division
Township/Range/Section
155N-83W-14
155N-83W-23
155N-82W-29

Opinion of Probable Cost
City of Minot 2018 Outfall Pipe Rehabilitation Project
Minot SWIF Action D
Minot, North Dakota
May 11, 2018

No.	Item	Unit	Total Quantity	Area 4 Quantity	Area 9 Quantity	Area 22 Quantity	Area 1-3, 5-8, 10-21 Quantity	Area 4 Unit Price	Area 9 Unit Price	Area 22 Unit Price	Area 1-3, 5-8, 10-21 Unit Price	Area 4 Price	Area 9 Price	Area 22 Price	Area 1-3, 5-8, 10-21 Price	Total Price
1	Mobilization	EA	4	1	1	1	1	$15,000.00	$20,000.00	$5,000.00	$40,000.00	$15,000.00	$20,000.00	$5,000.00	$40,000.00	$80,000.00
2	Clearing and Grubbing	LS	1				1				$8,000.00				$8,000.00	$8,000.00
3	Remove Tree	EA	27	2	12	3	10	$500.00	$500.00	$500.00	$500.00	$1,000.00	$6,000.00	$1,500.00	$5,000.00	$13,500.00
4	Remove Tree in Levee	EA	1				1				$800.00				$800.00	$800.00
5	Remove Bituminous Pavement	SY	868				868				$8.00				$6,944.00	$6,944.00
6	Remove Gravel Surfacing	SY	986				986				$5.00				$4,930.00	$4,930.00
7	Remove Concrete Pavement	SY	14				14				$15.00				$210.00	$210.00
8	Remove Curb and Gutter	LF	386				386				$10.00				$3,860.00	$3,860.00
9	Remove Sidewalk	SY	183				183				$7.00				$1,281.00	$1,281.00
10	Remove Hydrant and Valve	EA	1				1				$1,500.00				$1,500.00	$1,500.00
11	Remove Storm Catch Basin	EA	1				1				$100.00				$1,000.00	$1,000.00
12	Remove Storm Manhole	EA	6		1		5		$2,000.00		$2,000.00		$2,000.00		$10,000.00	$12,000.00
13	Remove Storm Vault	LS	1		1				$10,000.00				$10,000.00			$10,000.00
14	Remove Sanitary Manhole	EA	2				2				$2,000.00				$4,000.00	$4,000.00
15	Remove Concrete Outfall Structure	EA	2				2				$3,000.00				$6,000.00	$6,000.00
16	Remove and Replace Inlet Casting	EA	1				1				$800.00				$800.00	$800.00
17	Remove Pipe (All Types, Less than 60")	LF	1,150		67	38	1045		$40.00	$40.00	$40.00		$2,680.00	$1,520.00	$41,800.00	$46,000.00
18	Remove Storm Sewer (60" RCP)	LF	406		406				$100.00				$40,600.00			$40,600.00
19	Remove Storm Sewer (96" CMP)	LS	1	1				$10,000.00				$10,000.00				$10,000.00
20	Abandon Manhole (All Types, All Sizes)	EA	1				1				$2,000.00				$2,000.00	$2,000.00
21	Abandon Pipe (All Types, All Sizes)	LF	318				318				$20.00				$6,360.00	$6,360.00
22	Clean and Jet 8" Pipe	LF	35				35				$15.00				$525.00	$525.00
23	Clean and Jet 12" Pipe	LF	584				584				$18.00				$10,512.00	$10,512.00
24	Remove 12" Flap Gate	EA	1				1				$200.00				$200.00	$200.00
25	Remove 24" Flap Gate	EA	1				1				$300.00				$300.00	$300.00
26	Strip and Stockpile Topsoil	CY	590		400		190		$10.00		$10.00		$4,000.00		$1,900.00	$5,900.00
27	Install Salvaged Topsoil	CY	590		400		190		$10.00		$10.00		$4,000.00		$1,900.00	$5,900.00
28	Import and Install Topsoil	CY	100		50		50		$30.00		$30.00		$1,500.00		$1,500.00	$3,000.00
29	Import and Install Approved Levee Fill	CY	2,562		1830	160	572		$20.00	$20.00	$20.00		$36,600.00	$3,200.00	$11,440.00	$51,240.00
30	Exploration Trench	CY	900				900				$25.00				$22,500.00	$22,500.00
31	Excavation	CY	230		140		90		$25.00		$25.00		$3,500.00		$2,250.00	$5,750.00
32	NDDOT CL 5 Aggregate (6" Thick)	SY	247				247				$30.00				$7,410.00	$7,410.00
33	Bituminous Pavement (4" Thick)	SY	708				708				$80.00				$56,640.00	$56,640.00
34	Concrete Driveway (6" Thick)	SY	440		440				$100.00				$44,000.00			$44,000.00
35	Concrete Sidewalk (4" Thick)	SY	130				130				$60.00				$7,800.00	$7,800.00
36	Curb and Gutter - Type 1	LF	351				351				$40.00				$14,040.00	$14,040.00
37	6" PVC Watermain	LF	39				39				$55.00				$2,145.00	$2,145.00
38	6" 45° Bend	EA	4				4				$225.00				$900.00	$900.00
39	6" Cap	EA	1				1				$100.00				$100.00	$100.00
40	Fire Hydrant	EA	3				3				$6,000.00				$18,000.00	$18,000.00
41	6" Gate Valve	EA	3				3				$2,500.00				$7,500.00	$7,500.00
42	Connect to Existing Watermain	EA	1				1				$2,500.00				$2,500.00	$2,500.00
43	Modify Existing Manhole	EA	1				1				$1,000.00				$1,000.00	$1,000.00
44	Core Existing Manhole	EA	6		1		5		$1,500.00		$1,500.00		$1,500.00		$7,500.00	$9,000.00
45	Gatewell Structure	LS	1		1				$300,000.00				$300,000.00			$300,000.00
46	Gatewell and Outfall Modifications	LS	1	1				$80,000.00				$80,000.00				$80,000.00

No.	Item	Unit	Total Quantity	Area 4 Quantity	Area 9 Quantity	Area 22 Quantity	Area 1-3, 5-8, 10-21 Quantity	Area 4 Unit Price	Area 9 Unit Price	Area 22 Unit Price	Area 1-3, 5-8, 10-21 Unit Price	Area 4 Price	Area 9 Price	Area 22 Price	Area 1-3, 5-8, 10-21 Price	Total Price
47	Concrete Outfall Structure w/ Flap Gate (12" RCP)	EA	2				2				$35,000.00				$70,000.00	$70,000.00
48	Concrete Outfall Structure w/ Flap Gate (18" RCP)	EA	1				1				$40,000.00				$40,000.00	$40,000.00
49	Concrete Outfall Structure w/ Flap Gate (36" RCP)	EA	1				1				$60,000.00				$60,000.00	$60,000.00
50	Concrete Outfall Structure w/ Flap Gate (60" RCP)	EA	1		1				$95,000.00				$95,000.00			$95,000.00
51	Concrete Inlet Structure w/ Stop Logs (96" RCP)	EA	1	1				$175,000.00				$175,000.00				$175,000.00
52	Connect New 12" RCP to Outfall	EA	4		1		3		$10,000.00		$10,000.00		$10,000.00		$30,000.00	$40,000.00
53	Connect New 18" RCP to Outfall	EA	2				2				$12,000.00				$24,000.00	$24,000.00
54	Connect New 24" RCP to Outfall	EA	1				1				$15,000.00				$15,000.00	$15,000.00
55	12" RCP Storm Sewer	LF	878		67		811		$70.00		$70.00		$4,690.00		$56,770.00	$61,460.00
56	15" RCP Storm Sewer	LF	78				78				$90.00				$7,020.00	$7,020.00
57	18" RCP Storm Sewer	LF	324				324				$110.00				$35,640.00	$35,640.00
58	24" RCP Storm Sewer	LF	100				100				$150.00				$15,000.00	$15,000.00
59	36" RCP Storm Sewer	LF	159			69	90			$180.00	$180.00			$12,420.00	$16,200.00	$28,620.00
60	60" RCP Storm Sewer	LF	354		354				$240.00				$84,960.00			$84,960.00
61	96" RCP Storm Sewer	LF	67	67				$1,000.00				$67,000.00				$67,000.00
62	12" Flared End Section	EA	1				1				$1,000.00				$1,000.00	$1,000.00
63	15" Flared End Section	EA	2				2				$1,200.00				$2,400.00	$2,400.00
64	18" Flared End Section	EA	1				1				$2,500.00				$2,500.00	$2,500.00
65	36" Flared End Section	EA	2			1	1			$5,500.00	$5,500.00			$5,500.00	$5,500.00	$11,000.00
66	8" Flap Gate	EA	1				1				$3,000.00				$3,000.00	$3,000.00
67	12" Flap Gate	EA	5				5				$4,000.00				$20,000.00	$20,000.00
68	15" Flap Gate	EA	2				2				$6,000.00				$12,000.00	$12,000.00
69	18" Flap Gate	EA	1				1				$7,000.00				$7,000.00	$7,000.00
70	24" Flap Gate	EA	1				1				$8,000.00				$8,000.00	$8,000.00
71	36" Flap Gate	EA	1			1				$13,000.00				$13,000.00		$13,000.00
72	Storm Catch Basin	EA	3				3				$3,500.00				$10,500.00	$10,500.00
73	48" Dia Storm Manhole	EA	13				13				$5,000.00				$65,000.00	$65,000.00
74	72" Dia Storm Manhole	EA	1			1				$10,000.00				$10,000.00		$10,000.00
75	96" Dia Storm Manhole	EA	1		1				$15,000.00				$15,000.00			$15,000.00
76	108" Dia Storm Manhole	EA	1		1				$20,000.00				$20,000.00			$20,000.00
77	48" Dia Sanitary Sewer Manhole	EA	2				2				$6,500.00				$13,000.00	$13,000.00
78	Raise Manhole	EA	1		1				$1,000.00				$1,000.00			$1,000.00
79	Type 3 Barricade	EA	2				2				$1,000.00				$2,000.00	$2,000.00
80	B2 Riprap Bedding	TON	121			56	65			$55.00	$55.00			$3,080.00	$3,575.00	$6,655.00
81	NDDOT Grade 1 Riprap	TON	395		10	141	244		$60.00	$60.00	$60.00		$600.00	$8,460.00	$14,640.00	$23,700.00
82	Precast Concrete Riprap	SY	180				180				$65.00				$11,700.00	$11,700.00
83	Erosion Control Blanket	SY	353		243	110			$4.00	$4.00			$972.00	$440.00		$1,412.00
84	Bioroll	LF	1,378		591		787		$5.00		$5.00		$2,955.00		$3,935.00	$6,890.00
85	Inlet Protection	EA	18		3		15		$200.00		$200.00		$600.00		$3,000.00	$3,600.00
86	Silt Fence	LF	813		97		716		$5.00		$5.00		$485.00		$3,580.00	$4,065.00
87	Floating Silt Curtain	LF	2,043	117	144	98	1684	$10.00	$10.00	$10.00	$10.00	$1,170.00	$1,440.00	$980.00	$16,840.00	$20,430.00
88	Construction Entrance	EA	3		1	1	1		$1,500.00	$1,500.00	$1,500.00		$1,500.00	$1,500.00	$1,500.00	$4,500.00
89	Seeding	SY	20,132	692	6672	883	11885	$0.50	$0.50	$0.50	$0.50	$346.00	$3,336.00	$441.50	$5,942.50	$10,066.00
90	Hydromulching	SY	20,132	692	6672	883	11885	$0.50	$0.50	$0.50	$0.50	$346.00	$3,336.00	$441.50	$5,942.50	$10,066.00
91	Traffic Control	EA	4	1	1	1	1	$1,000.00	$1,000.00	$1,000.00	$10,000.00	$1,000.00	$1,000.00	$1,000.00	$10,000.00	$13,000.00
											TOTALS	$350,862.00	$723,254.00	$68,483.00	$925,232.00	$2,067,831.00

Minot SWIF Action D - Cost Share Calculations				
Item	**Total Est. Project Cost**	**SWC Cost Share**	**SWC Cost Share**	**Local Cost Share**
Area 4 Construction - Flood Protection	$350,862.00	60%	$210,517.20	$140,344.80
Area 9 Construction - Flood Protection	$723,254.00	60%	$433,952.40	$289,301.60
Area 22 Construction - Bank Stabilization	$68,483.00	50%	$34,241.50	$34,241.50
Construction Engineering	$155,000.00	50%	$77,500.00	$77,500.00
Totals	**$1,297,599.00**		**$756,211.10**	**$541,387.90**

DEPARTMENT OF THE ARMY
ST. PAUL DISTRICT, CORPS OF ENGINEERS
180 FIFTH STREET EAST, SUITE 700
ST. PAUL, MN 55101-1678

CEMVP-PM-B

14 May 2018

MEMORANDUM FOR Omaha District Regulatory, (CENWO-OD-R-ND/Ms. Toni Erhardt), 1513 South 12th Street, Bismarck, ND 58504

SUBJECT: City of Minot 2018 Outfall Pipe Rehabilitation Project. Minot SWIF Action D.

1. The U.S. Army Corps of Engineers, St. Paul District has completed its review of the Minot System-Wide Improvement Framework (SWIF) Action D repairs project. These repair areas have been identified in past levee safety inspections and are affected by unacceptable deficiencies due to the condition of the existing outfall pipes and the lack of backflow prevention on several of them.

2. The repair areas have been identified as high priority repairs in the Ward County and city of Minot SWIF plans. In accordance with Minot's approved SWIF plan, the city has completed television inspections of the outfall pipes within the Minot system. This process has identified several outfall pipes that are in need of repair or replacement due to their existing condition. Previous levee inspections have also identified several outfall pipes that do not have proper means of closure to prevent river water from flowing back through the levee system during high water events. The St. Paul District has reviewed the outfall repair plans and agree that the designs, as developed, are required to adequately address the deficiencies. The plan will generally restore the outfall pipes back to their original condition or provide outfall improvements to add backflow prevention and meet current levee safety standards.

3. If you have any questions regarding this memorandum or if additional information is required please contact me at 651-290-5477.

Nathan Wallerstedt, PE, PMP
Chief, Project Management Branch (PM-B)

City of Minot

Public Works Department

May 14, 2018

North Dakota State Water Commission
ATTN: Cost-Share Program
900 East Boulevard
Bismarck, ND 58505-0850

RE: Cost Share Request – City of Minot 2018 Outfall Pipe Rehabilitation Project, SWIF Action D

The Mouse River flood control system provides flood protection for the City of Minot and has a significant risk to loss of life if a failure occurs. The USACE performs annual inspections on the Mouse River flood control system through Minot to assess the condition of the system. These inspections identified multiple deficiencies that pose a risk to the integrity of the flood control system. In order to address these deficiencies, the City of Minot developed a System Wide Improvement Framework (SWIF) that outlines the City's strategy for addressing the system's deficiencies. The work included in this cost share request is consistent with the System Wide Improvement Framework (SWIF).

The deficiencies proposed to be resolved by this project include a deteriorated flood control structure (Area 4), an existing outfall without backflow protection (Area 9), and a channel bank failure effecting system stability (Area 22). This project will replace the portion of the existing flood control structure that has reached the end of its life (Area 4), install a flood closure structure on an existing unprotected 60" outfall pipe (Area 9), and stabilize an existing bank erosion area threatening the stability of a flood control levee (Area 22). These areas are shown in detail on the included construction plans. The project has been designed and is currently being advertised for bids. The project is scheduled to begin construction in the summer of 2018 and be completed in the fall of 2019.

With this letter and the attached supporting documentation, the City of Minot respectfully requests cost-share from the North Dakota State Water Commission for 60 percent of eligible construction related to the Area 4 and Area 9 Flood Protection activities, 50 percent of eligible construction for the Area 22 Bank Stabilization activities, and 50 percent of eligible construction engineering costs. The total estimated project cost for Areas 4, 9, and 22 at this time is $1,297,599 and the requested Cost Share amount is $756,211.10. The City of Minot has partnered with the Ward County Water Resource Board for the Area 22 repair. The Ward County Water Resource Board has agreed to provide the local cost share for that repair.

