MINUTES

North Dakota State Water Commission
Bismarck, North Dakota
December 9, 2022

The ND State Water Commission (Commission or SWC) held a meeting in the Lewis and Clark Room, Bank of North Dakota,1200 Memorial Highway, Bismarck, ND, and via phone conference on December 9, 2022. Governor Burgum called the meeting to order at 9:54 a.m. A quorum was present.

STATE WATER COMMISSION MEMBERS PRESENT:
Governor Burgum, Chairman
Doug Goehring, Commissioner, ND Dept. of Agriculture (left at 1:15 p.m.)
Michael Anderson, Lower Red River Basin
Richard Johnson, Vice-Chair, Devils Lake Basin (via phone)
James Odermann, Little Missouri, Upper Heart, and Upper Cannonball River Basins
Connie Ova, James River Basin
Gene Veeder, Upper Missouri River Basin
Jay Volk, Lower Missouri River Basin
April Walker, Upper Red River Basin
Jason Zimmerman, Mouse River Basin

OTHERS PRESENT:
Dr. Andrea Travnicek, Director, ND Dept. of Water Resources (DWR) and Commission Secretary
John Paczkowski, DWR State Engineer
DWR Staff
Jennifer Verleger, General Counsel, Attorney General's Office
Approximately 100 people present online and in person.

CONSIDERATION OF AGENDA

The agenda for the December 9, 2022, Commission meeting was approved as presented.

CONSIDERATION OF DRAFT MEETING MINUTES

It was moved by Commissioner Zimmerman, seconded by Commissioner Goehring, and carried on a voice vote that the minutes of the October 13, 2022, Commission and Policy meetings, November 10, 2022, Pre-Commission meeting, and November 29, 2022, meeting be approved as written with grammatical change to the October 13 Commission meeting minutes.

COMMISSION SECRETARY UPDATE

Dr. Andrea Travnicek, DWR Director and Commission Secretary, stated that the DWR has transitioned to its new location at the Bank of North Dakota (BND). Travnicek and many DWR team members attended the ND Joint Water Convention & Irrigation Expo. Travnicek thanked the Governor for the proposed 2023-2025 budget proposal, and the Commissioners and DWR staff for their work on the Cost-Share Policy revisions.

FINANCIAL REPORT

The Glossary of Terms, allocated program expenditures, and financial reports were presented by Chris Kadrmas, DWR Administration Division Director (**APPENDIX A**).

The oil extraction tax deposits into the Resources Trust Fund (RTF) total $345,546,844 through November 2022 which is $127,478,319 over projected revenue. Funds available above projection will be transferred to the Water Project Stabilization Fund (WPSF) and $100,601,725 was transferred through September 2022.

INTERNATIONAL WATER INSTITUTE (IWI) - ASSESSMENT OF SNAGGING AND CLEARING BENEFITS

Commissioners were provided with IWI's Final Draft Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool for Water Resources Cost-Share Program Administration (Assessment) (**APPENDIX B**). The Assessment was requested to assist the Commission in identifying existing or develop a process, including metrics, to incorporate the economic benefits of snagging and clearing into the Economic Assessment (EA) model for water resource projects.

Dr. Jay Leitch, IWI Consultant, and Charles Fritz, IWI Executive Director, presented a Report Summary of the Assessment (**APPENDIX C**). Sixteen assumptions were identified. After discussion, it was determined that the metrics would not be included in the EA model for water resource projects. Travnicek stated that if the Commissioners had specific data to incorporate into the EA model the DWR team would incorporate and staff would continue to identify additional model enhancements.

SOUTHWEST PIPELINE PROJECT (SWPP)

Capital Repayment, Replacement and Extraordinary Maintenance (REM), and 2023 Budget
Jarrett Hillius, SWPP Project Manager, presented the request to establish 2023 Capital Repayment and REM rates for SWPP and discussed Southwest Water Authority's (SWA) budget for 2023 (**APPENDIX D**).

The SWA's budget must be prepared by December 15 of each year and submitted to the Secretary of the Commission. The budget is deemed approved unless the SWA is notified by February 15. The budget for 2023 was received on November 9, 2022. The recommendation was to establish the 2023 Capital Repayment and REM rates as presented in APPENDIX D. Potential adjustments to the capital repayment rate increases which is currently based on September 1 Consumer Price Index (CPI) was discussed. Commissioner Odermann and Jen Murray, SWA Manager/CEO, addressed the Commission regarding the impact of the high CPI rate on SWPP customers' affordability.

After discussion, the following motion was made:

> **It was moved by Commissioner Veeder and seconded by Commissioner Zimmerman the Commission establish the 2023 Capital Repayment and REM rates as follows:**

Capital Repayment for contract and rural customers: $1.42 per thousand gallons for contract users, $34.40 for rural users in Morton County with water service from Missouri West Water System, and $43.43 per month for other rural users. Capital Repayment for oil industry contracts: $3.00 per thousand gallons for Dickinson Water Depot and $4.00 per thousand gallons for other oil industry contracts.

REM Rate: $0.76 per thousand gallons for the contract users, $0.87 per thousand gallons for SWA rural users, $0.87 per thousand gallons for Morton County rural users $3.00 per thousand gallons for the SWA's Dickinson Water Depot, and $4.00 per thousand gallons for other oil industry contracts.

Commissioners Anderson, Johnson, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. Commissioner Odermann abstained. The motion carried.

Contract HI-2021 Award

Hillius also presented the request to award Contract HI-2021 and approve $5.66 million to the SWPP from the capital assets funds appropriated for the 2021-2023 biennium (**APPENDIX E**). The recommendation was to award the contract to Carstensen Contracting and approve funding of $5.66 million to SWPP.

After discussion, the following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Walker the Commission authorize the Secretary to award SWPP Contract HI-2021 Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service areas to Carstensen Contracting in the amount of $5,104,510.50 based on Bid Schedules 1-4 with the Bid Alternates, and to approve $5.66 million dollars to the SWPP from the capital assets funds appropriated for the 2021-2023 biennium. The award of SWPP Contract HI-2021 contract is dependent upon legal review of the contract documents

Commissioners Anderson, Johnson, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. Commissioner Odermann abstained. The motion carried.

NORTHWEST AREA WATER SUPPLY (NAWS)

Snake Creek Intake Modifications Procurement Contract 6-1A

Tim Freije, DWR NAWS Project Manager, provided an update on the Snake Creek Intake Modifications Procurement Contract 6-1A (Procurement Contract). Bids were opened on November 17, 2022, and totaled $12.3 million. The bid tabulation and engineer's review letter are attached as **APPENDIX F**. The recommendation was to award the Procurement Contract as outlined in Appendix F. A capital assets funding request in the amount of $7.7 million which is 65 percent of the total bid cost including 10 percent contingency was also presented.

After discussion, the following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Veeder the Commission award NAWS Contract 6-1A Snake Creek Pumping Plant Intake Modifications Equipment Procurement pending concurrence from the Garrison Diversion Conservancy and US Bureau of Reclamation and legal review of the contract documents based on the following bid schedules:

- **Bid Schedule 1 – Vertical Turbine Pumps to General Repair/Flowserve for $1,883,611;**
- **Bid Schedule 2 – High Pressure Injection and Cooling Water Pumps to Vessco/EFI/Grundfos for $211,000;**
- **Bid Schedule 3 – Surge Suppression System to Vessco/Pulsco for $1,862,300;**
- **Bid Schedule 5 – Liquid-Filled Padmount Transformer to Main Electric for $614,722;**
- **Bid Schedule 6 – Medium Voltage Metal-Clad Switchgear to Main Electric for $1,352,195;**
- **Bid Schedule 7 – Medium Voltage Motor Control Center to Main Electric for $274,995;**
- **Bid Schedule 8 – Variable Frequency Drives to Main Electric for $2,374,035;**
- **Bid Schedule 9 – Standby Generator System to Main Electric for $1,266,665;**
- **Bid Schedule 10 – Controls Package to Main Electric for $640,380;**
- **No award of Bid Schedule 11 – Discharge Pipeline;**
- **Bid Schedule 12 – High Pressure Check Valves to Vessco for $298,464; and,**
- **Approve $7.7 million to the NAWS project from the capital assets funds appropriated for the 2021-2023 biennium to fund the state share of this project.**

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

Snake Creek Intake Modifications Demolition Contract 6-1A

Freije provided an update on the Snake Creek Intake Modifications Demolition Contract 6-1A (Demolition Contract) which includes demolition work and construction of the bulkhead wall within the current existing discharge structure at Snake Creek Pumping Plant. Bids were opened on December 1, 2022, and totaled $3,836,300. The bid tabulation and engineer's review letter are attached as **APPENDIX G**. A capital assets funding request in the amount of $2.75 million which is 65 percent of the total bid cost including 10 percent contingency was also presented.

There were no questions. The following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Zimmerman the Commission award NAWS Contract 6-1A Snake Creek Pumping Plant Intake Modifications Demolition pending concurrence from the Garrison Diversion Conservancy and US Bureau of Reclamation and legal review of the construction documents to PKG Contracting, Inc. in the amount of $3,836,300 and approve $2.75 million to the NAWS project from

the capital assets funds appropriated for the 2021-2023 biennium to fund the state share of this project.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

Bottineau Water Service Contract
Freije presented the proposed NAWS Bottineau Water Service Contract for approval (**APPENDIX H**). The NAWS Advisory Committee requested all NAWS contracts be updated to current standards.