On April 28, 2017 a cost share application was submitted for the City of Minot 2017 Levee Repair, Bank Stabilization, and Snagging Project. As part of that application the City was approved for $950,254 in funding. The construction bids came in under our original estimate. As a result, we estimate that there will be between $300,000 and $400,000 in unused funds from last year's cost share agreement. The City

requests that the State Water Commission reallocate any unused funds from the 2017 agreement to this year's Outfall Pipe Rehabilitation Project.

If you have any questions, please feel free to contact me or our project engineer, Mike Love, Houston Engineering, Inc. at 701-237-5065.

Dan Jonasson
Public Works Director, City of Minot

CC: Mike Love, Houston Engineering, Inc., Fargo, ND

Minot SWIF Action D - Cost Share Calculations				
Item	**Total Est. Project Cost**	**SWC Cost Share**	**SWC Cost Share**	**Local Cost Share**
Area 4 Construction - Flood Protection	$219,648.00	60%	$131,788.80	$87,859.20
Area 9 Construction - Flood Protection	$624,926.40	60%	$374,955.84	$249,970.56
Area 22 Construction - Bank Stabilization	$55,465.00	50%	$27,732.50	$27,732.50
Construction Engineering	$90,003.94	50%	$45,001.97	$45,001.97
Totals	**$990,043.34**		**$579,479.11**	**$410,564.23**

90% Opinion of Probable Cost

City of Minot 2018 Outfall Pipe Rehabilitation Project
Minot SWIF Action D - Area 4
Minot, North Dakota

April 13, 2018

No.	*Item*	*Unit*	*Quantity*	*Unit Price*	*Total Price*
1	Mobilization	LS	1	$3,000.00	$3,000.00
2	Clearing and Grubbing	LS	1	$432.00	$432.00
3	Remove Tree	EA	2	$600.00	$1,200.00
18	Remove Storm Sewer (96" CMP)	LS	1	$12,000.00	$12,000.00
40	Gatewell Structure Modifications	LS	1	$72,000.00	$72,000.00
46	Concrete Headwall Structure w/ Stop Logs (96" RCP)	EA	1	$48,000.00	$48,000.00
56	96" RCP Storm Sewer	LF	67	$1,200.00	$80,400.00
81	Floating Silt Curtain	LF	118	$12.00	$1,416.00
83	Seeding	AC	0.15	$1,200.00	$180.00
84	Hydromulching	AC	0.15	$1,200.00	$180.00
85	Traffic Control	LS	1	$840.00	$840.00
				Estimated Cost - Area 4	**$219,648.00**

90% Opinion of Probable Cost

City of Minot 2018 Outfall Pipe Rehabilitation Project
Minot SWIF Action D - Area 9
Minot, North Dakota

April 13, 2018

No.	*Item*	*Unit*	*Quantity*	*Unit Price*		*Total Price*
1	Mobilization	LS	1	$2,500.00	$3,000.00	$3,000.00
2	Clearing and Grubbing	LS	1	$360.00	$432.00	$432.00
3	Remove Tree	EA	9	$500.00	$600.00	$5,400.00
4	Remove Tree in Levee	EA	3	$650.00	$780.00	$2,340.00
12	Remove Storm Manhole	EA	2	$2,000.00	$2,400.00	$4,800.00
13	Remove Storm Vault	LS	1	$5,000.00	$6,000.00	$6,000.00
15	Remove Concrete Headwall Structure	EA	1	$2,000.00	$2,400.00	$2,400.00
16	Remove Pipe (All Types, Less than 60")	LF	67	$40.00	$48.00	$3,216.00
17	Remove Storm Sewer (60" RCP)	LF	406	$100.00	$120.00	$48,720.00
25	Strip and Stockpile Topsoil	CY	400	$10.00	$12.00	$4,800.00
26	Install Salvaged Topsoil	CY	400	$10.00	$12.00	$4,800.00
27	Import and Install Topsoil	CY	50	$30.00	$36.00	$1,800.00
28	Import and Install Approved Levee Fill	CY	1,830	$20.00	$24.00	$43,920.00
30	Excavation	CY	140	$25.00	$30.00	$4,200.00
33	Concrete Driveway (6" Thick)	SY	440	$70.00	$84.00	$36,960.00
39	Gatewell Structure	LS	1	$225,000.00	$270,000.00	$270,000.00
45	Concrete Headwall Structure w/ Flap Gate (60" RCP)	EA	1	$30,000.00	$36,000.00	$36,000.00
47	Connect New 12" RCP to Headwall	EA	1	$1,500.00	$1,800.00	$1,800.00
50	12" RCP Storm Sewer	LF	67	$70.00	$84.00	$5,628.00
55	60" RCP Storm Sewer	LF	354	$200.00	$240.00	$84,960.00
69	96" Dia Storm Manhole	EA	1	$15,000.00	$18,000.00	$18,000.00
70	108" Dia Storm Manhole	EA	1	$20,000.00	$24,000.00	$24,000.00
77	Erosion Control Blanket	SY	245	$4.00	$4.80	$1,176.00
78	Bioroll	LF	592	$3.00	$3.60	$2,131.20
79	Inlet Protection	EA	3	$200.00	$240.00	$720.00
80	Silt Fence	LF	98	$2.00	$2.40	$235.20
81	Floating Silt Curtain	LF	144	$10.00	$12.00	$1,728.00
82	Construction Entrance	EA	1	$1,500.00	$1,800.00	$1,800.00
83	Seeding	AC	1.3	$1,000.00	$1,200.00	$1,560.00
84	Hydromulching	AC	1.3	$1,000.00	$1,200.00	$1,560.00
85	Traffic Control	LS	1	$700.00	$840.00	$840.00
				Total Estimated Cost - Area 9		**$624,926.40**

90% Opinion of Probable Cost

City of Minot 2018 Outfall Pipe Rehabilitation Project
Minot SWIF Action D - Area 22
Minot, North Dakota

April 13, 2018

No.	*Item*	*Unit*	*Quantity*	*Unit Price*	*Total Price*
1	Mobilization	LS	1	$2,500.00	$2,500.00
2	Clearing and Grubbing	LS	1	$360.00	$360.00
3	Remove Tree	EA	3	$500.00	$1,500.00
16	Remove Pipe (All Types, Less than 60")	LF	38	$40.00	$1,520.00
28	Import and Install Approved Levee Fill	CY	174	$20.00	$3,480.00
54	36" RCP Storm Sewer	LF	81	$110.00	$8,910.00
60	36" Flared End Section w/ Trash Rack	EA	1	$5,500.00	$5,500.00
65	36" Flap Gate	EA	1	$13,000.00	$13,000.00
68	72" Dia Storm Manhole	EA	1	$10,000.00	$10,000.00
74	B2 Riprap Bedding	TON	37	$55.00	$2,035.00
75	NDDOT Grade 1 Riprap	TON	92	$45.00	$4,140.00
77	Erosion Control Blanket	SY	110	$4.00	$440.00
81	Floating Silt Curtain	LF	98	$10.00	$980.00
83	Seeding	AC	0.2	$1,000.00	$200.00
84	Hydromulching	AC	0.2	$1,000.00	$200.00
85	Traffic Control	LS	1	$700.00	$700.00
				Total Estimated Cost - Area 22	**$55,465.00**

City of Minot

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT

MINOT SWIF ACTION D
CITY OF MINOT, NORTH DAKOTA
CITY PROJECT NO. 3135.2D
MAY 2018

SURVEY INFORMATION
HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
VERTICAL DATUM CONVERSION: NAVD 88 = NGVD 29 + 1.24'
COORDINATE SYSTEM: ND STATE PLANE NORTH ZONE
UNIT OF MEASURE: U.S. SURVEY FOOT

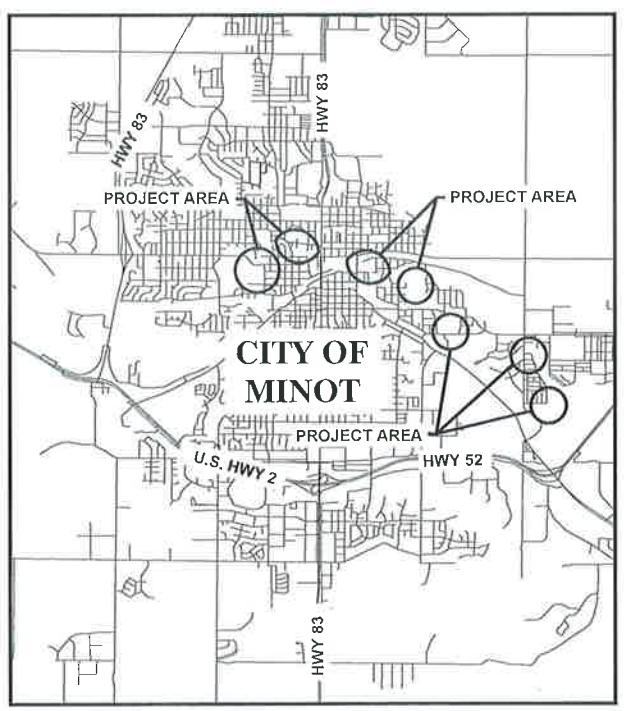
NOTES:

1. AERIAL IMAGE IS FROM 2015 AND MAY NOT REFLECT CURRENT CONDITIONS.
2. EXISTING GROUND SURFACES ARE A COMBINATION OF 2017 LIDAR AND FIELD SURVEY AND MAY NOT REFLECT CURRENT CONDITIONS.

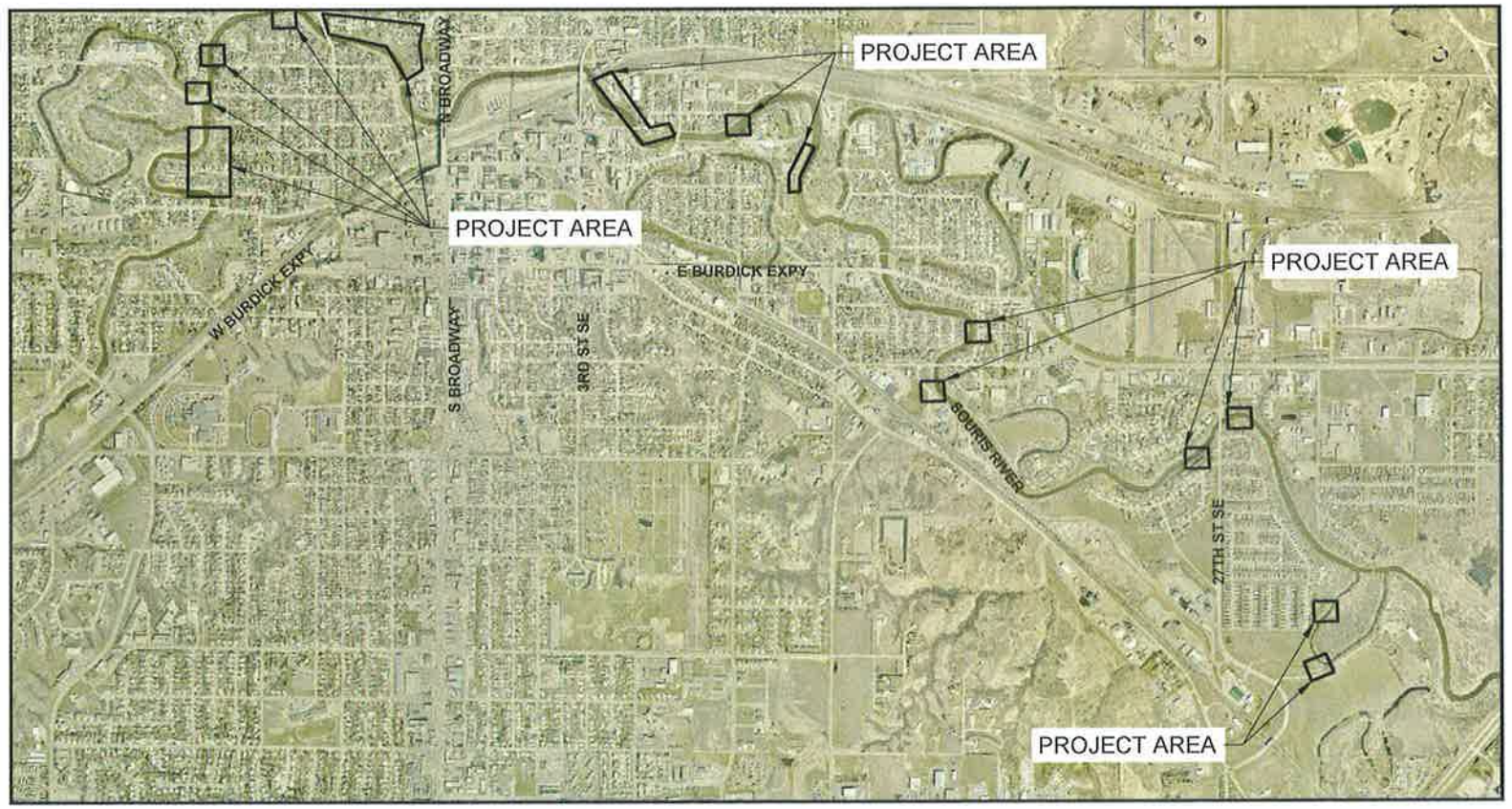
THE UNDERGROUND UTILITIES HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION, AS-BUILT MAPS AS PROVIDED BY MUNICIPALITIES OR UTILITY COMPANIES, AND/OR EXISTING DRAWINGS. THERE IS NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED, NOR IS THERE A GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY RESULT FROM ITS FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES.

SHEET INDEX

LEGEND	EXISTING	NEW
WATER MAIN	W	W
SANITARY SEWER MAIN	SS	
STORM SEWER MAIN	STS	STS
STORM INLET		
MANHOLE		
CLEANOUT		
FIRE HYDRANT		
GATE VALVE		
LIGHT POLE		
UNDERGROUND ELECTRIC	UGE	
UNDERGROUND TELEPHONE	UGT	
GAS MAIN	G	
CONIFEROUS TREE		
DECIDUOUS TREE		
REMOVE TREE		
REMOVE TREE IN LEVEE		
CONSTRUCTION LIMITS		
FENCE	X X	
FLOATING SILT CURTAIN		
SILT FENCE		XX XX
BIOROLL		
INLET PROTECTION		
STANDARD CURB & GUTTER		
CLEAR & GRUB LIMITS		
REMOVAL AREA		
NEW BITUMINOUS PAVEMENT		
NEW CONCRETE		
DRAINAGE DIRECTION		
EMBANKMENTS/FILL AREAS		
EXCAVATION AREAS		
SEED AND MULCH		
EROSION CONTROL BLANKET		
CONSTRUCTION ENTRANCE		
RIPRAP		



VICINITY MAP



LOCATION MAP

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY RANDY G. ENGELSTAD REGISTRATION NUMBER PE-6676 ON 05/11/18 AND THE ORIGINAL DOCUMENT IS STORED AT HOUSTON ENGINEERING, INC., 1401 21ST AVE. N, FARGO, ND 58102

Houston Engineering Inc.

\\houston\hei\Fargo\IBN\6000\6027\16_6027_050\CAD\Plans\CIP No. 2\01_Cover.dwg Cover-5/11/2018 4:17 PM-(tkornkven)

No.	Item	Unit	Quantity	Area 1	Area 2-3	Area 4	Area 5-6	Area 7	Area 8A-8B	Area 9A-9B	Area 10A-10B	Area 11,12A,12B	Area 13-14	Area 15	Area 16	Area 17	Area 18	Area 19	Area 20	Area 21	Area 22
1	Mobilization	LS	1																		
2	Clearing and Grubbing	LS	1		1																
3	Remove Tree	EA	27		9	2			5	12		1									3
4	Remove Tree in Levee	EA	1		1																
5	Remove Bituminous Pavement	SY	858						261			96	33			384		94			
6	Remove Gravel Surfacing	SY	986	184			55					357	168				222				
7	Remove Concrete Pavement	SY	14													14					
8	Remove Curb and Gutter	LF	386						163			25				198					
9	Remove Sidewalk	SY	183					65	50			38				30					
10	Remove Hydrant and Valve	EA	1													1					
11	Remove Storm Catch Basin	EA	1	1																	
12	Remove Storm Manhole	EA	6					1		1		2	2								
13	Remove Storm Vault	LS	1							1											
14	Remove Sanitary Manhole	EA	2						2												
15	Remove Concrete Outfall Structure	EA	2					1								1					
16	Remove and Replace Inlet Casting	EA	1															1			
17	Remove Pipe (All Types, Less than 60")	LF	1,150	96	140		56	88	137	67	36	32	166			26	150	34	54	30	38
18	Remove Storm Sewer (60" RCP)	LF	406							406											
19	Remove Storm Sewer (66" CMP)	LS	1			1															
20	Abandon Manhole (All Types, Sizes)	EA	1													1					
21	Abandon Pipe (All Types, All Sizes)	LF	318									284				34					
22	Clean and Jet 8" Pipe	LF	35				35														
23	Clean and Jet 12" Pipe	LF	584				269	80						168	67						
24	Remove 12" Flap Gate	EA	1									1									
25	Remove 24" Flap Gate	EA	1		1																
26	Strip and Stockpile Topsoil	CY	580						120	400	70										
27	Install Salvaged Topsoil	CY	590						120	400	70										
28	Import and Install Topsoil	CY	100						50	50											
29	Import and Install Approved Levee Fill	CY	2,562						476	1830	96										160
30	Exploration Trench	CY	900						667		233										
31	Excavation	CY	230							140							90				
32	NDDOT CL 5 Aggregate (6" Thick)	SY	247	46			14					89	42				56				
33	Bituminous Pavement (4" Thick)	SY	708						96			96	33			389		94			
34	Concrete Driveway (6" Thick)	SY	440							440											
35	Concrete Sidewalk (4" Thick)	SY	130					72				21				37					
36	Curb and Gutter - Type 1	LF	351						130			25				196					
37	6" PVC Watermain	LF	39						30							9					
38	6" 45° Bend	EA	4						4												
39	6" Cap	EA	1													1					
40	Fire Hydrant	EA	3						2							1					
41	6" Gate Valve	EA	3						2							1					
42	Connect to Existing Watermain	EA	1													1					
43	Modify Existing Manhole	EA	1					1													
44	Core Existing Manhole	EA	6							1		1						4			
45	Gatewell Structure	LS	1							1											
46	Gatewell and Outfall Modifications	LS	1			1															
47	Concrete Outfall Structure w/ Flap Gate (12" RCP)	EA	2				1	1													
48	Concrete Outfall Structure w/ Flap Gate (18" RCP)	EA	1													1					
49	Concrete Outfall Structure w/ Flap Gate (36" RCP)	EA	1														1				
50	Concrete Outfall Structure w/ Flap Gate (60" RCP)	EA	1							1											
51	Concrete Inlet Structure w/ Step Logs (66" RCP)	EA	1			1															
52	Connect New 12" RCP to Outfall	EA	4		1					1	1		1								
53	Connect New 18" RCP to Outfall	EA	2						1				1								
54	Connect New 24" RCP to Outfall	EA	1		1																
55	12" RCP Storm Sewer	LF	878	58	40		54	75	53	67	36	335	130			30					
56	15" RCP Storm Sewer	LF	78								32								46		
57	18" RCP Storm Sewer	LF	324						71				110			82		37		24	
58	24" RCP Storm Sewer	LF	100		100																
59	36" RCP Storm Sewer	LF	159														90				69
60	60" RCP Storm Sewer	LF	354							354											
61	96" RCP Storm Sewer	LF	67			67															
62	12" Flared End Section	EA	1									1									
63	15" Flared End Section	EA	2								1								1		
64	18" Flared End Section	EA	1																	1	
65	36" Flared End Section	EA	2														1				1
66	8" Flap Gate	EA	1				1														
67	12" Flap Gate	EA	5	1					1			2		1							
68	15" Flap Gate	EA	2								1								1		
69	18" Flap Gate	EA	1																	1	
70	24" Flap Gate	EA	1		1																
71	36" Flap Gate	EA	1																		1
72	Storm Catch Basin	EA	3						1							2					
73	48" Dia Storm Manhole	EA	13	1			1	1	1		1	2	4			2					
74	72" Dia Storm Manhole	EA	1																		1
75	96" Dia Storm Manhole	EA	1							1											
76	108" Dia Storm Manhole	EA	1							1											
77	48" Dia Sanitary Sewer Manhole	EA	2						2												
78	Raise Manhole	EA	1							1											
79	Type 3 Barricade	EA	2						2												
80	#2 Riprap Bedding	TON	121									6		24			11		24		56
81	NDDOT Grade 1 Riprap	TON	395	5	10			30	10	10	10	20	10	61			27		61		141
82	Precast Concrete Riprap	SY	180														180				
83	Erosion Control Blanket	SY	353							243											110
84	Bioroll	LF	1,378					37	346	591	157	25					77	32	113		
85	Inlet Protection	EA	16	1				1	2	3		6				3		2			
86	Silt Fence	LF	813						442	97		136				90				48	
87	Floating Silt Curtain	LF	2,043	121	171	117	79	131	62	144	262	132	143	135	122	125	87		114		98
88	Construction Entrance	EA	3							1						1					1
89	Seeding	SY	20,132	516	1680	692	468	414	2239	6672	1019	727	1149	605	172	296	967	251	984	398	883
90	Hydromulching	SY	20,132	516	1680	692	468	414	2239	6672	1019	727	1149	605	172	296	967	251	984	398	883
91	Traffic Control	LS	1																		

NOTES:

1. CONTRACTOR SHALL CLEAN STREETS DAILY AS PART OF PROJECT, OR MORE OFTEN AS DIRECTED BY THE ENGINEER (INCIDENTAL).
2. ALL GRAVEL SURFACE SHALL HAVE NDDOT TYPE R1 FABRIC INSTALLED BETWEEN THE SUBBASE AND GRAVEL SURFACE (INCIDENTAL). ALL GRAVEL CROSS SECTIONS ASSUMED TO BE 6" THICK.
3. QUANTITIES LISTED IN THE ADJACENT TABLE ARE THE BID QUANTITIES FOR EACH AREA. THE TOTAL FOR EACH BID ITEM IS REFLECTED IN THE BID FORM. ANY ADDITIONAL WORK REQUIRED TO COMPLETE THE WORK IN A SPECIFIC AREA SHALL BE INCIDENTAL TO OTHER ITEMS IN THAT WORK AREA.

THIS DOCUMENT WAS ORIGINALLY ISSUED AND SEALED BY
RANDY G. ENGELSTAD
REGISTRATION NUMBER
PE-6676
ON 5/11/18 AND THE ORIGINAL DOCUMENT IS STORED AT HOUSTON ENGINEERING, INC., 1401 21ST AVE. N, FARGO, ND 58102

No.	Revision	Date	By

City of Minot

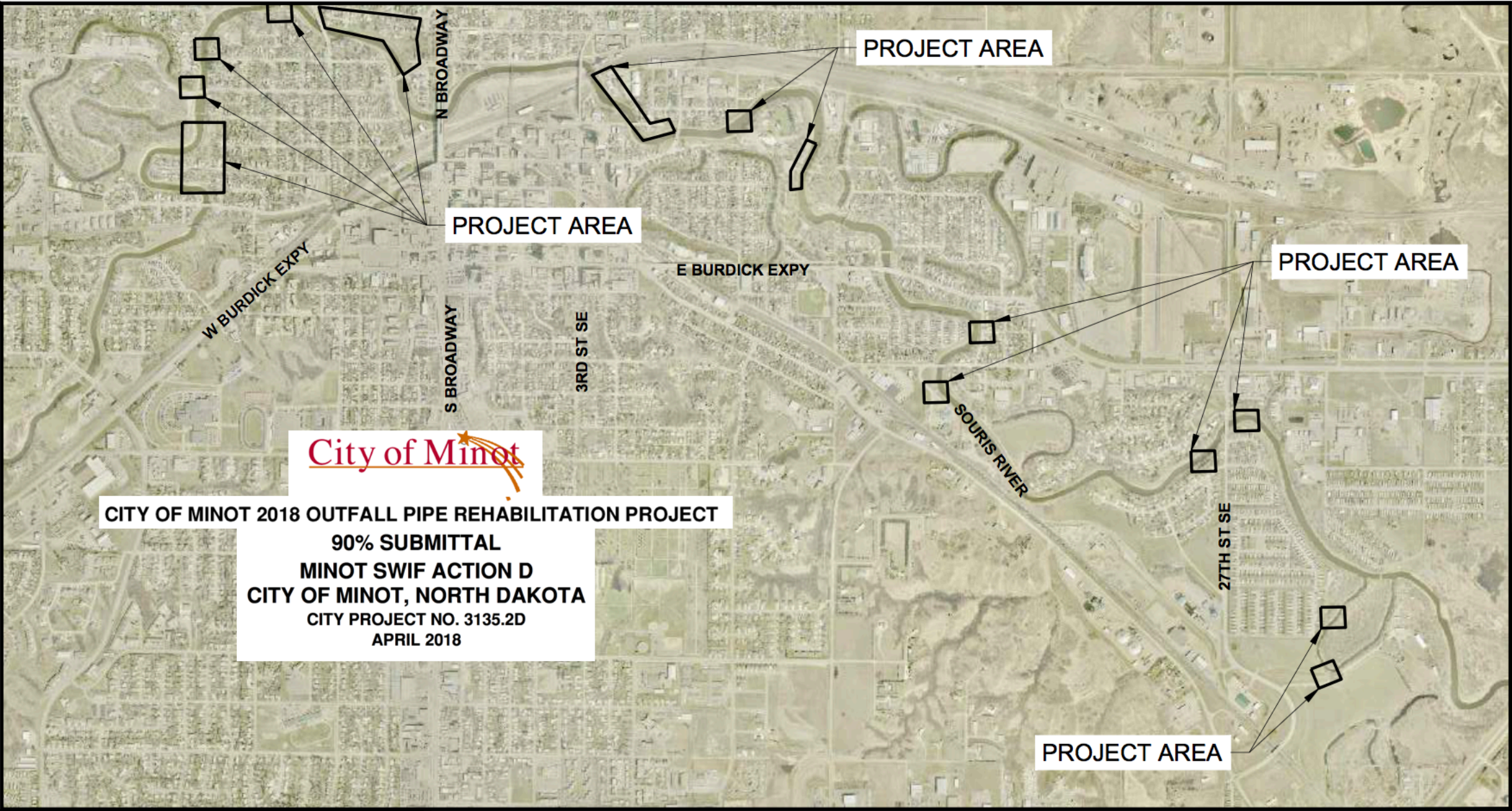
Houston Engineering Inc.
Fargo
P: 701.237.5065
F: 701.237.5101

Drawn by: BAU, JAR | Date: 5-11-18 | Checked by: RGE | Scale: AS SHOWN

CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
MINOT SWIF ACTION D, PROJECT NO. 3135.2D
MINOT, NORTH DAKOTA

GENERAL NOTES

PROJECT NO. 6027-050


PROJECT AREA
PROJECT AREA
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PROJECT AREA
N BROADWAY
W BURDICK EXPY
E BURDICK EXPY
S BROADWAY
3RD ST SE
SOURIS RIVER
27TH ST SE
City of Minot
CITY OF MINOT 2018 OUTFALL PIPE REHABILITATION PROJECT
90% SUBMITTAL
MINOT SWIF ACTION D
CITY OF MINOT, NORTH DAKOTA
CITY PROJECT NO. 3135.2D
APRIL 2018

COST-SHARE REQUEST FORM

NORTH DAKOTA STATE WATER COMMISSION
DEVELOPMENT DIVISION
SFN 60439 (5/2017)

APPENDIX I

This form is to be filled out by the project or program sponsor with State Water Commission staff assistance as needed. Applications for cost-share are accepted at any time. However, applications received less than 30 days before a State Water Commission meeting will be held for consideration at the next scheduled meeting.

Please answer the following questions as completely as possible. Supporting documents such as maps, detailed cost estimates, and engineering reports should be attached to this form. If additional space is required, please use extra sheets as necessary.

For information regarding cost-share program eligibility see the *State Water Commission Cost-Share Policy, Procedure, and General Requirements* – available upon request or at www.swc.nd.gov.

Project, Program, Or Study Name
Lower Yellowstone Irrigation District #2 Lateral W Irrigation Protection

Sponsor(s)
Lower Yellowstone Irrigation District #2

County	City	Township/Range/Section
McKenzie	East Fairview	Twn 152N, Rg 104E, Section 18

Description Of Request ☑ New ☐ Updated (previously submitted)

Specific Needs Addressed By The Project, Program, Or Study
Protect Critical Water Supply from immediate erosion from ongoing flooding of Missouri River that will cause failure this summer

If Study, What Type ☐ Water Supply ☐ Hydrologic ☐ Floodplain Mgmt. ☐ Feasibility ☐ Other

If Project/Program

☐ Flood Control	☑ Multi-Purpose	☐ Bank Stabilization	☐ Dam Safety/EAP
☐ Recreation	☐ Water Supply	☐ Snagging & Clearing	☐ Property Acquisition
☑ Irrigation	☐ Water Retention	☐ Rural Flood Control	☑ Other

Jurisdictions/Stakeholders Involved
Lower Yellowstone Irrigation District #2, 10 Private Farm Owners, Montana-Dakota Beet Growers Association, Sidney Sugars Plant, & McKenzie County Soil Conservation District

Description Of Problem Or Need And How Project Addresses That Problem Or Need
Problem: Current and worsening flood conditions on the Missouri River at the above described location is causing significant and rapid erosion or the river bank and impinging and undermining our major irrigation delivery canal "Lateral W". The river erosion will most likely cause the failure and destruction of this crucial water delivery system before this midsummer when the water is needed the most! Lateral W is a critical and significant water supply for: Irrigation, Aquifer Recharge, and Wildlife habitat support for more than 800 acres of irrigated land and several hundred acres of wildlife habitat. If the decision is delayed until after the river washes out the irrigation canal, not only will it ruin 800 acres of irrigated crops, but the rupturing and emptying of the irrigation canal will erode multiple acres of private property into the river along with eroding tens of thousands cubic yards of silt and sand into the Missouri River.

Solution: Lower Yellowstone Irrigation District 2 will re route and pipe the Lateral away from the Eroding river bank and reconnect it to the original lateral farther east and away from the river. Piping the canal will also conserve water & electricity.

Has Feasibility Study Been Completed?	☑ Yes	☐ No	☐ Ongoing	☐ Not Applicable
Has Engineering Design Been Completed?	☐ Yes	☑ No	☐ Ongoing	☐ Not Applicable
Have Land Or Easements Been Acquired?	☐ Yes	☑ No	☐ Ongoing	☐ Not Applicable

Have You Applied For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any State Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Applied For Any Local Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			
Have You Been Approved For Any Local Permits?	☐ Yes	☑ No	☐ Not Applicable
If Yes, Please Explain			

Briefly Explain The Level Of Review The Project Or Program Has Undergone

A feasibility study has been completed by Interstate Engineering. Lower Yellowstone Irrigation District #2 in conjunction with its partner irrigation district have successfully piped multiple sections of canals of this size for several decades and have the equipment, knowledge, and experience to complete this project successfully.

Do You Expect Any Obstacles To Implementation (i.e., problems with land acquisition, permits, funding, local, opposition, environmental concerns, etc.)? The effected land owners have requested us to do this and Everyone benefits; so we expect no opposition.

Funding Timeline (carefully consider when SWC cost-share will be needed)

Source	Total Cost	2015-2017 7/1/15-6/30/17	2017-2019 7/1/17-6/30/19	Beyond 7/1/19
Federal	$	$	$	$
State Water Commission	$ 800,000	$	$ 800,000	$
Other State	$	$	$	$
Local	$ 600,000	$	$ 600,000	$
Total	$	$	$	$

List All Other State Of North Dakota Funding Sources (Grant or Loan), For Which You Have Applied

Please Explain Implementation Timelines, Considering All Phases And Their Current Status

This project needs to be approved and implemented immediately because; existing, worsening flood conditions could cause canal failure in early June; which will not only ruin 800 acres of irrigated crops, but the rupturing and emptying of the irrigation canal will erode multiple acres of private property into the river along with eroding 10s of 1,000s cubic yards of silt and sand into the Missouri River.