There were no questions. The following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Odermann the Commission authorize the Secretary to execute the NAWS Water Service Contract 237-4-11 with the city of Bottineau.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

Upper Souris Water District (USWD) Water Service Contract
Freije presented the proposed NAWS USWD Water Service Contract that would provide additional water service to USWD (**APPENDIX I**). An amendment will be needed to increase flow rates to full project design flows when project is complete.

There were no questions. The following motion was made:

It was moved by Commissioner Zimmerman and seconded by Commissioner Goehring the Commission authorize the Secretary to execute the NAWS Water Service Contract 237-4-5 with USWD.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

Change Order Authorization (COA)
Sindhuja S.Pillai-Grinolds, DWR Water Development Division Director, provided an update on the NAWS COA process. Currently, NAWS does not have a policy related to the COA process. The process utilized for the SWPP change orders was reviewed to develop a COA process for NAWS which authorizes the Secretary to execute change orders up to $1,000,000 not to exceed 20 percent of the total contract amount and authorizes the project manager to execute change orders not to exceed $100,000.

After discussion, the following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Volk the Commission authorize the Secretary to execute cumulative change orders on NAWS project contracts up to $1,000,000 not to exceed 20 percent of the total contract amount and authorize the NAWS Project Manager to execute change orders not to exceed $100,000.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

DEVILS LAKE WEST END OUTLET (DLWEO) CAPITAL IMPROVEMENT PLAN (CIP)

Chris Korkowski, DWR Investigations Section Chief, provided information on the Request for Qualifications (RFQ) from engineering firms advertised to develop a DLWEO CIP. Currently there is no CIP for the DLWEO. The RFQ closed on November 18, 2022, and the final CIP report will likely be available in June 2023. Korkowski noted that submittals were received from two firms, AE2S/HDR and Bartlett & West/AECOM, and DWR's selection committee recommended Bartlett & West/AECOM.

After discussion, the following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Anderson the Commission authorize the Secretary to negotiate a contract with Bartlett & West/AECOM to complete the CIP for the DLWEO.

Commissioners Anderson, Johnson, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. Commissioner Odermann abstained. The motion carried.

CONSENT AGENDA

The Consent Agenda included the following cost-share projects with requested funding amounts for approval:

Flood Control
- Valley City: Reallocation of Funds - $297,779

General Water
- Minot: Little Roosevelt Low Head Dam Remediation - $168,750

Water Supply (Municipal/Regional)
- Western Area Water Supply (WAWS): Northwest Rural Water District East Williston CR9 Rural Distribution - $398,250
- Casselton: Watermain Replacement and Looping 2023-1 - $837,000

Water Supply (Rural)
- Cass Rural Water District: 2022 System Wide Distribution Improvements - $265,000
- North Prairie Rural Water District: Minot to Velva Highway 52 - $729,000
- McLean Sheridan Rural Water District: System Improvements Phase 2 - $673,400

After discussion, the following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Anderson, that the Consent Agenda items be approved as presented. Commissioner Walker abstained from the Minot Little Roosevelt Low Head Dam Remediation project.

STATE COST-SHARE REQUESTS

RURAL WATER SUPPLY AND FEDERAL PROJECTS

Jeffrey Mattern, DWR Engineer Manager, presented the requests for the rural and federal water supply projects.

Cass Rural Water District (CRWD): Service to ND Soybean Processors - $9,803,000 (SWC Project No. 2050CAS)

CRWD submitted a cost-share request for construction costs to provide reclaimed water from the city of Fargo's Wastewater Treatment Plant Effluent Reuse Facility (ERF) to the North Dakota Soybean Processor's (NDSP) proposed location north of Casselton. The project will expand Fargo's ERF to provide additional capacity and includes 29 miles of distribution pipeline to the NDSP location with reclaimed water. Costs for wastewater treatment processes, the wastewater pipeline back to Fargo, and easements are ineligible for cost-share.

The project meets requirements of the Commission's cost-share policy for rural water supply projects and the recommendation was to approve the request.

After discussion, the following motion was made:

> **It was moved by Commissioner Goehring and seconded by Commissioner Walker the Commission approve the request by CRWD for state cost-share participation at 75 percent of eligible costs for the Service to North Dakota Soybean Processors project for an additional $9,803,000, with the total amount not to exceed $10,583,000. The approval is contingent on available funding.**
>
> **Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.**

Dakota Rural Water District (DRWD): Service to Hannaford - $381,800 (SWC Project No. 2050DAK)

DRWD submitted a request for cost-share for construction for the expansion of the South Water Treatment Plant to provide additional filtration for the system's recent expansion and for the construction of a pipeline to serve the city of Hannaford. The project will increase the plant capacity from 275 gallons-per-minute to 800 gallons-per-minute.

The project meets requirements of the Commission's cost-share policy for rural water supply projects and the recommendation was to approve the request.

There were no questions. The following motion was made:

> **It was moved by Commissioner Goehring and seconded by Commissioner Zimmerman the Commission approve the request by for state cost-share participation at 75 percent of eligible costs for the Service to Hannaford and Water Treatment Plant Expansion project, for an additional $381,800, with the total amount not to exceed $696,800. The approval is contingent on available funding.**

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

All Seasons Water Users District (ASWUD): System 4 Connection to System 1 - $2,180,000 (SWC Project No. 2050ALL)

ASWUD submitted a cost-share request for additional cost-share toward the construction of a System 4 to System 1 connection southeast of the city of Bottineau. ASWUD was previously approved for $4,900,000 in cost-share in 2015 and experienced delays when seeking easements. The project, excluding the storage expansion, was bid November 17, 2022, with the low bid approximately $3 million higher than the original 2015 estimate. The storage component of the project is currently under design and construction cost-share will be requested in 2023.

The project meets requirements of the Commission's cost-share policy for rural water supply projects and the recommendation was to approve the request.

There were no questions. The following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Zimmerman the Commission approve the request by ASWUD for state cost-share participation at 35 percent of eligible preconstruction costs and 75 percent of eligible construction costs for the System 4 to System 1 Connection project for an additional $2,180,000, with a total amount not to exceed $7,080,000. The approval is contingent on available funding.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

State Municipal, Rural and Industrial (MR&I) Five-Year Plan Fiscal Year (FY) 2022-26 (Plan) (SWC Project No. 237-03/237-04NAWS/1912)

The Plan will be submitted as a planning document as part of the overall program between the state and the Bureau of Reclamation. There were no questions.

NAWS: FY2022 Funds - $51,563,682

The request was to allocate $51,563,682 of the $53,963,682 of FY 2022 federal MR&I program funding to the NAWS project. The remaining appropriation of $2.4 million would be $0.68 million for state MR&I program administration and $1.72 million for continuing work on the Eastern North Dakota Alternative Water Supply Project.

Also requested was the consolidation of NAWS funding of $55,463,087 to include the FY 2022 funding and the previous NAWS approvals to allow adjustments for timely completion of contracts, and to reallocate $68,207.28 from other completed MR&I projects to state administration.

The request would be considered by the Garrison Diversion Conservancy District at their December 2022 meeting and the recommendation was to approve the requests.

There were no questions. The following motion was made:

It was moved by Commissioner Goehring and seconded by Commissioner Zimmerman the Commission approve the NAWS project for federal funding of $55,463,087 and reallocate $68,207.28 from other completed MR&I projects to state administration. The approval is contingent on available funding, that the project follows federal MR&I program requirements, and delegates to the Secretary the ability to move funds between project elements to facilitate efficient project completion.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

DRAFT 2023 WATER DEVELOPMENT PLAN (WDP) AND DASHBOARD

Pat Fridgen, DWR Planning and Education Division Director, provided an update on the WDP inventory, web pages, and Dashboard and provided Commissioners with a 2023-2025 Project Financial Needs Summary (**APPENDIX J**). Fridgen reviewed the electronic interactive Dashboard DWR staff developed for sponsors, Commissioners, Legislators, and other stakeholders to utilize. The Dashboard will be updated each month to capture current funding availability and project information.

Fridgen requested the approval of the WDP and Dashboard including the 2023-2025 project and purpose funding recommendations, as well as approval for Secretary to update the information as necessary.

There were no questions. The following motion was made:

It was moved by Commissioner Veeder and seconded by Commissioner Volk the Commission approve the 2023 WDP and Dashboard, including the 2023-2025 project and purpose funding recommendations, and authorize the Secretary to update the 2023 WDP and Dashboard, and the 2023-2025 project and purpose funding recommendations as necessary in response to future updated revenue projections or other changing conditions.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

COST-SHARE POLICY AND PRIORITIZATION GUIDANCE MODIFICATIONS

Fridgen provided the Commission with the final draft of the Cost-Share Policy and Prioritization Guidance and final proposed modifications (**APPENDIX K**). Commissioners met several times to review the Cost-Share Policy and Prioritization Guidance to determine specific modifications that should be incorporated. The modifications were based on Commissioner input received during several prior Pre-Commission meetings, and public feedback and input received during the Commissioner-hosted meetings and 45-day comment period.