Have Assessment Districts Been Formed?	☑ Yes	☐ No	☐ Ongoing ☐ Not Applicable

Submitted By: James Brower	Date: 5/21/2018

Address: 3691 158th Ave. NW	City: Fairview	State: MT	ZIP Code: 59221

Telephone Number: 406-478-4502	Sponsor Email: jbrower@midrivers.com	Engineer Email: Ryan.Kopp@interstateeng.com

I Certify That, To The Best Of My Knowledge, The Provided Information Is True And Accurate.

Signature: James W. Brower	Date: 5/21/2018

MAIL TO:

ND State Water Commission • ATTN: Cost-Share Program
900 E Boulevard Ave. • Bismarck, ND 58505-0850

ESTIMATE OF PROBABLE PROJECT COST
Lateral W - Piped
Lower Yellowstone Irrigation Project
I.E. #S18-04-022

Item No.	Item	Unit	No. of Units	Unit Price	Extended Price
1	Mobilization	L.S.	1	$ 125,000.00	$ 125,000.00
2	60" HDPE Pipe	LF	4,330	$ 200.00	$ 866,000.00
3	Inlet/Outlet	LS	1	$ 10,000.00	$ 10,000.00
4	Type II Bedding	CY	1,600	$ 80.00	$ 128,000.00
5	Lateral Reclamation	LS	1	$50,000	$ 50,000.00

Estimated Total	$	1,179,000.00
Contingency (±10%)	$	121,000.00
Total Construction Cost	**$**	**1,300,000.00**
Design Engineering	$	50,000.00
Construction Engineering	$	50,000.00
Total Engineering Cost	$	100,000.00
Estimated Total Cost	**$**	**1,400,000.00**

Lower Yellowstone Irrigation District #2
Lateral W
Feasibility Report

June 2018

IEI #S18-04-022

Project Overview

In the summer of 2015, the Lower Yellowstone Irrigation District #2 (LYID) was notified that the Missouri River had undermined and washed out their existing Lateral W. LYID acted quickly as farmers needed continuous water to keep their crops viable. The LYID, at great expense and immense effort successfully rerouted the lateral 60 feet from the river bank, but the delay to irrigation adversely effected crop production. This solution has worked and is currently delivering water, however, the river has further migrated and is currently undermining and about to destroy the lateral once again. James Brower, LYID Project Manager contacted Interstate Engineering (IEI) in the spring of 2018 to begin determining the best option to assure constant irrigation to over 800 acres of irrigated land in McKenzie County, North Dakota.

Options Considered

Interstate Engineering has entertained 3 options to mitigate the threat to the irrigation lateral as well as the Missouri River; rerouting the ditch further south, rip-rapping the Missouri River banks, and piping the lateral.

In order to reroute the lateral further from the Missouri River, over 20,000 cubic yards of dirt would be needed to build up the 4,000 feet of ditch bank. This dirt would have to be hauled in as the existing topography does not provide for the materials needed. This lateral move would cut through existing farm fields, isolating fields of previously farmable private property. This also would not ensure the lateral from future damage from the river, as it continues to migrate in the direction of the lateral.

The next option, rip-rapping the Missouri River was evaluated and met with resistance by the Corps of Engineers as the area of concern is directly in view of the Fort Union Trading Post, a National Historic Site. This area of the river also contains very steep banks. We have estimated it would take over 3,000 cubic yards of rip rap as well as 10,000 cubic yards of excavation at a cost of well over a million dollars. This does not account for any setbacks due to permitting if it is allowed at all.

The final option considered involved installing a siphon system that pipes the lateral approximately 1,000 feet from the river with 4,300 linear feet of 60" HDPE pipe. This option will not obstruct the view from Fort Union, will not need as many loads of materials hauled in, and can be completed in a short amount of time. This option will also disturb the least amount of private property. The land disturbed will be restored to previous condition and can be farmed as before. This option will be further evaluated in the report. An overview of this option can be found in Appendix A, Schematics.

Hydraulic Analysis

Working with LYID, IEI used minimal flows allowed for irrigating the 807 acres serviced by the lateral. The original design standard of 3 cubic feet per second (cfs) per 80 acres was used. This requires that 30 cfs needs to be delivered.

To deliver 30 cfs, the Hazen-Williams formula for determining frictional head loss was used to determine the amount of frictional head for various pipe sizes. Table 1 shows the maximum water delivery and head loss for various pipe sizes.

Pipe Size (in)	Head Loss (ft)
36	5.654
42	2.671
48	1.395
54	0.786
60	0.471
72	0.194

Table 1 – Head Loss

Frictional losses aren't the only factor in determining head loss. Entrance and exit losses also have to be accounted for as well as any structures such as manholes and bends along the pipeline. This project will include an entrance structure, exit structure, 4 manholes, and one bend. Table 2 shows the head loss at 30 cfs for each structure.

Structure	Head Loss (ft)
Inlet	0.15
Manhole (x4)	0.4
Bend	0.12
Outlet	0.32
Total	0.99

Table 2 – Structure Head Loss

The existing channel has a difference in water elevation of 1.3' between the tie in points. Using a 60" diameter pipe, the total head loss will amount to 1.461' of head loss. This pipe will adequately carry the existing water volume without substantially reducing the high water elevation at the delivery point. You will see the proposed profile of the pipe in Appendix A – Schematics.

Cost

Using recent projects of this type and industry knowledge, Interstate Engineering created an estimate of probable cost for this project. LYID has been able to secure volume pricing for HDPE pipe, and this cost was used in the estimate.

LYID has long maintained a fleet of heavy equipment capable of installing large diameter HDPE pipe and plan to construct this project with their in-house capabilities. LYID has installed numerous pipelines of this diameter before and because they are the experienced end user of this pipeline, they are heavily invested in the highest quality installation. Below you will find a cost estimate for the proposed project; assuming LYID pipe pricing and in-house construction.

ESTIMATE OF PROBABLE PROJECT COST

Lateral W - Piped

Lower Yellowstone Irrigation Project

I.E. #S18-04-022

Item No	Item	Unit	No. of Units	Unit Price	Extended Price
1	Mobilization	L.S.	1	$ 125,000.00	$ 125,000.00
2	60" HDPE Pipe	LF	4,330	$ 200.00	$ 866,000.00
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4	Type II Bedding	CY	1,600	$ 80.00	$ 128,000.00
5	Lateral Reclamation	LS	1	$50,000	$ 50,000.00
		Estimated Total			$ 1,179,000.00
		Contingency (±10%)			$ 121,000.00
		Total Construction Cost			**$ 1,300,000.00**
		Design Engineering			$ 25,000.00
		Construction Engineering			$ 75,000.00
		Total Engineering Cost			$ 100,000.00
		Estimated Total Cost			**$ 1,400,000.00**

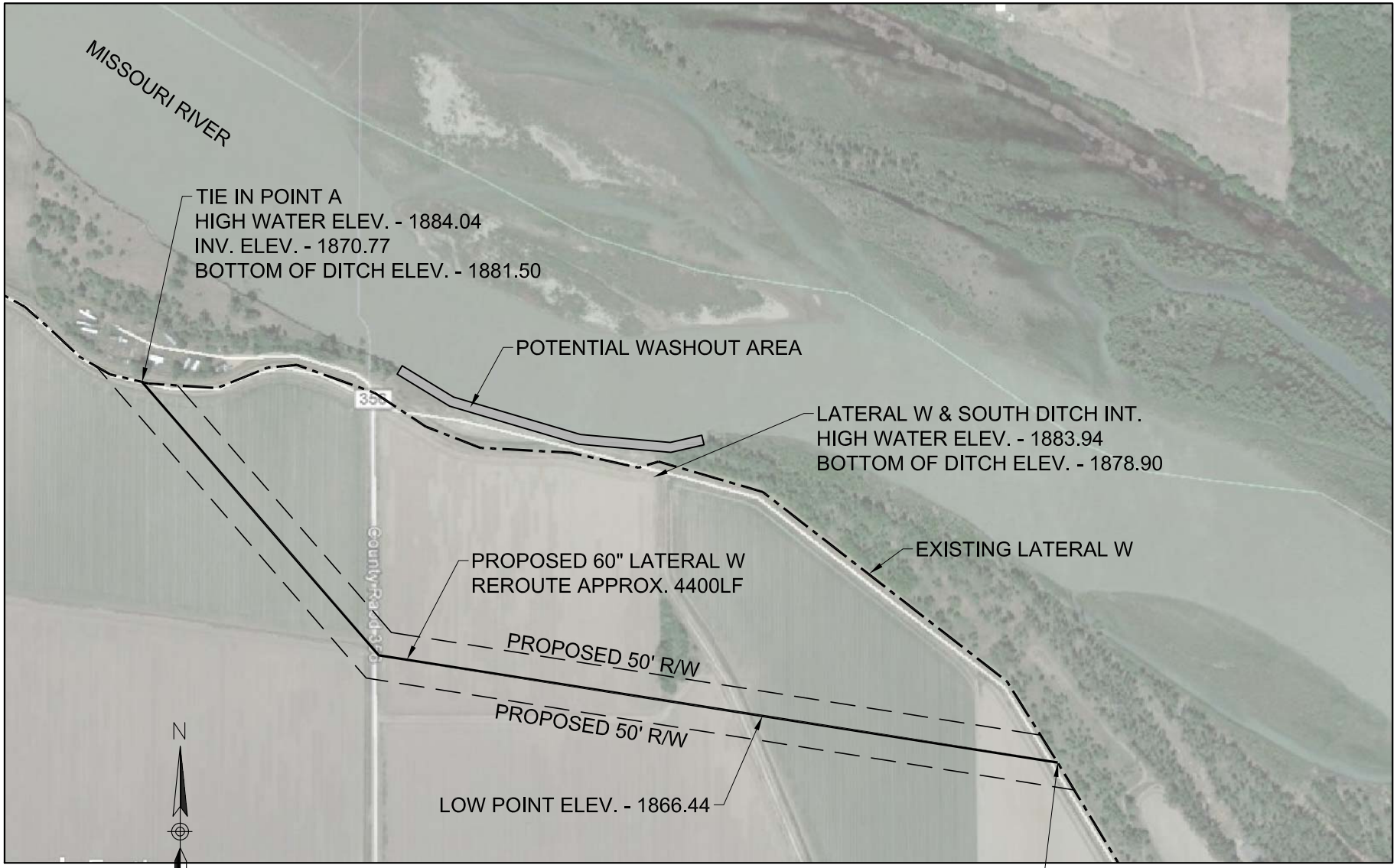
Conclusions

With the urgency of this water supply lateral again being undermined, installing a reroute of this pipe using LYID's equipment and personnel is the most feasible option to continue reliable irrigation to the 800+ acres it services. This option also significantly reduces the risk of the lateral being washed into the Missouri River and causing an unnecessary inflow of sediment into the river.

Appendix A – Schematics

LATERAL W EXHIBIT

LOWER YELLOWSTONE IRRIGATION PROJECT



Revision No.	Date	By	Description

LATERAL W EXHIBIT

LYIP

Drawn By: J.D.M. Project No.: S18-04-022

Checked By: R.L.K. Date: 5-30-18

Interstate Engineering, Inc.
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425 East Main Street
Sidney, Montana 59270
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Fax (406) 433-5618
www.interstateeng.com
Other offices in Minnesota, North Dakota and South Dakota

INTERSTATE ENGINEERING

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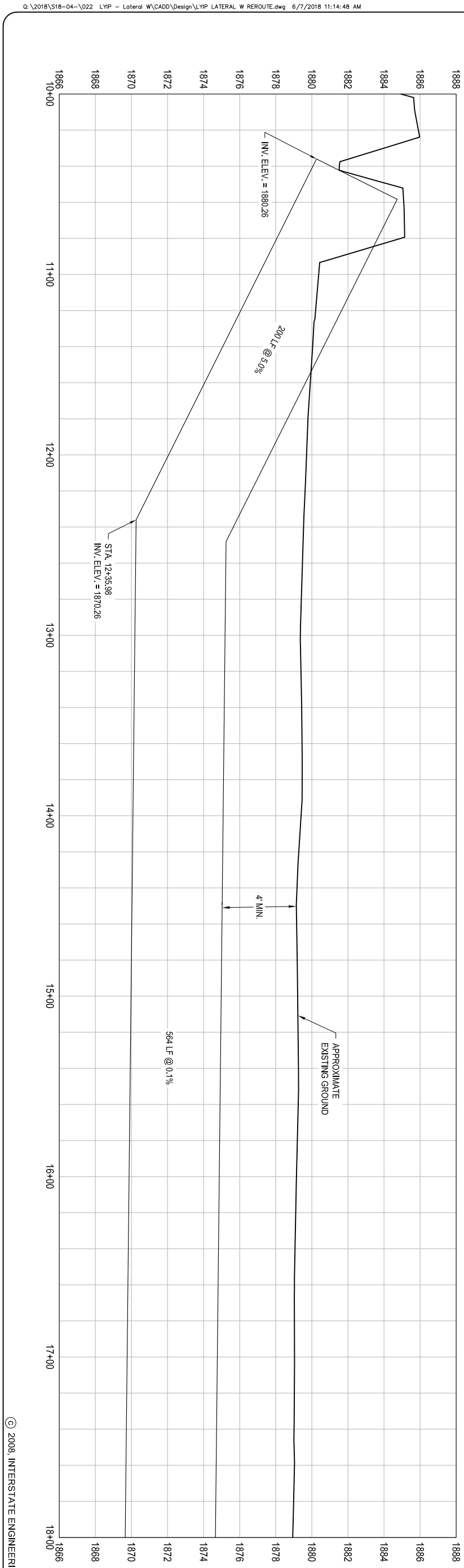
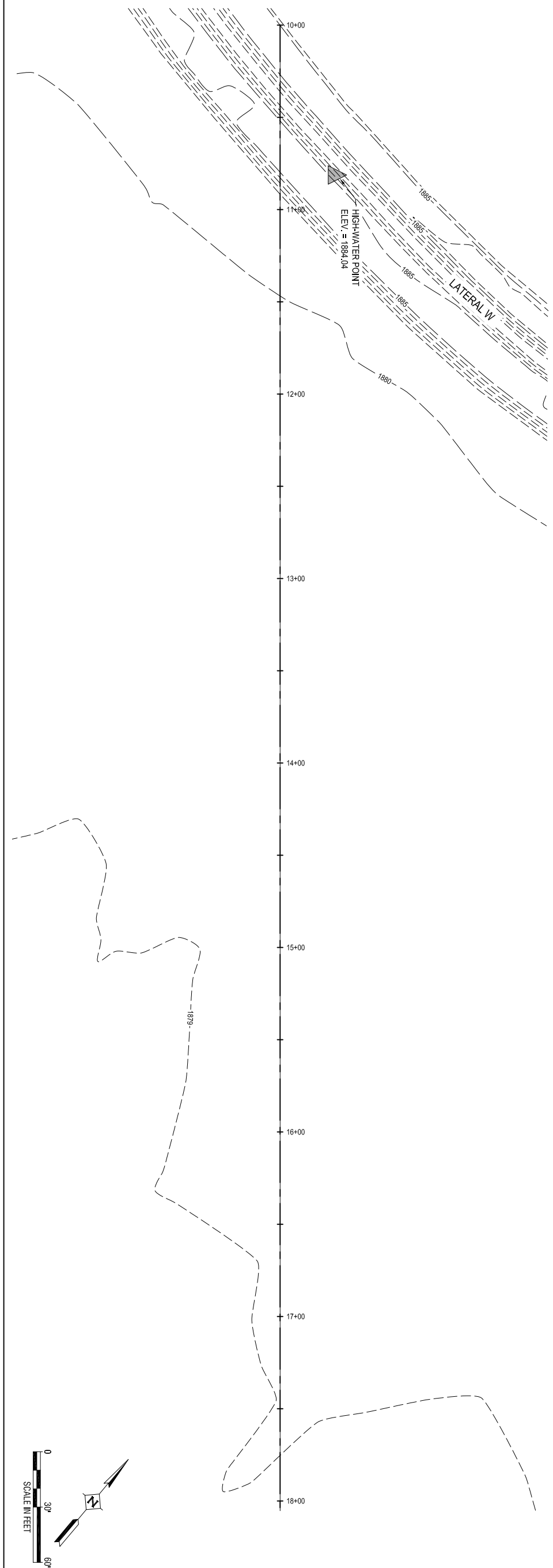
1/1

SHEET NO.





SHEET NO. 3

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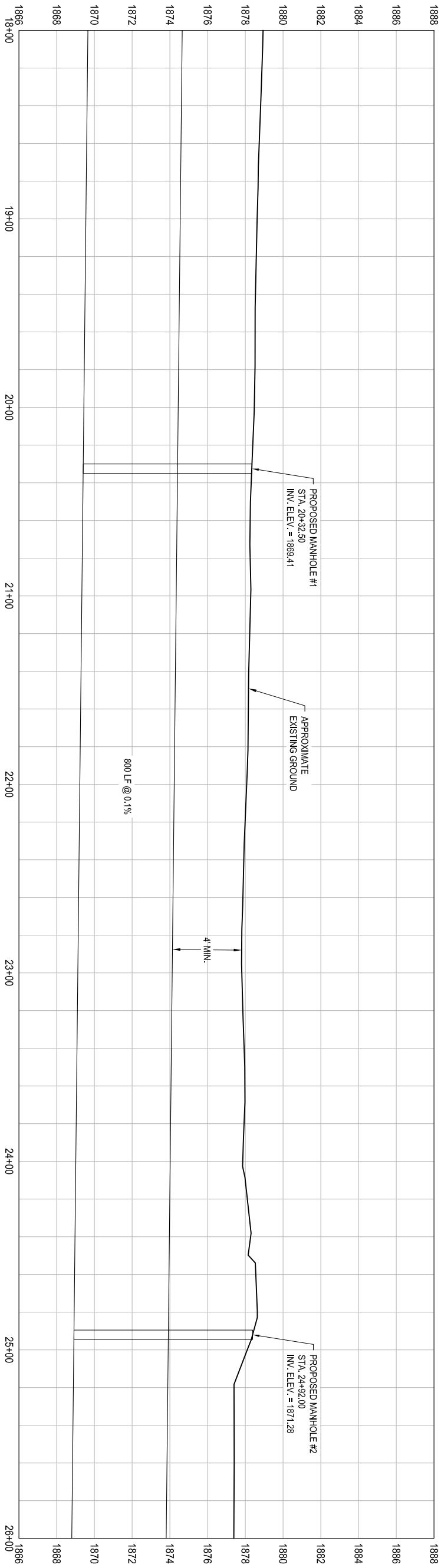
Other offices in Minnesota, North Dakota and South Dakota

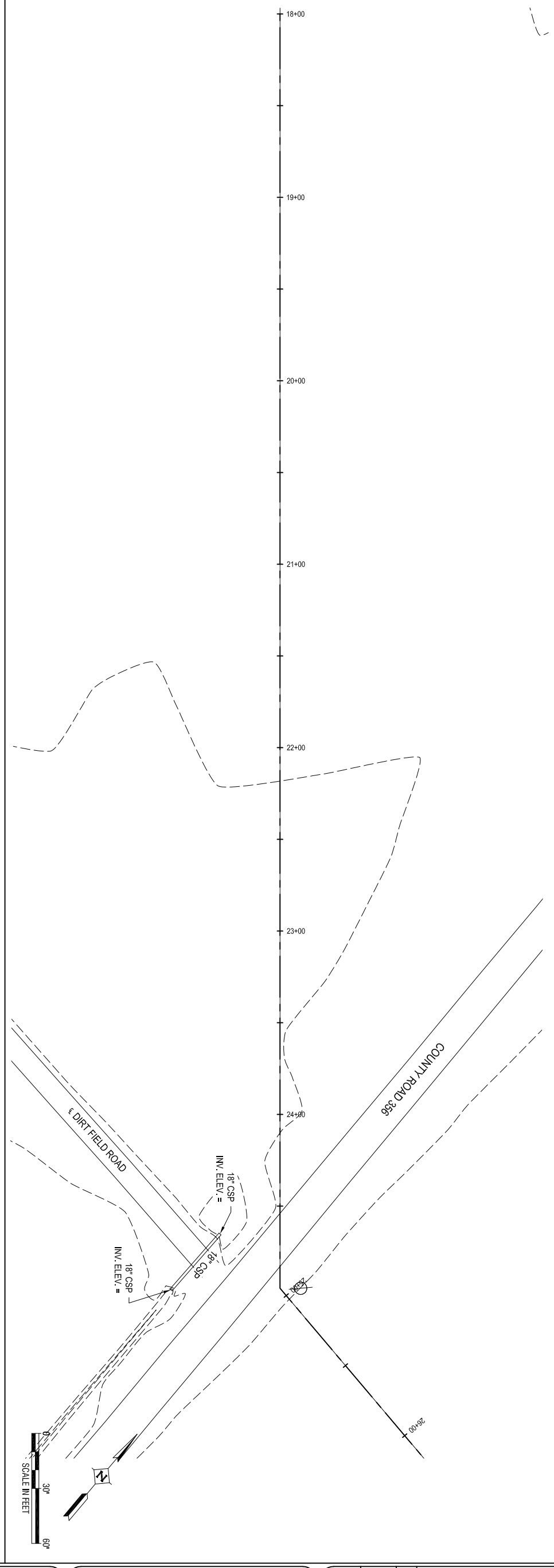
LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M. | Project No.: S18-04-022
Checked By: R.L.K. | Date: JUNE 7, 2018

Revision No.	Date	By	Description

Q:\2018\S18-04-\022 LYIP - Lateral W\CADD\Design\LYIP LATERAL W REROUTE.dwg - 6/7/2018 11:14 AM jackie miller





SHEET NO. 4

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Other offices in Minnesota, North Dakota and South Dakota

LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M. | Project No.: S18-04-022
Checked By: R.L.K. | Date: JUNE 7, 2018

Revision No.	Date	By	Description

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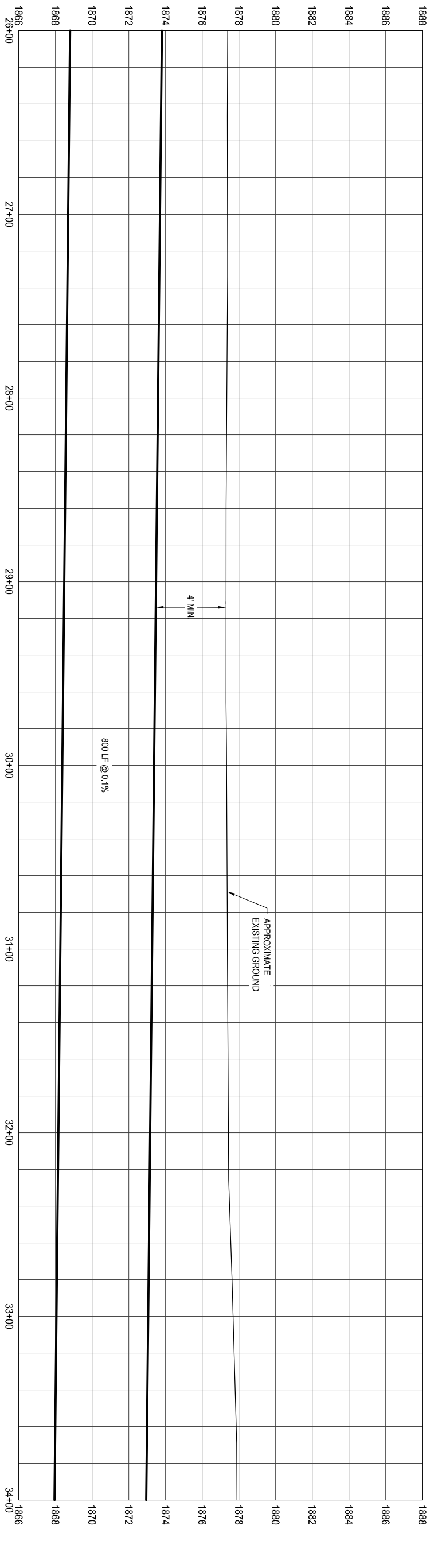

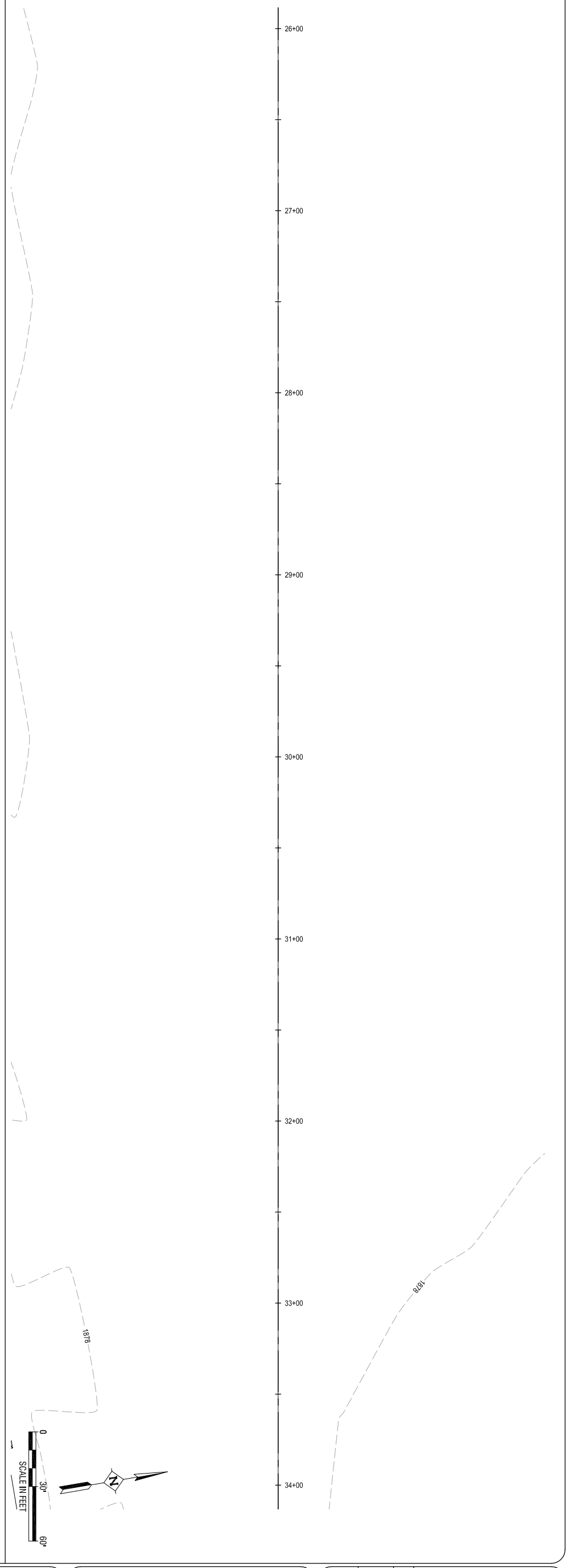

SHEET NO. 5

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Other offices in Minnesota, North Dakota and South Dakota

LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M. | Project No.: S18-04-022
Checked By: R.L.K. | Date: JUNE 7, 2018

Revision No.	Date	By	Description

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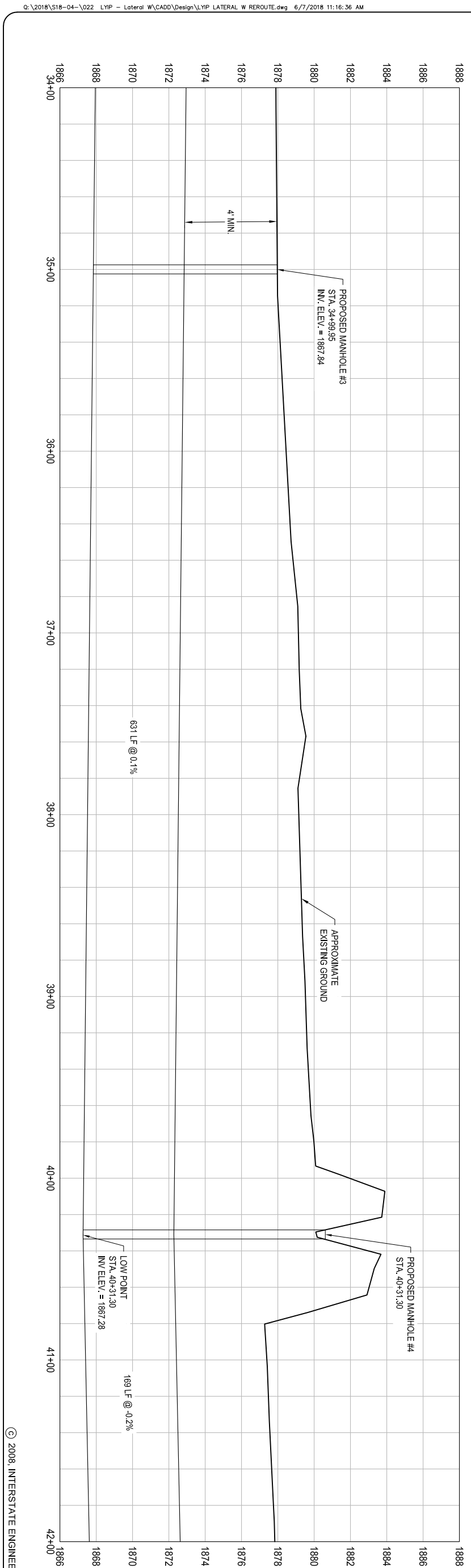

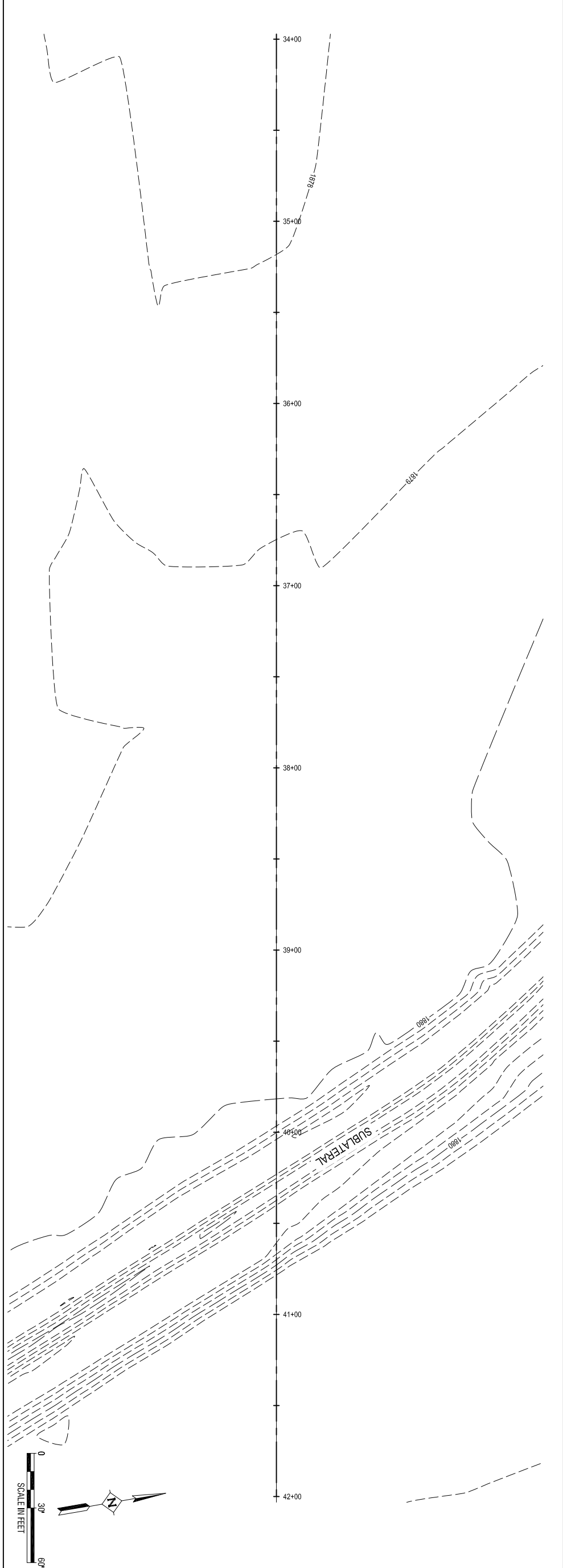

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LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M.
Checked By: R.L.K.
Project No.: S18-04-022
Date: JUNE 7, 2018