There were no questions. The following motion was made:

It was moved by Commissioner Odermann and seconded by Commissioner Walker the Commission approve the Water Commission Cost-Share Policy, Procedure, and General Requirements; and the Project Prioritization Guidance – with implementation during the 2023-2025 biennium.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

PROJECT UPDATES

DWR staff did not provide project updates due to time constraints, however, Hillius presented an update on the SWPP prior to Executive Session.

LEGAL UPDATE

There was no legal update due to time constraints.

EXECUTIVE SESSION UNDER AUTHORITY OF NDCC § 44-04-19.1(9) FOR ATTORNEY CLIENT CONSULTATION REGARDING SWPP/FOWLER INTAKE AND NAWS/WAGNER CONSTRUCTION

It was the recommendation of Governor Burgum that the discussion relating to the SWPP/Fowler Intake and NAWS/Wagner Construction be held in executive session, under the provisions of NDCC § 44-04-19.1(9), for the purpose of attorney consultation. The Commission invited the following to participate in the executive session:

STATE WATER COMMISSION MEMBERS PRESENT:
Governor Burgum, Chairman
Doug Goehring, Commissioner, ND Dept. of Agriculture (left at 1:15 p.m.)
Michael Anderson, Hillsboro
Richard Johnson, Devils Lake
James Odermann, Belfield
Connie Ova,
Gene Veeder, Watford City
Jay Volk, Bismarck
April Walker, West Fargo
Jason Zimmerman, Minot

OTHERS PRESENT:
Andrea Travnicek, Ph.D., DWR Director
John Paczkowski, DWR State Engineer
Jennifer Verleger, General Counsel, Attorney General's Office
Sindhuja S.Pillai-Grinolds, DWR Water Development Director
Jarrett Hillius, SWPP Project Manager
Cheryl Fitzgerald, DWR Executive Assistant
Abby Ebach, DWR Policy Advisor
Jim Lennington, Bartlett & West (SWPP discussion only)
Glen Hille, AECOM (SWPP discussion only)
Tyson Decker, Bartlett & West (SWPP discussion only)

Tim Freije, NAWS Project Manager (NAWS discussion only)
Kevin Martin, Houston Engineering (NAWS discussion only)
Ryan Norrell, General Counsel, Governor's Office
John Reiten, Policy Advisor, Governor's Office

It was moved by Commissioner Walker and seconded by Commissioner Goehring that under the provision of NDCC § 44-04-19.1 (9), the Commission proceed into executive session on December 9, 2022, at 12:38 p.m., for the purpose of attorney consultation relating to the SWPP/Fowler Intake and NAWS/Wagner Construction.

Commissioners Anderson, Johnson, Odermann, Ova, Veeder, Volk, Walker, Zimmerman, Goehring, and Governor Burgum voted aye. There were no nay votes. The motion carried.

Following attorney consultation regarding the SWPP/Fowler Intake and NAWS/Wagner Construction, Governor Burgum reconvened the open session of the Commission meeting on December 9, 2022, at 2:00 p.m. Instruction was given to Commission attorney to proceed consistent with discussion during executive session.

There being no further business to come before the Commission, Governor Burgum adjourned the December 9, 2022, meeting at 2:03 p.m.

Doug Burgum, Governor
Chairman, State Water Commission

Andrea Travnicek, Ph.D.
Director, DWR, and Secretary to the State Water Commission

NORTH Dakota | Water Resources
Be Legendary.

Glossary of Terms

Allocated-To apportion for a specific purpose. To set apart or earmark.

Anticipated Construction Request-Potential construction requests for prior approved and current projects.

Appropriation-Specifies the amount of funds to be used for a particular purpose during a period of time, normally one biennium.

Original-Legislative authorization to expend.
Current-Requesting authorization to allocate funds.
Unobligated- Funding available to be obligated to a project.

Appropriation Authority-Legislative authority in an Appropriation Act for an agency to expend funds.

Appropriation Bill-A bill which appropriations are given legal effect.

Approved-Funds approved and allocated by the State Water Commission.

Beginning Balance-Resource Trust Fund cash balance that carries over from the previous biennium. This information is provided by Legislative Council and includes carryover and funds not approved or allocate by the State Water Commission.

Carryover Funds-Approved funds unpaid during the current biennium which are transferred to the appropriation for the following biennium.

Carryover Projects-Projects approved but not finished by the end of the current biennium. The time is limited to 2 years after the end of the current biennium, 6/30/21, unless approved by the State Water Commission to continue past that date.

Cash-Resource Trust Fund money received and not allocated to a specific appropriation purpose.

Cost Increase-Funding needed above original cost estimate.

De-Obligation-Funds released from project allocation made from the current biennium appropriation.

Expenditure-Payment or funds spent.

Obligation-Funds allocated from current biennium appropriation to pay based on a contract.

Unexpended-Not yet spent or paid.

Turnback-Carryover funds released from prior biennium from a project allocation.

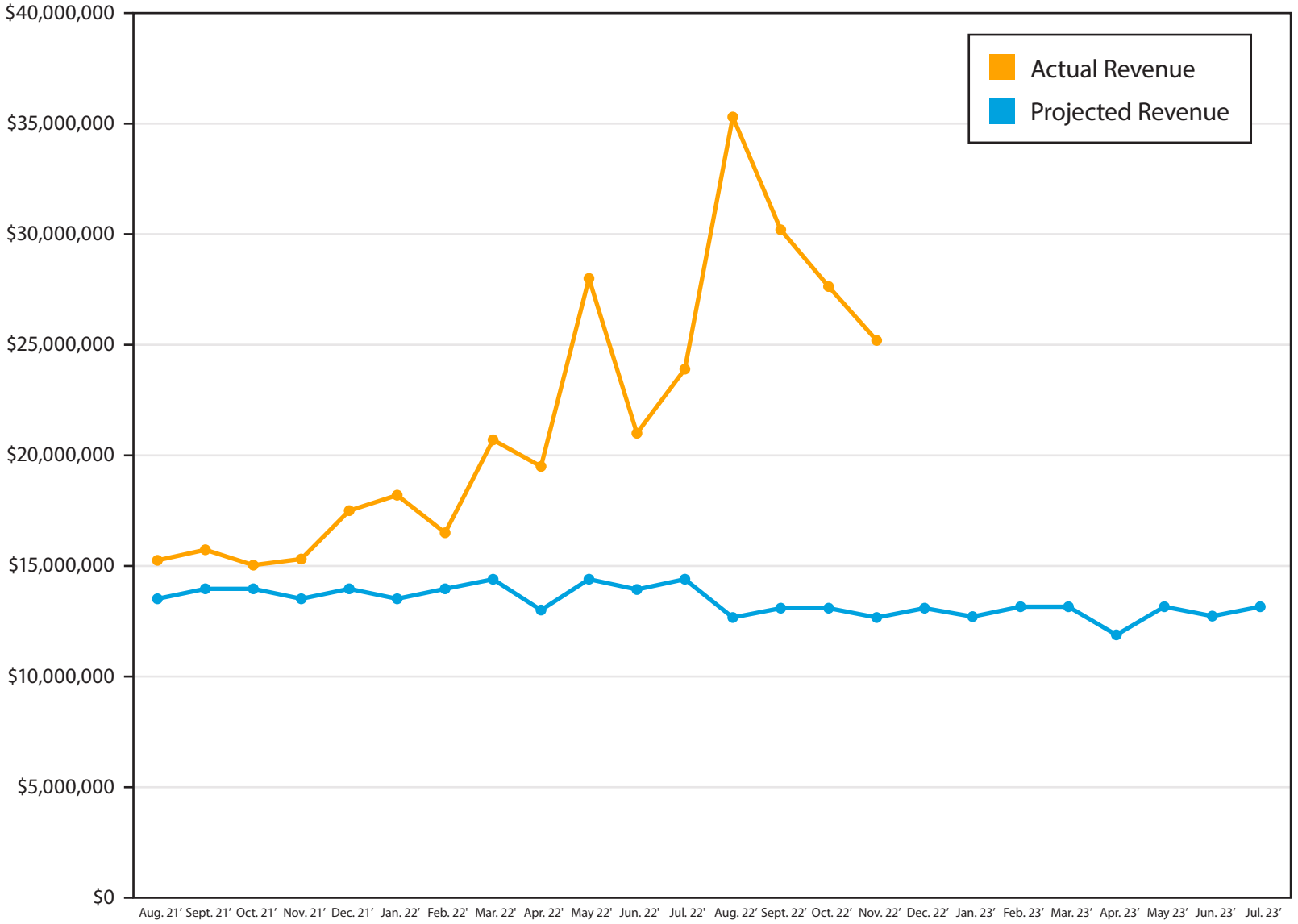
Unobligated Carryover-Previous biennium funding, not associated with a project released to the Resource Trust Fund.

Unpaid Approval-A commitment to an expense at a future date.

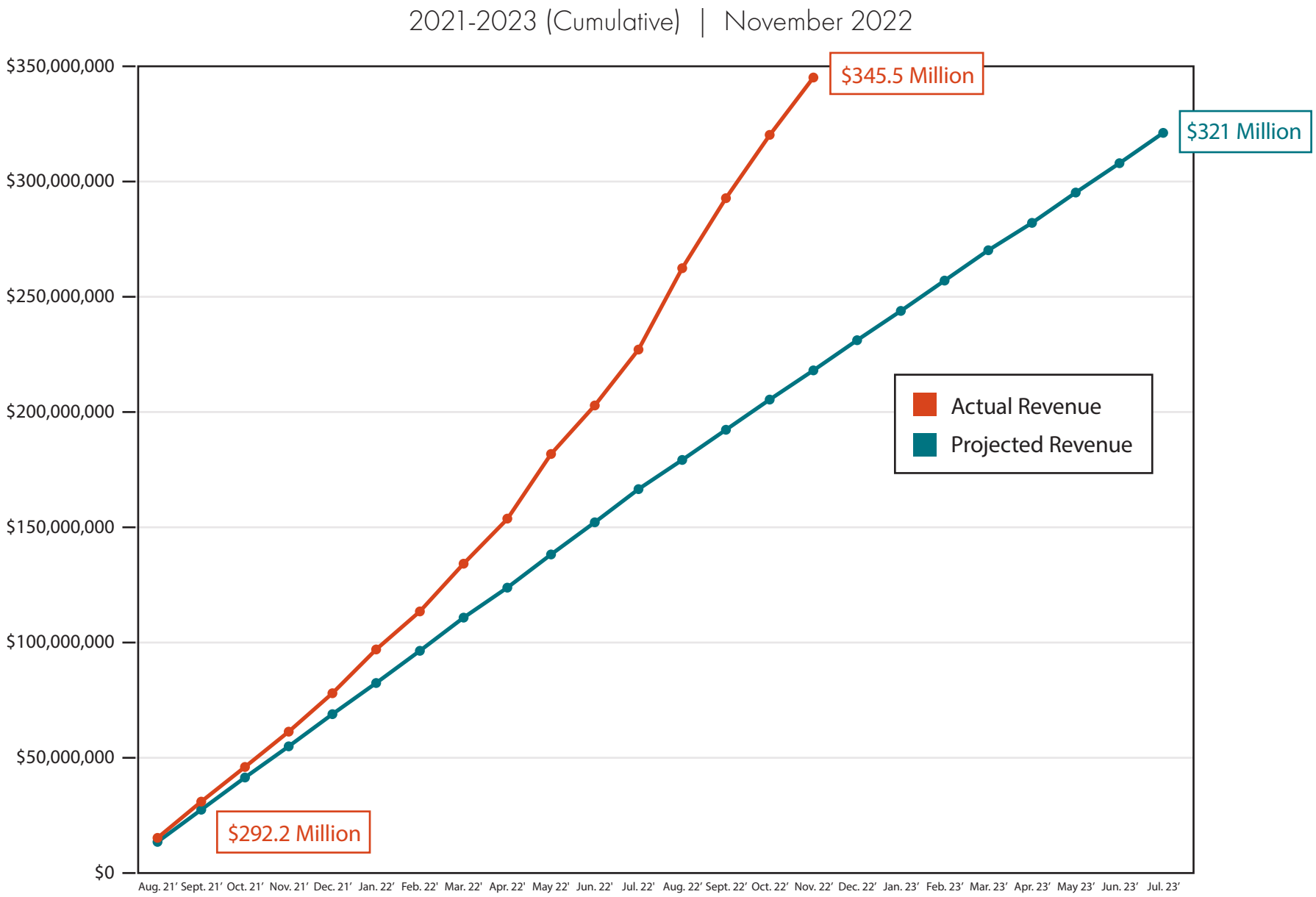
Water Infrastructure Revolving Loan Fund (WIRLF) Eligibility-Approval by the State Water Commission of the eligibility of projects to apply for a Water Infrastructure Revolving Loan in compliance with cost share and statutory authority. Final loan approval is by the Bank of North Dakota.

RESOURCES TRUST FUND REVENUE

2021-2023 (Month by Month) | November 2022



RESOURCES TRUST FUND REVENUE



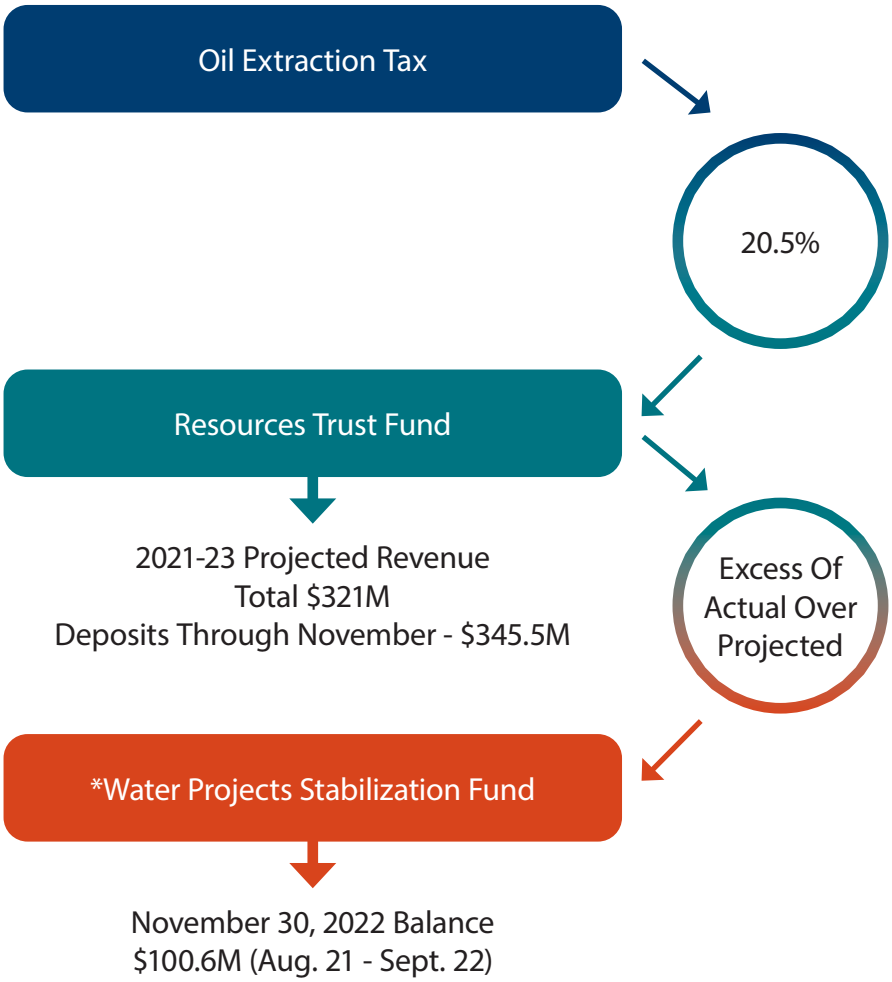
NORTH DAKOTA DEPARTMENT OF WATER RESOURCES
OIL EXTRACTION REVENUE
FOR THE 2021 - 2023 BIENNIUM

MONTH / YEAR	PROJECTED[1] REVENUE	**ACTUAL[1] REVENUE**	TRANSFERS TO[2] WATER PROJECTS STABILIZATION FUND
AUGUST, 2021	13,515,385	**15,253,686**	1,801,349
SEPTEMBER, 2021	13,965,897	**15,731,071**	1,829,196
OCTOBER, 2021	13,965,897	**15,037,222**	1,110,181
NOVEMBER, 2021	13,515,385	**15,313,493**	1,863,324
DECEMBER, 2021	13,965,897	**17,521,266**	3,684,320
JANUARY, 2022	13,515,385	**18,199,333**	4,836,458
FEBRUARY, 2022	13,965,897	**16,454,479**	2,064,733
MARCH, 2022	14,397,263	**20,665,252**	6,296,666
APRIL, 2022	13,006,515	**19,975,435**	7,003,940
MAY, 2022	14,400,070	**28,099,982**	13,768,756
JUNE, 2022	13,935,552	**20,932,464**	7,032,072
JULY, 2022	14,400,070	**23,935,091**	9,582,936
AUGUST, 2022	12,668,683	**35,321,250**	22,632,530
SEPTEMBER, 2022	13,090,973	**30,252,021**	17,095,264
OCTOBER, 2022	13,090,973	**27,646,687**	14,489,930
NOVEMBER, 2022	12,668,683	**25,208,112**	12,539,429
DECEMBER, 2022	13,090,973		
JANUARY, 2023	12,709,026		
FEBRUARY, 2023	13,156,757		
MARCH, 2023	13,156,757		
APRIL, 2023	11,883,522		
MAY, 2023	13,156,757		
JUNE, 2023	12,732,345		
JULY 2023-JUNE REVENUE	13,156,757		
TOTALS	321,111,419	**345,546,844**	127,631,084

[1] Projected revenue and actual revenue exclude transfers to the renewable energy development fund and the energy conservation grant fund