Revision No.	Date	By	Description

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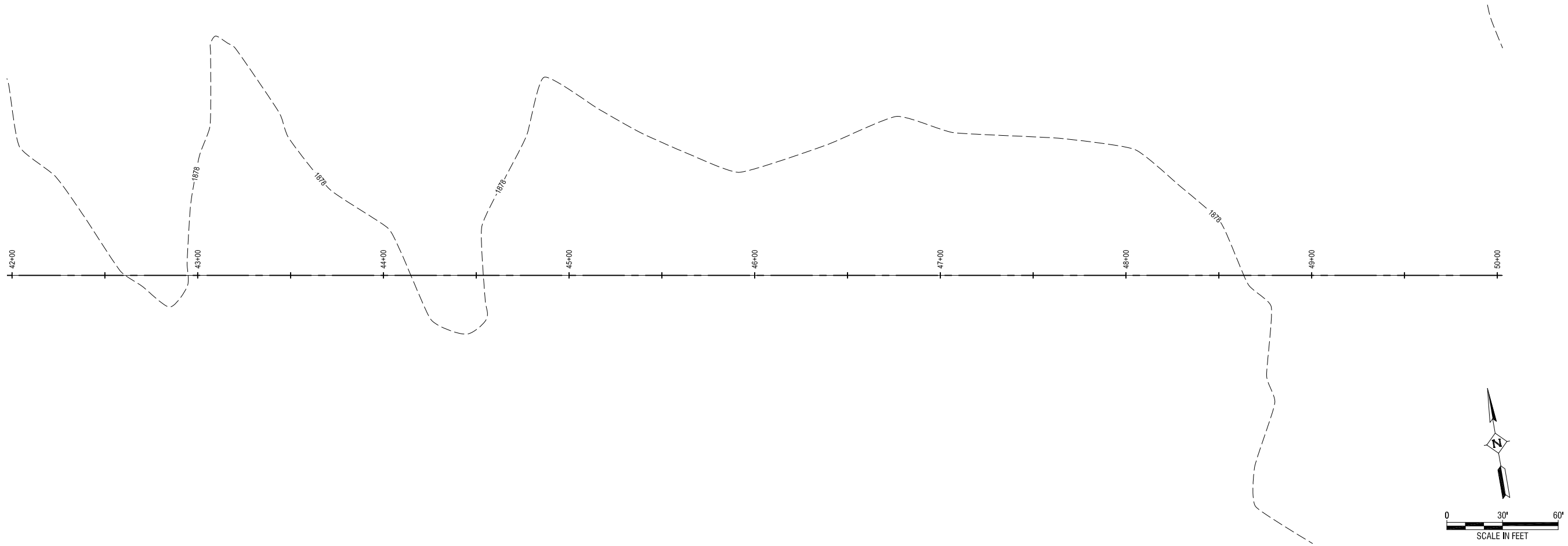

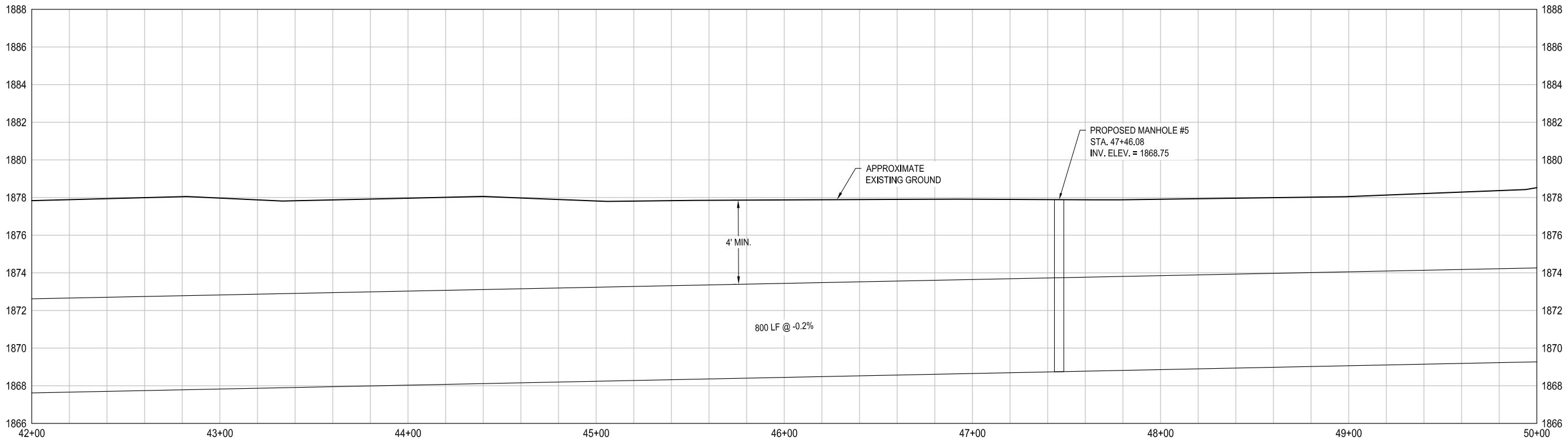

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LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M. Project No.: S18-04-022
Checked By: R.L.K. Date: JUNE 7, 2018

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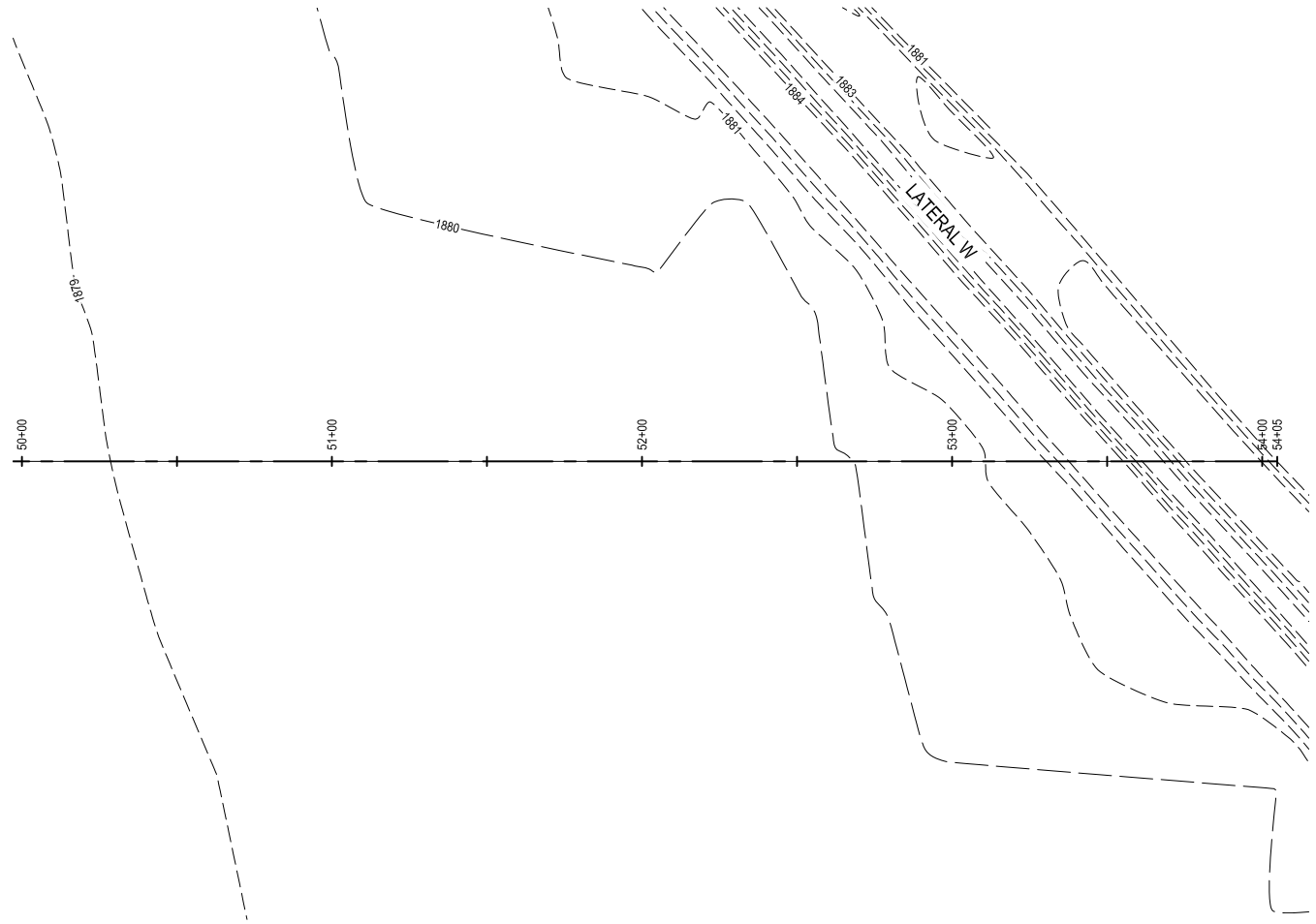

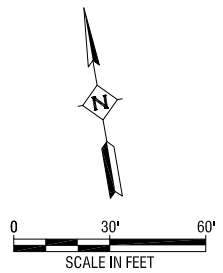

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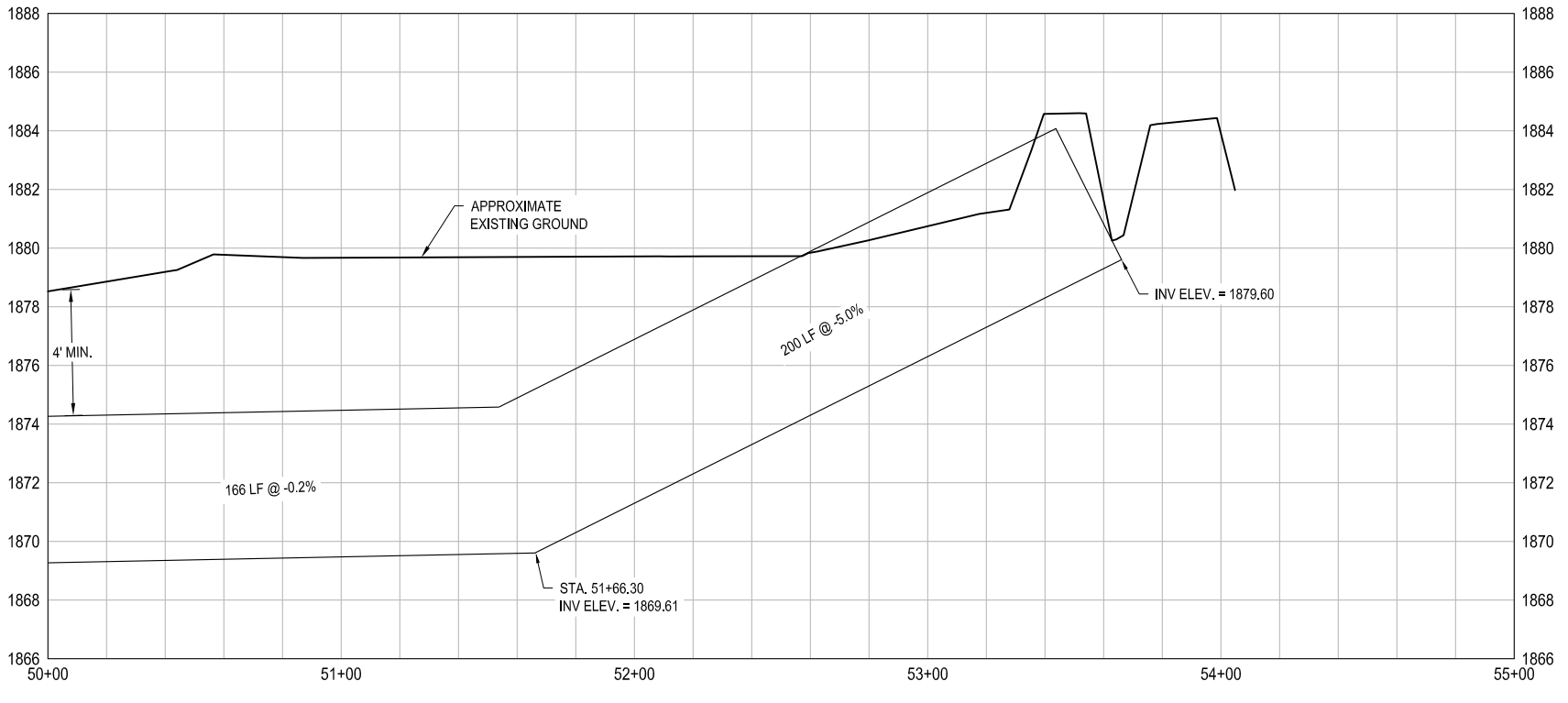

LOWER YELLOWSTONE IRRIGIATION
LATERAL W IMPROVEMENTS

Drawn By: J.D.M.
Checked By: R.L.K.
Project No.: S18-04-022
Date: JUNE 7, 2018

Revision No.	Date	By	Description

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SHEET NO.

NRWD
Northeast Regional Water District

APPENDIX J

SWC Date Received : 5/2/18

May 2, 2018

Garland Erbele, State Engineer
North Dakota State Water Commission (SWC)
900 E. Boulevard Ave.
Bismarck, ND 58505-0850

Duane DeKrey, General Manager
Garrison Diversion Conservancy District (GDCD)
P.O. Box 140
Carrington, ND 58421-0140

Re: Revised request of April 16th letter

Dear Garland and Duane:

In a letter to both of you dated April 16, 2018, I requested additional Federal MR&I funding for the Phase 2 User Expansion phase of the Devils Lake Water Supply Project.

Originally, we had anticipated about 150 to 170 sign-ups, with an estimated project cost of $8,000,00.

In the April 16 letter, I stated we had 235 sign-ups, and an estimated $10,039,244 project.

Just yesterday, at a meeting with our engineers to finalize hook-ups, pipeline sizing, and routing, we updated project costs to $10.5 million (see attached engineer's estimate).

I had previously requested for up to $1.6 million, the amount I thought was being turned back by the City of Carrington.

Since then, I have been told that amount is $1.9 million, an amount very close to 75% of the additional $2.5 million estimated project cost.

On behalf of Northeast Regional Water District, I respectfully revise request from $1.6 million to $1.9 million in Federal MR&I grant funding for NRWD's Devils Lake Water Supply – Phase 2 project.