[2] Transfers to the water project stabilization fund are calculated before transfers to the renewable energy development fund and energy conservation grant fund occur

RESOURCES TRUST FUND REVENUE



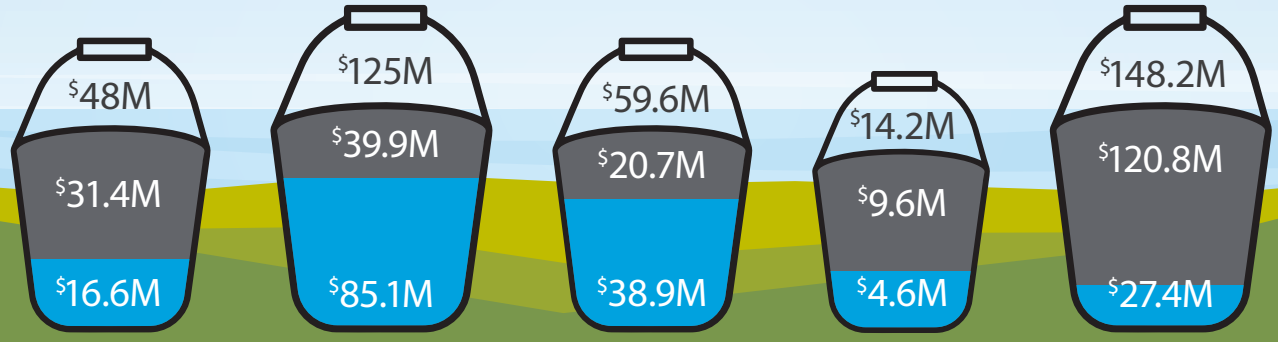
*Authorized in Sections 5-7 of Senate Bill 2345 during the November special session.

*Budget Section approval is needed to transfer from the Water Projects Stabilization Fund to the Resources Trust Fund.

2021-23 PURPOSE FUNDING

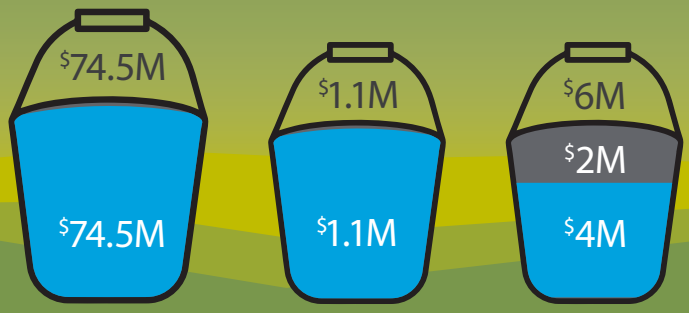
September 30, 2022

APPROVED | UNOBLIGATED

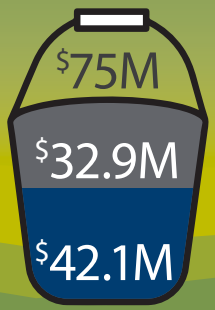


Flood Control Projects | Water Supply | Rural Water | General Water | * Capital Assets

*Capital Assets bucket includes $45.6M line of credit.



Mouse River Flood | Basin Wide Plan | Discretionary Funds

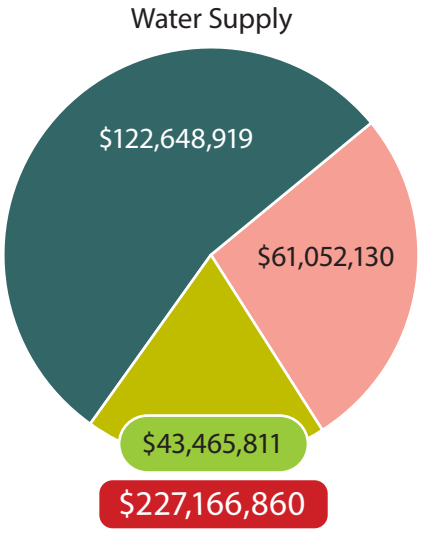


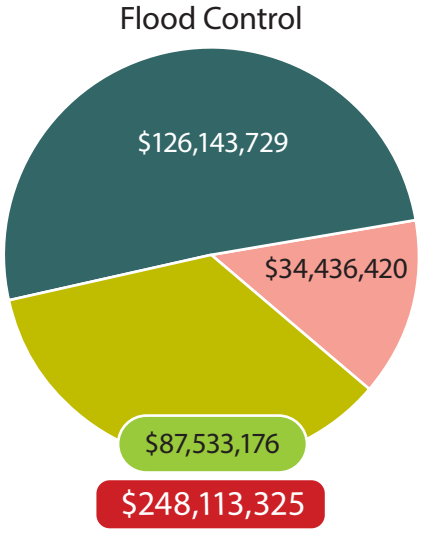
Federal Funds-State Fiscal Recovery Funds - SB 2345

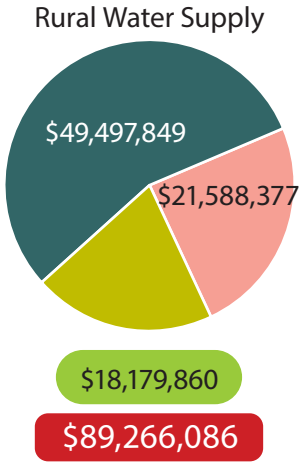
Spent

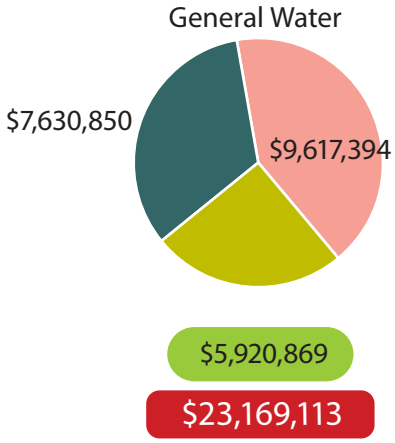
2021-2023 BIENNIUM TO DATE

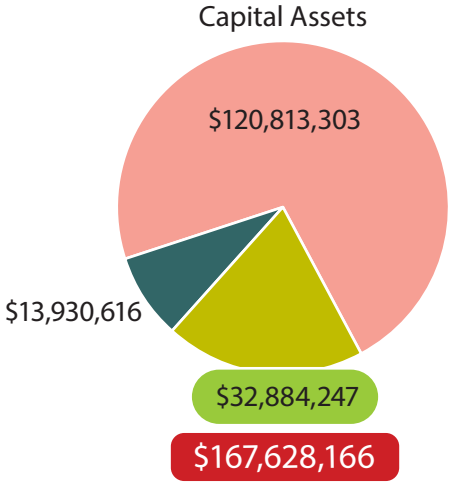
Project Funds | September 30, 2022

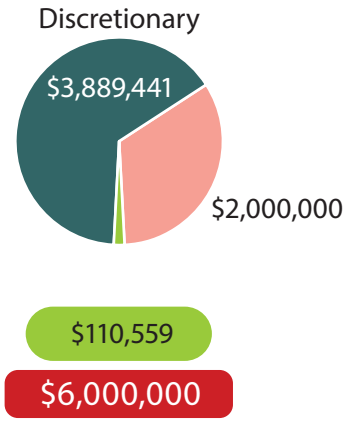


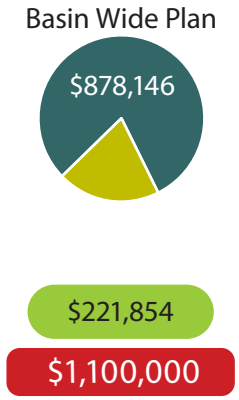


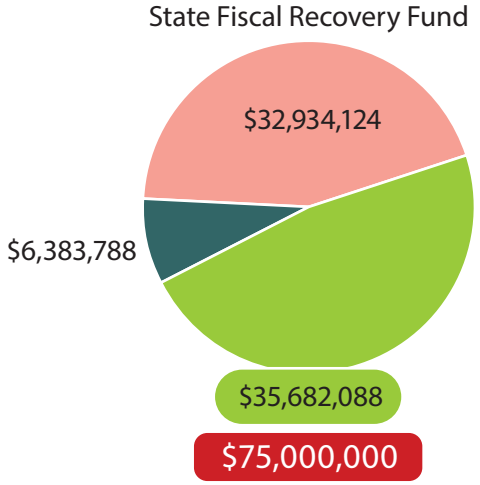












Expenditures | Unpaid Approvals | Appropriation Balance | 21-23 Total Appropriation *(Carryover and New Money)*

DEPARTMENT OF WATER RESOURCES
BUDGET SUMMARY
2021-2023 BIENNIUM

September 30, 2022

Projected Funding	
Cash Balance (September 30, 2022)	$389,300,000
Future Projected Revenue (See page 7)	$128,803,000
Other Projected Revenue (SWPP, Interest, etc.)	$4,900,000
SB 2345 State Fiscal Recovery Funds	$32,934,124
TOTAL	**$555,937,124**

Projected Expenditures	
Unpaid Approvals (September 30, 2022)	$331,900,000
DWR Operations (September 30, 2022)	$26,200,000
TOTAL	**$358,100,000**