Sincerely,

Gordon L Johnson

Gordon L Johnson, General Manager
Northeast Regional Water District

CC: Geoffrey Slick
Sarah Sesselman
Jeremy Schuler

13532 Hwy 5 West • Cavalier, ND 58220 • Phone: (701) 265-8503 • FAX (701) 265-4280

NRWD - User Expansion Phase II
Date: 5/1/18

ITEM NO.	DESCRIPTION	Adjusted Bid Unit Price	Units	CURRENT QUANTITY	TOTAL COST
CONTRACT 1 – BASE BID					
A.	**Mobilization**	$200,000.00	%	1.00	$200,000.00
B.	**Water Main**				
	1. 2-inch PVC Class 200	$4.00	L.F.	1,182,331.83	$4,729,327.32
	2. 3-inch PVC Class 200	$4.50	L.F.	147,746.00	$664,857.00
	3. 4-inch PVC Class 160	$5.50	L.F.	48,300.00	$265,650.00
C.	**Gate Valves**				
	1. 2-inch	$1,000.00	ea.	35.00	$35,000.00
	2. 3-inch	$1,200.00	ea.	8.00	$9,600.00
	3. 4-inch	$1,800.00	ea.	3.00	$5,400.00
D.	**1-inch Flush/Air Blow-off Valve**	$1,000.00	ea.	46.00	$46,000.00
E.	**Tie-in to Existing System Using a Tee**				
	1. 1.5 to 3-inch Existing Main	$1,800.00	ea.	70.00	$126,000.00
	2. 4 to 6-inch Existing Main	$2,600.00	ea.	40.00	$104,000.00
F.	**New 2-inch Tie-in to Existing System Using a Saddle**				
	3. New 2-inch to 8-inch & Larger Existing Main	$2,650.00	ea.	7.00	$18,550.00
G.	**Non-Cased Bores**				
	1. 2-inch and 3-inch	$1,300.00	ea.	279.00	$362,700.00
	2. 4-inch	$2,400.00	ea.	9.00	$21,600.00
H.	**Directional Bores**				
	1. 2-inch POLY SDR 11	$13.00	L.F.	69,614.88	$904,993.44
	2. 3-inch POLY SDR 11	$20.00	L.F.	1,500.00	$30,000.00
	3. 4-inch POLY SDR 11	$24.00	L.F.	500.00	$12,000.00
I.	**Cased Bores**				
	1. 2-inch POLY SDR 11 in 6-inch Steel	$13,000.00	ea.	8.00	$104,000.00
J.	**Signs**	$150.00	ea.	92.00	$13,800.00
K.	**Seeding**	$600.00	Acre	300.00	$180,000.00
L.	**Gravel**	$20.00	Ton	1,000.00	$20,000.00
M.	**1-inch Curb Stop Valve**	$1,100.00	ea.	237.00	$260,700.00
N.	**Residential Meter Setter Unit**	$1,200.00	ea.	193.00	$231,600.00
O.	**Frost Proof Meter Pit**	$1,700.00	ea.	44.00	$74,800.00
				SUBTOTAL BASE BID CONSTRUCTION COSTS=	**$8,420,577.76**
				SUBTOTAL NON-CONSTRUCTION COSTS=	**$2,121,876.00**
				TOTAL PROJECT COST=	**$10,542,453.76**

APPENDIX K

RED RIVER VALLEY WATER SUPPLY PROJECT

Serving the Water Supply Needs of Central North Dakota and the Red River Valley

Lake Agassiz Water Authority

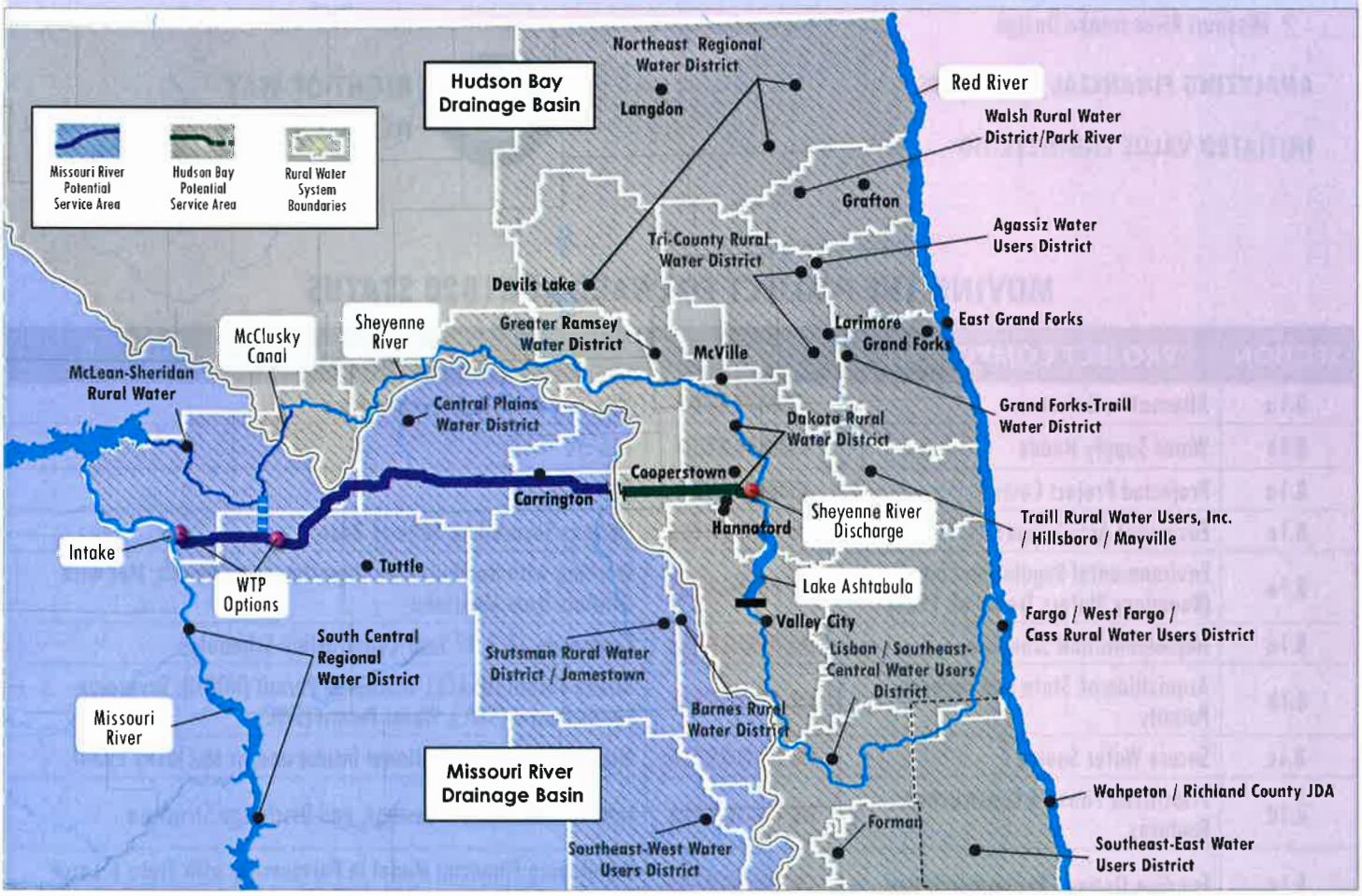
June 13, 2018

NEED FOR THE PROJECT

EXISTING WATER SUPPLIES WILL BE INADEQUATE DURING DROUGHT

CLIMATOLOGISTS PREDICT A 1930s-TYPE DROUGHT WILL LIKELY REPEAT BY 2050

EXPECTED ECONOMIC IMPACT ~$25 BILLION OVER 10 YEARS (2015 DOLLARS)



UNIQUE FINANCIAL IMPACT

THE RRVWSP IS UNIQUE IN THAT IT WILL DELIVER SUPPLEMENTAL WATER SUPPLIES TO ITS USERS WHEN NEEDED

1. THE RRVWSP WILL NOT REPLACE EXISTING FACILITIES
2. EXISTING INFRASTRUCTURE WILL BE CONTINUOUSLY USED AND MAINTAINED BY CURRENT USERS
3. THE RRVWSP IS AN ADDITIONAL COST TO ALL WATER SYSTEMS

PRUDENT SPENDING IS ON TRACK

COMPLETED CONCEPTUAL DESIGN REPORT
- June 2016

COMPLETED PRELIMINARY DESIGN REPORT
- February 2018

STARTED FINAL DESIGN OF KEY COMPONENTS
- 28-Mile Pipeline Segment
- Sheyenne River Discharge Structure
- Missouri River Intake Design

ANALYZING FINANCIAL SCENARIOS

INITIATED VALUE ENGINEERING

NEXT STEPS

PREFERRED FINANCIAL PLAN

RIGHT-OF-WAY ACQUISITION

MOVING THE PROJECT FORWARD - HB1020 STATUS

SECTION	PROJECT COMPONENT	STATUS	DETAIL
8.1a	Alternative Selection	COMPLETED	Missouri River to Sheyenne River
8.1a	Water Supply Needs	COMPLETED	165 cfs
8.1a	Projected Project Costs	COMPLETED	$1.14 Billion
8.1a	Easement Acquisitions	IN PROGRESS	Options Secured on 50% of Route
8.1a	Environmental Regulation Compliance (Boundary Waters Treaty of 1909)	IN PROGRESS	Working with North Dakota Department of Health, Met with Officials from Manitoba
8.1a	Implementation Schedule	IN PROGRESS	Evaluating 10 & 17 Year Construction Schedules
8.1b	Acquisition of State and Federal Permits	IN PROGRESS	Intake Permit (USACE), Discharge Permit (NDDH), Sovereign Lands Permit (SWC), Water Permit (SWC)
8.1c	Secure Water Source	IN PROGRESS	Missouri River Conventional Intake and/or McClusky Canal
8.1d	Prioritized Phase 1 Construction Features	IN PROGRESS	Intake, Trenchless Crossings, and Discharge Structure
8.1e	Funding Options Recommendation	IN PROGRESS	Developing Financial Model in Partnership with State & Local Users
8.2	Phase 1 Construction Approval	NOT STARTED	State Engineer and State Water Commission Certify Section 1 Completed and Budget Section Approval
8.3	Quarterly Progress Reports to Water Topics Committee	ONGOING	July 25, 2017; October 12, 2017; February 21, 2018; June 13, 2018

APPENDIX L

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
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MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Garland Erbele P.E., Chief Engineer – Secretary
SUBJECT: Devils Lake Update
DATE: May 24, 2018

Hydrologic Update

The May 24th Devils Lake water surface elevation is 1449.8 feet which is approximately 1.8 ft below the lake level one year ago. Spring precipitation has been below average, and the lake experienced very little rise from spring runoff. Any additional lake rise will be driven by precipitation, and the most recent National Weather Service forecast indicated that there is still a 50 percent chance of the lake rising to 1450.1 ft. The June forecast will include probabilities for how low the lake might drop by winter. An elevation of 1448.0 ft is possible in 2018 depending on summer precipitation. At that elevation, the Devils Lake Outlets Management Advisory Committee has agreed to re-convene to discuss future outlet operating parameters.

Outlet Update

The West End Outlet was started on May 9th and discharged 125 cfs steadily until May 15th when the outlet was shut down for a planned electrical preventive maintenance service. The service included testing and a thorough inspection of each of the motor control centers. The service was completed on May 18th, and there were no major problems detected. The West Outlet returned to full capacity (250 cfs) discharge on May 22nd.

A repair at the East Outlet terminal structure was also completed on May 22nd. Over time, the impact from the discharge falling onto the articulated concrete block had displaced the block and allowed erosion to begin occurring. The repair consisted of placing sections of sheet pile against the toe of the structure, filling the void with cementitious grout, and reinforcing the impact area. The structure will continue to be monitored closely for future changes. The East Outlet began discharging on May 24th at 150 cfs.

Additional Items

A request to alter the Devils Lake Outlet discharge operations was received from the Upper Sheyenne River Joint Water Resource Board on May 18, 2018. The Board has commissioned Barr Engineering to perform a Sheyenne River Riparian Corridor Management study which will include an analysis of the riverbank and survey cross sections at fifteen sites and four USGS stream gages along the river. The board has requested that the outlets be shut down for a period of time during the summer operating season and has specified a maximum flow target of 150 to 200 cfs in the river during the field work. To reach those flow targets at the downstream stretches of the Upper Sheyenne River would likely require the outlets to be shut down for a minimum of a week and even then there is no guarantee that

the flow would drop as low as 200 cfs. Any precipitation during that time would keep the river high and require a longer shut-down.

In the past, requests to reduce discharge to allow work to be performed have been denied because other options such as using low flow periods in the fall to perform work have been available. In this case, the Board has been informed that the West Outlet will likely be shut down for one to two days in early July to allow canal maintenance to be performed. At that time, East Outlet discharge is also reduced or shut down to prevent exceedances of downstream water quality limitations. This maintenance has been performed for the past several years and typically results in a drop to less than 100 cfs near the West Outlet and to approximately 300 cfs near Cooperstown a week later. The date for canal maintenance will vary depending on canal condition and weather but the Board will be notified as early as possible so that the field work can be coordinated to coincide with the maintenance shutdown.

GE:JK:TD:ph/416-10

North Dakota State Water Commission

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MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Garland Erbele, P.E., Chief Engineer-Secretary
SUBJECT: Missouri River Update
DATE: May 11, 2018

System/Reservoir Status

Total System

System volume on May 11 in the six mainstem reservoirs was 61.2 million acre-feet (MAF), 5.0 MAF above the base of flood control. This is 5.6 MAF above the average system volume for the end of April and 2.0 MAF more than a year ago.

Lake Sakakawea

On May 11, the elevation of Lake Sakakawea was 1843.4 feet msl, 5.9 feet above the base of flood control. This is 1.7 feet higher than a year ago and 10.0 feet higher than the average end of April elevation. The lowest recorded end of April elevation was 1806.6 feet msl in 2005, and the highest recorded end of April elevation was 1847.6 feet msl in 2011.

Lake Oahe

On May 11, the elevation of Lake Oahe was 1610.3 feet msl, 2.8 feet above the base of flood control. This is 1.8 feet higher than a year ago and 6.0 feet higher than the average end of April elevation. The lowest recorded end of April elevation was 1574.7 feet msl in 2005, and the highest recorded end of April elevation was 1617.9 feet msl in 1997.

Fort Peck

On May 11, the elevation of Fort Peck was 2241.0 feet msl, 7.0 feet above the base of flood control. This is 3.3 feet higher than a year ago and 12.1 feet higher than the average end of April elevation. The lowest recorded end of April elevation was 2198.6 feet msl in 2005, and the highest recorded end of April elevation was 2247.0 feet msl in 1979.

Runoff and Reservoir Forecasts

On May 7, mountain snowpack in the "Above Fort Peck" reach was 123% of average. In the "Fort Peck to Garrison" reach it was 120% of average. It appears that snowpack has peaked in both reaches.

Releases from Garrison Dam are predicted to be at least 39,000 cfs in May, June, July, and August. The May runoff forecast predicts runoff above Sioux City for this year to be 33.2 MAF or 131% of average.

Missouri River Recovery Implementation Committee (MRRIC)

Section 5018 of the 2007 Water Resources Development Act (WRDA) authorized the Missouri River Recovery Implementation Committee (MRRIC). The Committee is to make recommendations and provide guidance on activities of the Missouri River Recovery Program (MRRP). MRRIC has nearly 70 members representing local, state, tribal, and federal interests throughout the Missouri River Basin. The representatives for the State of ND on MRRIC are John Paczkowski (primary) and Jesse Kist (alternate).

The Corps is currently in the process of preparing the Missouri River Recovery Management Plan and Environmental Impact Statement (MRRMP & EIS). This process involves the development of a range of alternatives for the purposes of avoiding jeopardy of species on the Missouri River that are protected under the Endangered Species Act, specifically the threatened piping plover and endangered least tern and pallid sturgeon.

The final Biological Opinion (BiOp) was delivered to the Corps on April 16, 2018 and subsequently to MRRIC.

The final EIS and Record of Decision is expected this summer/fall.

Emergent Sandbar Habitat Construction

As part of the Missouri River Recovery Program, the Corps is currently planning to construct a single 20-25 acre emergent sandbar habitat (ESH) site within the Garrison Reach of the Missouri River. The intent of this project is to create nesting habitat for the threatened Piping Plover in order to achieve compliance with the Endangered Species Act. The anticipated project site is located south of the City of Washburn near Cross Ranch State Park. Construction will consist of dredging of the riverbed and placement of dredged material onto an existing shallowly submerged sandbar. The Corps is planning to hold a public meeting on June 12th at the Lewis and Clark Interpretive Center in Washburn to discuss the project.

JGK /1392

North Dakota State Water Commission

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MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Garland Erbele, P.E., Chief Engineer/Secretary
SUBJECT: NDSWC– Mouse River Update
DATE: May 16, 2018

Mouse River Enhanced Flood Protection Project

The Souris River Joint Board (SRJB) sponsored Mouse River Enhanced Flood Protection Project (MREFPP) is a basin wide project looking to reduce flood risk in the Mouse River Basin within North Dakota. Construction of phases MI-1, MI-2, and MI-3 are currently underway in the City of Minot, with an expected completion date near the end of 2020. During the construction of the new flood protection project, the current 5,000 cfs protection will be maintained within the city.