Projected Funding Balance	**$197,837,124**

APPROVED REQUESTS (October 13, 2022 SWC Meeting)	$4,379,444
ANTICIPATED REQUESTS (December 9, 2022 SWC Meeting)	$16,632,950

PROJECTED BALANCE	$176,824,730

Federal Funding	
MR&I Federal Funds Authority	$50,000,000
SFRF Funds Authority	$75,000,000
Federal Funds Expenditures	($68,089,510)
Remaining Federal Funds Authority	$56,910,490

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 BIENNIUM

September 30, 2022

		2019-2021 CARRYOVER	2021-2023 APPROPRIATION	2021-2023 TOTAL	SWC/Secretary APPROVED	UNOBLIGATED APPROPRIATION
MUNICIPAL & REGIONAL WATER SUPPLY:						
MUNICIPAL WATER SUPPLY		41,092,581	24,318,915	65,411,496	65,411,496	0
RED RIVER VALLEY		20,459,679	41,041,734	61,501,413	61,501,413	0
OTHER REGIONAL WATER SUPPLY		19,508,811	19,693,010	39,201,821	39,201,821	0
UNOBLIGATED MUNICIPAL/REG WATER SUPPLY		21,105,789	39,946,341	61,052,130		61,052,130
	Total	102,166,860	125,000,001	227,166,860	166,114,730	$ 61,052,130
% OBLIGATED			68.04%			
RURAL WATER SUPPLY:						
RURAL WATER SUPPLY		28,737,538	38,940,171	67,677,709	67,677,709	(0)
UNOBLIGATED RURAL WATER SUPPLY		928,548	20,659,829	21,588,377		21,588,377
	Total	29,666,086	59,600,000	89,266,086	67,677,709	21,588,377
% OBLIGATED			65.34%			
FLOOD CONTROL:						
FARGO		50,966,383	(0)	50,966,383	50,966,383	(0)
MOUSE RIVER		38,406,498	10,000,000	48,406,498	48,406,498	(0)
MOUSE RIVER HB1431 BOND PROCEEDS		0	74,500,000	74,500,000	74,500,000	0
VALLEY CITY		11,120,628	(0)	11,120,628	11,120,628	(0)
LISBON		174,579	(0)	174,579	174,579	(0)
OTHER FLOOD CONTROL		3,875,200	547,594	4,422,794	4,422,794	(0)
PROPERTY ACQUISITIONS		7,056,475	308,935	7,365,410	7,365,410	0
WATER CONVEYANCE		10,972,385	5,748,227	16,720,612	16,720,612	(0)
UNOBLIGATED FLOOD CONTROL		3,041,174	31,395,247	34,436,421		34,436,421
	Total	125,613,325	122,500,000	248,113,325	213,676,905	34,436,420
% OBLIGATED			52.89%			
GENERAL WATER:						
GENERAL WATER		8,919,172	4,632,546	13,551,719	13,551,719	0
UNOBLIGATED GENERAL WATER		22,666	9,594,728	9,617,394		9,617,394
	Total	8,941,838	14,227,274	23,169,113	13,551,719	9,617,394
% OBLIGATED			32.56%			
SUBTOTAL		266,388,108	321,327,275	587,715,384	461,021,062	126,694,322
CAPITAL ASSETS:						
SWPP CAPITAL ASSETS		8,528,779	18,868,203	27,396,982	27,396,982	0
NAWS CAPITAL ASSETS		10,865,900	8,551,981	19,417,881	19,417,881	(0)
UNOBLIGATED CAPITAL ASSETS		0	120,813,303	120,813,303		120,813,303
	Total	19,394,679	148,233,487	167,628,166	46,814,863	120,813,303
% OBLIGATED			18.50%			
DISCRETIONARY FUNDING:						
DISCRETIONARY FUNDING PROJECTS		0	4,000,000	4,000,000	4,000,000	0
UNOBLIGATED DISCRETIONARY FUNDS		0	2,000,000	2,000,000		2,000,000
	Total	0	6,000,000	6,000,000	4,000,000	2,000,000
% OBLIGATED			66.67%			
BASINWIDE PLAN IMPLEMENTATION:						
BASINWIDE PLAN IMPLEMENTATION		0	1,100,000	1,100,000	1,100,000	0
UNOBLIGATED BASINWIDE PLAN IMPLEMENTATION FUNDS		0	0	0		0
	Total	0	1,100,000	1,100,000	1,100,000	0
% OBLIGATED			100.00%			
STATE FISCAL RECOVERY FUND:						
STATE FISCAL RECOVERY FUNDS - SB 2345		0	42,065,876	42,065,876	42,065,876	(0)
UNOBLIGATED STATE FISCAL RECOVERY FUNDS		0	32,934,124	32,934,124		32,934,124
	Total	0	75,000,000	75,000,000	42,065,876	32,934,124
% OBLIGATED			56.09%			
TOTAL		285,782,787	551,660,762	837,443,551	555,001,802	282,441,749

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 BIENNIUM

Sep-22

		SWC/Secretary APPROVED	EXPENDITURES	UNPAID APPROVALS
MUNICIPAL & REGIONAL WATER SUPPLY:				
MUNICIPAL WATER SUPPLY		65,411,496	21,210,878	44,200,618
RED RIVER VALLEY		61,501,413	8,286,666	53,214,747
OTHER REGIONAL WATER SUPPLY		39,201,821	13,968,267	25,233,554
	TOTAL	166,114,730	43,465,811	122,648,919
RURAL WATER SUPPLY:				
RURAL WATER SUPPLY		67,677,709	18,179,860	49,497,849
FLOOD CONTROL:				
FARGO		50,966,383	43,882,570	7,083,813
MOUSE RIVER		48,406,498	25,922,441	22,484,057
MOUSE RIVER HB1431		74,500,000	2,480,064	72,019,936
VALLEY CITY		11,120,628	246,775	10,873,853
LISBON		174,579	94,090	80,489
OTHER FLOOD CONTROL		4,422,794	854,400	3,568,395
PROPERTY ACQUISITIONS		7,365,410	7,115,476	249,933
WATER CONVEYANCE		16,720,612	6,937,360	9,783,252
	TOTAL	213,676,905	87,533,176	126,143,729
GENERAL WATER:				
GENERAL WATER		13,551,719	5,920,869	7,630,850
SUBTOTAL		461,021,062	155,099,716	305,921,346
CAPITAL ASSETS:				
SWPP CAPITAL ASSETS		27,396,982	21,774,819	5,622,163
NAWS CAPITAL ASSETS		19,417,881	11,109,428	8,308,453
	TOTAL	46,814,863	32,884,247	13,930,616
DISCRETIONARY FUNDING:				
DISCRETIONARY FUNDING PROJECTS		4,000,000	110,559	3,889,441
BASINWIDE PLAN IMPLEMENTATION:				
BASINWIDE PLAN IMPLEMENTATION		1,100,000	221,854	878,146
STATE FISCAL RECOVERY FUNDS SB2345				
STATE FISCAL RECOVERY FUND PROJECTS		42,065,876	35,682,088	6,383,788
TOTALS		555,001,802	223,998,464	331,003,338

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

WATER SUPPLY

Sep-22

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
				Municipal Water Supply:					
SWC	2050-13	5000	2017-19	Mandan	New Raw Water Intake	10/7/13	580,025	580,025	0
SWC	2050-13	5000	2019-21	Mandan	New Raw Water Intake	10/7/13	10,553,395	2,270,681	8,282,714
SWC	2050-15	5000	2017-19	Washburn	New Raw Water Intake	10/7/13	1,872,949	24,307	1,848,642
SWC	2050-32	5000	2017-19	Williston	Water Systems Improvement Project	10/6/15	3,629,490	2,095,027	1,534,463
SWC	2050-75-19	5000	2019-21	Bismarck	Lockport Water Pump Station	10/8/20	408,339	191,960	216,378
SWC	2050-84-19	5000	2019-21	Cavalier	Water Tower Replacement	2/11/21	1,175,325	1,125,926	49,399
SWC	2050-86-19	5000	2019-21	Minot	SW Water Tower	10/10/19	976,010	524,507	451,504
SWC	2050-88-19	5000	2019-21	Davenport	Water Improvement District No. 2019-1	10/10/19	421,582	374,189	47,393
SWC	2050-89-19	5000	2019-21	West Fargo	9th Street NW Water Main	10/10/19	594,000	0	594,000
SWC	2050-95-19	5000	2019-21	Garrison	Water Supply Treatment and Transmission Line	2/13/20	3,076,759	544,689	2,532,070
SWC	2050-96-19	5000	2019-21	Larimore	2020 Water System Replacement	12/11/20	3,329,005	1,507,771	1,821,234
SWC	2050-98-19	5000	2019-21	Sykeston	Water Tower Replacement	5/4/21	414,966	321,332	93,634
SWC	2050-99-19	5000	2019-21	Valley City	Water Main Improvement 100/101	2/13/20	47,939	0	47,939
SWC	2050-100-19	5000	2019-21	Wyndmere	2020 Water Main Improvements	2/13/20	663,203	636,904	26,299
SWC	2050-101-19	5000	2019-21	Fargo	Downtown Water Tower	2/13/20	2,751,478	1,289,597	1,461,880
SWC	2050-102-19	5000	2019-21	Lincoln	Water Tank Replacement	2/13/20	1,268,000	0	1,268,000
SWC	2050-103-19	5000	2019-21	Kindred	Water Main Looping 2020	2/13/20	35,546	0	35,546
SWC	2050-104-19	5000	2019-21	Hazen	Water Storage Improvements	2/13/20	1,283,038	1,176,017	107,021
SWC	2050-105-19	5000	2019-21	Williston	42nd Street and 16th Avenue Water Main	2/13/20	230,157	23,601	206,556
SWC	2050-106-19	5000	2019-21	Parshall	Water Tower Storage	4/9/20	262,686	262,686	0
SWC	2050-107-19	5000	2019-21	Dickinson	North Annexation Water Supply	4/9/20	842,408	42,135	800,273
SWC	2050-115-19	5000	2019-21	Killdeer	2020 Water Main and Pump Station Project	10/8/20	1,011,008	195,200	815,808
SWC	2050-116-19	5000	2019-21	Portland	Water Systems Improvement Feasibility Study	11/16/20	0	0	0
SWC	2050-121-19	5000	2019-21	Killdeer	HWBL Water Expansion	2/11/21	72,300	13,500	58,800
SWC	2050-122-19	5000	2019-21	Bowbells	Watermain Improvements 2020	2/11/21	22,800	22,800	0
SWC	2050-123-19	5000	2019-21	Horace	District 2020-06 Water System Improvements	6/8/21	3,053,000	1,314,052	1,738,948
SWC	2050-124-19	5000	2019-21	Horace	District 2020-07 Connection to Cass RWD	2/11/21	75,750	75,750	0
SWC	2050-125-19	5000	2019-21	Williston	Williston Square Watermain	6/7/22	280,100	0	280,100
SWC	2050-128-19	5000	2019-21	Bismarck	43rd Avenue Expansion Phase I	6/8/21	584,000	470,890	113,110
SWC	2050-129-19	5000	2019-21	Napoleon	Water Tower Replacement	6/8/21	177,000	177,000	0
					TOTAL MUNICIPAL WATER SUPPLY CARRYOVER		***39,692,257***	***15,260,544***	***24,431,713***
SWC	2050-95-21	5000	2021-23	Garrison	Water Supply Treatment and Transmission Line	2/23/22	924,000	0	924,000
SWC	2050-104-21	5000	2021-23	Hazen	Water Systems Improvement Project	8/12/21	367,000	0	367,000
SWC	2050-106-21	5000	2021-23	Parshall	Water Tower	8/12/21	703,200	296,323	406,877
SWC	2050-122-21	5000	2021-23	Bowbells	Watermain Improvements 2021	4/12/22	298,200	19,433	278,767
SWC	2050-124-21	5000	2021-23	Horace	Watermain Improvement District 2020-7 to Cass	8/12/21	1,232,250	418,345	813,905
SWC	2050-125-19	5000	2019-21	Williston	Williston Square Watermain	6/7/22	1,003,900	0	1,003,900
SWC	2050-128-21	5000	2021-23	Bismarck	43rd Avenue Expansion Phase 2	4/12/22	2,936,000	1,727,093	1,208,907
SWC	2050-129-21	5000	2021-23	Napoleon	Water Tower Replacement	8/12/21	1,617,000	1,102,922	514,078
SWC	2050-134-21	5000	2021-23	Stanley	Country Estates Watermain Extension	8/11/22	303,300	0	303,300
SWC	2050-138-21	5000	2021-23	Wahpeton	Well Field and Transmission Line	10/14/21	223,400	0	223,400
SWC	2050-139-21	5000	2021-23	Rugby	Water Treatment Plant Improvements Phase 3	10/14/21	881,000	0	881,000
SWC	2050-143-21	5000	2021-23	Fargo	Regional Waer System Distribution Extensions	2/23/22	172,000	0	172,000
SWC	2050-144-21	5000	2021-23	Minot	NW Minot Residential Watermain Replacement	2/23/22	225,000	5,267	219,733
SWC	2050-145-21	5000	2021-23	Valley City	Watermain Improvement District 59	8/11/22	334,000	92,355	241,645
SWC	2050-146-21	5000	2021-23	Valley City	6th Street NW Watermain District 102	2/23/22	252,000	227,186	24,814
SWC	2050-148-21	5000	2021-23	Riverdale	Raw Water Supply and Gate Valve Improvements	8/11/22	639,000	63,229	575,771
SWC	2050-150-21	5000	2021-23	Portland	Water System Improvements	2/23/22	97,350	3,147	94,203
SWC	2050-153-21	5000	2021-23	Grand Forks	2022 Waterline Expansion	4/12/22	144,000	0	144,000
SWC	2050-154-21	5000	2021-23	Wilton	2022 Street and Utility Improvements	4/12/22	2,150,000	0	2,150,000
Secretary	2050-158-21	5000	2021-23	Ray	Surge Tank Project	5/17/22	14,000	0	14,000
Secretary	2050-159-21	5000	2021-23	Colfax	Water Transmission Line & Reservoir Expansion	5/17/22	24,000	0	24,000
SWC	2050-160-21	5000	2021-23	Williston	9th Ave. West Watermain Replacement	6/7/22	224,700	0	224,700
SWC	2050-161-21	5000	2021-23	Bismarck	Water Treatment Plant Improvements	8/11/22	2,307,000	18,492	2,288,508
SWC	2050-162-21	5000	2021-23	Bismarck	WU137 Watermain Replacement	6/7/22	2,170,000	403,201	1,766,799
SWC	2050-163-21	5000	2021-23	Devils Lake	West Side Watermain Replacement	6/7/22	850,000	0	850,000
SWC	2050-164-21	5000	2021-23	Williston	2nd Ave. NW and 13th Ave. West Improvements	6/7/22	684,300	0	684,300
Secretary	2050-167-21	5000	2021-23	Casselton	Water Main Replacement and Looping Project	7/24/22	73,200	0	73,200
SWC	2050-169-21	5000	2021-23	Bismarck	Water Treatment Plant Expansion 2022	8/11/22	2,794,000	0	2,794,000
Secretary	2050-170-21	5000	2021-23	Bismarck Parks & Recreat	Parks & Rec Tom O'Leary Water Intake Improve	9/2/22	49,600	0	49,600
Secretary	2050-171-21	5000	2021-23	Wilton	2023 Street and Utility Improvements	9/29/22	42,000	0	42,000
					TOTAL MUNICIPAL WATER SUPPLY 2021-2023		***23,735,400***	***4,376,995***	***19,358,405***
SB2345	2050-147-21	5000	2021-23	Grand Forks	Agribusiness Park Raw Water Supply Improvements	2/23/22	1,200,000	0	1,200,000
SB2345	2050-13	5000	2021-23	Mandan	New Raw Water Intake	11/15/21	6,736,605	6,736,605	(0)
					TOTAL MUNICIPAL WATER SUPPLY		***71,364,262***	***26,374,144***	***44,990,118***
				Regional Water Supply:					
SWC	1973-07	5000	2019-21	WAWSA	WAWSA Phase VI	6/8/21	19,508,811	8,653,007	10,855,804
SWC	325-17-19	5000	2017-19	RRVWSP	RRVWSP Garrison Diversion	10/8/20	1,452,074	1,452,074	0
SWC	325-19-21	5000	2019-21	RRVWSP	RRVWSP Garrison Diversion	6/8/21	19,007,605	6,813,299	12,194,306
					TOTAL REGIONAL WATER SUPPLY CARRYOVER		***39,968,490***	***16,918,380***	***23,050,110***
SWC	1973-08	5000	2021-23	WAWSA	McKenzie County WRD 2021 System I North Project	12/10/21	2,961,010	2,884,333	76,676
SWC	1973-09	5000	2021-23	WAWSA	Stanley Rural Distribution Part 2 Project	4/12/22	7,132,000	0	7,132,000
SWC	1973-10	5000	2021-23	WAWSA	McKenzie County RWD System 4 Part 4	8/11/22	9,600,000	0	9,600,000
SWC	325-21-23	5000	2021-23	RRVWSP	RRVWSP Garrison Diversion	10/14/21	41,041,734	21,293	41,020,440
					TOTAL REGIONAL WATER SUPPLY 2021-2023		***60,734,743***	***2,905,627***	***57,829,117***
SB2345	1973-07	5000	2019-21	WAWSA	WAWSA Phase VI	6/8/21	1,913,936	1,913,936	0
SB2345	1973-08	5000	2021-23	WAWSA	McKenzie County WRD 2021 System I North Project	12/10/21	516,990	516,990	0
SB2345	325-19-21	5000	2019-21	RRVWSP	RRVWSP Garrison Diversion	11/15/21	10,673,377	10,673,377	0
SB2345	325-21-23	5000	2021-23	RRVWSP	RRVWSP Garrison Diversion	11/15/21	6,958,267	6,958,267	0
					TOTAL REGIONAL WATER SUPPLY		***120,765,804***	***39,886,578***	***80,879,227***
					TOTAL		***192,130,067***	***66,260,722***	***125,869,345***
				Capital Assets:					
SWC	1736-05	8000		SWPP	Southwest Pipeline Project	10/14/21	27,396,982	21,774,819	5,622,163
SWC	2374	9000		NAWS	Northwest Area Water Supply	8/11/22	24,692,180	11,109,428	13,582,752
					TOTAL CAPITAL ASSETS		***52,089,162***	***32,884,247***	***19,204,915***