As of mid-May, topsoil and asphalt is being stripped from a walking trail along phases MI-2 and MI-3 to prepare for the removal of the existing levee. As part of phase MI-1, crews are preparing for the construction of the Broadway Pump Station.

Integrated Feasibility Study

The Integrated Feasibility Study with the Corps is being conducted to determine if the federal government has interest in the MREFPP. The Corps has selected a Tentatively Selected Plan, the Maple Diversion, which ties into the MREFPP. The SRJB has submitted preliminary designs and cost estimates for the Tentatively Selected Plan to the Corps in order to speed up the preparation of the final report, known as the Chief's Report. The SRJB hopes to have the Chief's Report completed by the end of the year. This shortened timeline may allow the Tentatively Selected Plan to be considered for funding in Congress' next Water Resource Development Act.

Plan of Study

The International Joint Commission's (IJC) Plan of Study will review and update the operating agreements for Rafferty, Grant Devine (formerly known as Alameda), Boundary, and Darling Dams. An appointed Study Board, which manages the review and update process, has received comments on their draft work plan and is currently looking to begin tasks detailed in the work plan to complete the study by June 2020.

The IJC has created a Public Advisory Group (PAG) that will allow the general public to provide input to study. The Study Board and the PAG will conduct meetings in Estevan, Saskatchewan during the week of June 24th in conjunction with the International Souris River Board's meeting. Detailed information about the PAG meeting will be available soon on the Study Board's webpage.

System/Reservoir Status Above Minot

Total System

System volume on May 15 in the four reservoirs above Minot was approximately 574,000 acre-feet, with an available flood storage volume of nearly 472,00,000 acre-ft. The normal end of February storage (for flood and non-flood years) is approximately 540,000 acre-ft.

Boundary Reservoir (Saskatchewan)

On May 15, Boundary Reservoir was at an elevation of 1836.61 feet msl, 3.39 feet below the full supply level. The maximum allowable flood level, full supply level, and normal draw down level is 1840 feet msl.

Rafferty Reservoir (Saskatchewan)

On May 15, Rafferty Reservoir was at an elevation of 1802.82 feet msl, 3.28 feet below the full supply level. The normal end of February elevation (for flood and non-flood years) is 1802.82 feet, and the maximum allowable flood level is 1871.59 feet msl.

Grant Devine Reservoir (Saskatchewan)

On May 15, Grant Devine Reservoir was at an elevation of 1841.54 feet msl, 2.29 feet below the full supply level. The normal end of February elevation (for flood and non-flood years) is 1840.55 feet msl, and the maximum allowable flood level is 1860.24 feet msl.

Darling Reservoir (North Dakota)

On May 15, Darling Reservoir was at an elevation of 1596.75 feet msl, one quarter of a foot below the full supply level. The normal end of February elevation (for flood and non-flood years) is 1596.00 feet, and the maximum allowable flood level is 1601.00 feet msl.

GE:CK:ph/1974/2122

State of North Dakota
Office of the State Engineer
Regulatory Division
900 EAST BOULEVARD AVE. • BISMARCK, ND 58505-0850
Regulatory Division (701) 328-2752 • FAX (701) 328-3696 • http://swc.nd.gov

MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Garland Erbele, P.E., Chief Engineer - Secretary
SUBJECT: SWPP – Project Update
DATE: May 14, 2018

Oliver, Mercer, North Dunn (OMND) Regional Service Area
Rural Distribution Contracts 7-9E, 7-9G Bid Schedule 1 and 2:
Reclamation, seeding and final administrative items remain before final payments can be made on Contract 7-9E and Contracts 7-9G Bid Schedules 1 and 2. Contractors have returned to finish reclamation and seeding.

Other Contracts
Contract 8-1A New Hradec Reservoir:
This contract involves furnishing and installing a 296,000-gallon fusion powder coated bolted steel reservoir. Olander Contracting Company is the contractor. The contract documents were executed on May 16, 2013, and the Notice to Proceed was issued on June 3, 2013. The substantial completion date on this contract was September 15, 2013. The tank was put into service on February 20, 2014. The contractor disputes the liquidated damages withheld. The contractor has not provided any justification for the delays. The contractor has filed a lawsuit against us and their tank sub-contractor. Our legal counsel has filed an answer to their lawsuit. We have not heard anything regarding the lawsuit for many months.

Contract 3-2D Six (6) MGD Water Treatment Plant (WTP) at Dickinson:
The water treatment plant started producing finished water on February 7, 2018. The contract was considered substantially complete on March 7, 2018. Contractor is working on administrative and punch list items. An issue with the concrete floor has been identified and solutions for remedying it have been proposed to the General contractor. Discussion with the General contractor with regards to responsibility of heat and power costs when the process systems were partially operational is ongoing. To date, five change orders totaling $312,048.24 (1.5 percent of the contract amount) have been signed by all parties.

The Electrical Contractor, Edling Electric is working on administrative items and punch list items. One change order for $25,408.92 (1 percent of the contract amount) is signed by all parties.

The Mechanical Contractor, Williams Plumbing and Heating is working on testing, administrative items and punch list items. One change order for $46,272.62 (2 percent of the contract amount) has been signed by all parties. Second change order for $69,639.10 is under process.

Contract 3-2E Residual Handling Building at Dickinson WTP:

The preconstruction conference for this contract was held on October 5, 2017 with all three contractors, Rice Lake Construction Group, Central Mechanical, Inc. and Edling Electric. The General Contractor, Rice Lake Construction Group, mobilized to site on October 16, 2017 and has completed the base slab pours. wall pours in the basement, first floor slab, columns in the first floor and some masonry walls. The General contractor is currently working on decking and shoring for the second-floor slab pour. Some concrete samples (from basement wall, first floor slab, masonry grout and first floor columns) not achieving the desired design strength were identified. All the problem samples except for the first-floor concrete column attained the desired concrete strength when tested after extended curing. The concrete sample for the first-floor column is still under investigation. Both the Electrical and Mechanical contractors are coordinating the placement of conduits and wall sleeves with the concrete pours.

During the overnight hours on December 18, 2017, the construction site flooded because of a malfunctioning raw water control valve in the Water Treatment Plant site. This caused a week delay for this contract. The contractor has filed claims with the Builder's Risk insurance policy.

Contract 5-1A and 5-2A 2nd Richardton Reservoir and 2nd Dickinson Reservoir:

The State Water Commission (SWC), at its October 12, 2016 meeting, awarded Contract 5-2A, 2nd Dickinson Reservoir, to John T. Jones Construction Company. Preconstruction conference for this contract was held on March 30, 2017. The construction of the reservoir walls and leak test of the reservoir were completed last winter. The contractor completed installation of the top three rings of the dome on the ground before ceasing construction because of unfavorable weather conditions. The contract completion date on this contract is November 1, 2017. One change order for $19,475 (0.5 percent of the contract amount) has been executed by all parties. Contractor initially requested 115-day extension to the contract due to weather delays and changes incorporated to the contract. In response to request for more documentation, the contractor changed their request to 67 days. We have responded to their request indicating 45-day extension in justified. The contractor is currently working on the dome installation, site piping and will begin backfilling. The contractor has requested the initial fill that was placed last winter be accepted and in return is offering to provide extended warranty for settlement. Their request is currently being reviewed. The current schedule from the contractor indicates contract completion in mid-July.

The SWC at its December 9, 2016 meeting awarded Contract 5-1A, 2nd Richardton Reservoir, to Engineering America, Inc. A preconstruction conference for this was held on June 7, 2017. The tank panel installation was mostly completed in winter. The contract has a milestone completion date of November 15, 2017 for the work on the new reservoir. The

contractor sent in a letter requesting extension through January 5, 2018. BW/AECOM responded to their request agreeing to 17 out of the 31 days requested which extended the completion date to December 11, 2017. The inlet piping to the reservoir did not pass the pressure test in winter. Because of the unfavorable weather conditions for completing the remaining site work, extension of the contract completion date with contractor asked to reimburse the State Water Commission for the additional field inspection costs was agreed by all parties. One change order for $21,487.78 (1 percent of the contract amount) has been executed by all parties. The current schedule from the contractor indicates the new reservoir will be completed by the end of May.

Contract 2-1B Raw Water Line Capacity Upgrade from intake to OMND WTP:

The scope of work for Contract 2-1B generally consists of furnishing and installing 19,026 lineal feet of 30" diameter steel pipeline. The contractor completed two out of the three jack and bore crossings last winter. The contractor will install the third crossing in Mid-May. Full scale installation of the pipeline is expected to start after Memorial Day. Alignment changes because of observed field conditions are being incorporated in the construction design.

Contract 1-2A Supplemental Raw Water Intake:

The contractor, J.W.Fowler Company (JWF), launched the Microtunneling Boring Machine (MTBM) along the current alignment on August 2017. On October 5, 2017, JWF had installed approximately 1000 feet of intake pipe when employees observed some cracks on pipe no. 58 located approximately 500 feet from the caisson. After pushing a few additional pipes, the cracks worsened. On October 18, 2017, JWF informed that the best course of action to remediate the incident was to leave the installed pipe string in place and pursue other options to complete the intake pipe to the screen location.

JWF's initial plan was to install a rescue shaft 65 feet X 25 feet on top of the MTBM to retrieve the machine and relaunch the machine from the rescue shaft. This information was conveyed to the United States Army Corps of Engineers (USACE) to get permission for performing geotechnical exploration. USACE's review indicated that the rescue shaft is located on an established culturally significant site. USACE's ability to allow a rescue shaft at the location would depend on consultation and review by other agencies and tribes and will involve a significant amount of time. JWF is evaluating other options which include constructing an emergency rescue shaft on the shoreline approximately 150' lake side of the MTBM location or installing the intake pipe by using Direct Pipe® option from near the existing shaft to the proposed screen location. JWF is exploring both the options at this point and working with the builder's risk to secure coverage.

Geotechnical exploration at the emergency shaft location was completed during the week of April 30th. The exploration results will be used by Fowler for the design of the emergency shaft.

Upgrades at the Dodge and Richardton pump stations:

Design of the upgrades at the Dodge and Richardton pump stations to increase the raw water transmission capacity to Dickinson from 9,150 gpm to 13,200 gpm is currently

underway. We expect submittal set of plans and specifications from Bartlett & West/AECOM soon.

Transfer of Service Agreements:

At the December 12, 2015 SWC meeting, the Commission approved the Transfer of Service agreement between the City of Killdeer, the SWA and the SWC. This was the first annexation agreement negotiated between a city served by Southwest Pipeline Project and the SWA. In early January 2016, the SWA mailed similar agreements to 33 communities within the SWPP service area except for the City of Dickinson using the same template as used for the City of Killdeer. The SWA has been negotiating different terms with the City of Dickinson, but now the City of Dickinson is agreeable to the same terms as the other communities. Some communities executed the agreement, while many communities expressed concerns about terms of the annexation agreement that was mailed to them. The SWA continues to meet with the communities to negotiate the terms. Twenty-nine communities out of the total 35 communities have executed the agreement.

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North Dakota State Water Commission

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MEMORANDUM

TO: Governor Doug Burgum
State Water Commission Members

FROM: Garland Erbele, P.E., Chief Engineer-Secretary

DATE: May 25, 2018

SUBJECT: SWC Economic Analysis and Life Cycle Cost Analysis Process Development

Background

Legislation passed by the North Dakota Legislature in 2017 created NDCC 61-03-21.4 - requiring the State Engineer to: *"develop an economic analysis process for water conveyance projects and flood-related projects expected to cost more than one million dollars, and a life cycle analysis process for municipal water supply projects. When the State Water Commission is considering whether to fund a water conveyance project, flood-related project, or water supply project, the State Engineer shall review the economic analysis or life cycle analysis, and inform the State Water Commission of the findings from the analysis and review."*

To comply with the 2017 legislation, the Water Commission has contracted with HDR to assist the agency in drafting Economic Analysis (EA) and Life Cycle Cost Analysis (LCCA) guidelines. In addition, the agency and HDR are also working on fillable platforms that project sponsors and the agency will be able to access to assist with more efficient assessments of projects.

Project Update

Since February 8, when the SWC was provided with an overview of both processes, HDR has solicited and received comments on the draft products from workshop attendees, and the agency. HDR has been working to complete the guidance documents and models, and a workshop has been scheduled for June 21 at the BSC National Energy Center of Excellence from 9 AM to 5 PM (see attached agenda).

The purpose of the workshop is to educate the agency's Commissioners, staff, project sponsors, or their consultants about the new guidance documents and models for EA and LCCA. The workshop is free of charge, and it will be recorded for future viewing via webinar for those who are not able to attend.

GE:pf/322

WORKSHOP

ECONOMIC ANALYSIS & LIFE CYCLE COST ANALYSIS

Date: Thursday, June 21, 2018
Time: 9:00 am – 5:00 pm
Place: BSC National Energy Center of Excellence
Bavendick Stateroom
1200 Schafer St, Bismarck, ND 58501

AGENDA

Life Cycle Cost Analysis (LCCA) - Morning Session (9:00 AM - Noon)

Welcome and Introductions

LCCA Workshop Overview

LCCA Principles, Guidance, & Frequently Asked Questions

The LCCA Model & Interactive Demonstration

Session Wrap-up

Lunch on Your Own

Economic Analysis (EA) - Afternoon Session (1:00 PM – 5:00 PM)

Welcome and Introductions

EA Workshop Overview

EA Principles, Guidance, & Frequently Asked Questions

The EA Urban Model & Interactive Demonstration

The EA Rural Model & Interactive Demonstration

Session Wrap-up

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MEMORANDUM

TO: Governor Doug Burgum
State Water Commission Members

FROM: Garland Erbele, P.E., Chief Engineer-Secretary

DATE: May 25, 2018

SUBJECT: 2019 Water Development Plan

Background

NDCC 61-02-01.3 requires that on a biennial basis, the State Water Commission *"develop and maintain a comprehensive water development plan organized on a river basin perspective, including an inventory of future water projects for budgeting and planning purposes."*

In compliance with this statutory requirement, the Planning and Education Division began the process of developing a 2019 Water Development Plan – focusing on the 2019-2021 biennium and beyond. To make this process a success, the agency sent inquiries to potential project sponsors from all across the state during the second week of January.

Potential project sponsors were asked for their help in identifying the water development projects they're trying to move forward, the timing of their implementation, and estimated costs. As in the past, the input gained from local project sponsors and water managers will become the foundation of the State Water Commission's budget request to the Governor and Legislature.

Updates

Water Development Plan Outline

On May 15, an outline for the 2019 Water Development Plan was provided to Commissioners (via GoodReader) for review and comment. Staff are in the process of writing and developing content, so any suggestions or changes should be provided to the Planning and Education Division so they can make necessary adjustments.

Project Inventory Reviews

On May 17 and 18, State Water Commission members met with staff to review water development projects and studies that were submitted as part of the project inventory effort. Projects were reviewed for potential cost-share eligibility, and project types were assigned to each submittal for future prioritization – after the Project Prioritization Guidance is finalized.

During the project reviews, Commission members requested additional information or clarification on some of the projects or studies. Staff have contacted all of those sponsors and requested the applicable information/clarification. All of that information had not been provided to the agency as of the time this memo was developed. However, it should be available by the June 14 meeting.

Commissioner-Hosted Basin Meetings
An important part of the water development planning process is the Commissioner-hosted basin meetings, where Commissioners have an opportunity to directly engage with project sponsors and the general public. The schedule and agenda for those meetings have been set, and both are available on the agency's website at www.swc.nd.gov.

Long-Term Planning
In addition to the near-term project inventory efforts, the Water Commission has been working with the League of Cities and the North Dakota Rural Water Systems Association to survey water supply systems about their aging infrastructure challenges. The results of this survey will provide better insight into the water infrastructure needs that exist in the state for long-term (50 year) planning and budgeting purposes. This information will also be summarized in the 2019 Water Development Plan.

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