PROGRESS REPORT REQUIRED SWC Board Approved to Continue

	BUDGET	***APPROVED***	***BALANCE***
RRVWSP WATER SUPPLY	***41,041,734***	***41,041,734***	***0***
OTHER WATER SUPPLY	***83,374,751***	***43,428,410***	***39,946,341***
OTHER WATER SUPPLY - COMPLETED	***583,516***	***583,516***	***0***
BUDGET WATER SUPPLY 2021-2023	***125,000,000***	***85,053,659***	***39,946,341***

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

COMPLETED WATER SUPPLY

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Sep-22* Balance
				Municipal Water Supply:					
SWC	2050-37	5000	2017-19	Dickinson	Dickinson State Avenue South Water Main	12/11/15	587,143	587,142	312,900.00
SWC	2050-54	5000	2017-19	West Fargo	North Loop Connection	8/23/17	117,461	117,461	-
SWC	2050-55	5000	2017-19	West Fargo	West Loop Connection	8/23/17	10,000	10,000	-
SWC	2050-85-19	5000	2019-21	Mapleton	300,000 Gallon Storage Tank	10/10/19	13,845	13,845	159,595.55
SWC	2050-87-19	5000	2019-21	Streeter	Well Installation and Tower Rehabilitation	10/10/19	5,591	5,592	91,221.00
SWC	2050-90-19	5000	2019-21	Grand Forks	Water Treatment Plant	10/10/19	450,037	450,037	-
SWC	2050-94-19	5000	2019-21	Watford City	Water Distribution 2019	12/6/19	0	0	541,400.00
SWC	2050-117-19	5000	2019-21	Lakota	Water Transmission Line Replacement Project	12/11/20	49,601	49,601	135,353.40
SWC	2050-127-19	5000	2019-21	Valley City	Watermain Improvement District 100 Project	4/8/21	166,645	166,645	-
					TOTAL MUNICIPAL WATER SUPPLY CARRYOVER		***1,400,323***	***1,400,323***	***1,240,470***
SWC	2050-140-21	5000	2021-23	McLean Sheridan RWD	Service to Blue Flint Ethanol Plant	10/14/21	145,516	0	145,516.00
SWC	2050-149-21	5000	2021-23	Jamestown	ER Cross Town Water Supply Repair	2/23/22	438,000	438,000	-
					TOTAL MUNICIPAL WATER SUPPLY 2021-2023		***583,516***	***438,000***	***145,516***
					TOTAL MUNICIPAL WATER SUPPLY		***1,983,839***	***1,838,323***	***1,385,986***
				Regional Water Supply:					
0	0	0	0	0	0	1/0/00	0	0	-
					TOTAL REGIONAL WATER SUPPLY CARRYOVER		***0***	***0***	***0***
0	0	0	0	0	0	1/0/00	0	0	-
					TOTAL REGIONAL WATER SUPPLY 2021-2023		***0***	***0***	***0***
					TOTAL REGIONAL WATER SUPPLY		***0***	***0***	***0***
				State Fiscal Recovery Funds:					
SWC	325-19-21	5000	2019-21	RRVWSP	RRVWSP Garrison Diversion	6/8/21	10,673,378	0	10,673,377.40
SWC	325-21-23	5000	2021-23	RRVWSP	RRVWSP Garrison Diversion	10/14/21	6,958,266	0	6,958,266.02
SB2345	1973-07	5000	2019-21	WAWSA	WAWSA Phase VI	6/8/21	1,913,936	0	1,913,935.98
SB2345	1973-08	5000	2021-23	WAWSA	McKenzie County WRD 2021 System I North Project	12/10/21	516,990	0	516,990.25
SWC	2050-13	5000	2019-21	Mandan	New Raw Water Intake	10/7/13	6,736,605	0	6,736,605.18
					TOTAL STATE FISCAL RECOVERY FUNDS		***26,799,175***	***0***	***26,799,175***
					TOTAL		***28,783,014***	***1,838,323***	***28,185,161***
				Capital Assets:					
0	0	0	0	0	0	1/0/00	0	0	-
					TOTAL CAPITAL ASSETS		***0***	***0***	***0***

SWC Board Approved to Continue

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

RURAL WATER

Sep-22

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
				Rural Water Supply:					
SWC	2050-43	5000	2017-19	All Seasons Water District	System 4 Connection to System 1	12/11/15	4,900,000	71,215	4,828,785
SWC	2050-57	5000	2017-19	North Central Regional Water District	Mountrail Expansion Phase II	8/23/17	2,981,628	1,015,105	1,966,523
SWC	2050-58	5000	2017-19	North Central Regional Water District	Mountrail Co. Watery Phase III	8/23/17	3,386,181	31,816	3,354,365
SWC	2050-65	5000	2017-19	Tri-County Rural Water District	System Expansion Project	8/9/18	28,929	0	28,929
SWC	2373-39	5000	2017-19	North Central Rural Water Consortium	Carpio Berthold Phase 2	4/1/15	258,691	0	258,691
SWC	2050-77-19	5000	2019-21	Dakota Rural Water District	2019 Expansion	4/9/20	2,053,156	2,053,156	0
SWC	2050-92-19	5000	2019-21	East Central Regional Water District	2019 Expansion Phase IV	10/8/20	2,583,960	2,000,484	583,476
SWC	2050-113-19	5000	2019-21	North Prairie Regional Water District	Minot to Velva Highway 52 Improvement	10/8/20	2,310,863	8,440	2,302,424
SWC	2050-114-19	5000	2019-21	Walsh Rural Water District	Drayton Water Supply Project	2/11/21	7,323,029	576,657	6,746,372
SWC	2050-119-19	5000	2019-21	Southeast Water Users District	West System Supply Study	2/11/21	134,408	106,741	27,667
SWC	2050-120-19	5000	2019-21	East Central Regional Water District	Grandin Water Supply	6/8/21	1,637,445	124,343	1,513,102
SWC	2050-126-19	5000	2019-21	East Central Regional Water District	Hatton Water Supply	4/8/21	75,000	75,000	0
SWC	2050-130-19	5000	2019-21	Barnes Rural Water District	2021 Storage Expansion	10/14/21	112,000	112,000	0
SWC	2050-131-19	5000	2019-21	Northeast Regional Water District	Expansion - Adams/Walsh RWD	6/8/21	50,000	50,000	0
					TOTAL RURAL WATER SUPPLY CARRYOVER		***27,835,290***	***6,224,956***	***21,610,335***
SWC	2050-77-21	5000	2021-23	Dakota Rural Water District	2019 Expansion	8/12/21	1,577,591	9,126	1,568,466
SWC	2050-113-21	5000	2021-23	North Prairie Regional Water District	Minot to Velva Highway 52 Improvement	8/30/22	1,293,000	0	1,293,000
SWC	2050-114-21	5000	2021-23	Walsh Rural Water District	Drayton Water Supply Project	4/12/22	1,025,300	0	1,025,300
SWC	2050-120-21	5000	2021-23	East Central Regional Water District	Grandin Water Supply	4/12/22	528,000	0	528,000
SWC	2050-126-21	5000	2021-23	East Central Regional Water District	Hatton Water Supply	4/12/22	1,433,637	536,391	897,245
SWC	2050-130-19	5000	2019-21	Barnes Rural Water District	2021 Storage Expansion	10/14/21	1,688,544	647,280	1,517,323
SWC	2050-131-19	5000	2021-23	Northeast Regional Water District	Expansion - Adams/Walsh RWD	6/8/21	160,000	138,561	131,300
SWC	2050-132-21	5000	2021-23	McLean-Sheridan Rural Water District	McClusky Water Tower Replacement	2/23/22	3,031,407	687,622	2,343,786
SWC	2050-133-21	5000	2021-23	Rolette County	Turtle Mountain Public Utilities Comm: WTP Membrane	6/8/21	1,036,800	1,036,800	0
SWC	2050-135-21	5000	2021-23	East Central Regional Water District	WTP and Transmission Expansion	8/11/22	10,875,309	1,086,432	9,788,877
SWC	2050-136-21	5000	2021-23	McLean-Sheridan Rural Water District	System Improvements Phase 2	2/23/22	6,390,083	2,613,474	3,776,609
SWC	2050-137-21	5000	2021-23	Upper Souris Water District	2021 Improvements and Expansion	8/12/21	245,000	71,745	173,255
SWC	2050-141-21	5000	2021-23	Agassiz Water Users District	2022 Expansion Phase 2	10/14/21	332,500	0	332,500
SWC	2050-142-21	5000	2021-23	Cass Rural Water District	2022 System Distribution Project	6/7/22	2,401,000	203,472	2,197,528
SWC	2050-151-21	5000	2021-23	Walsh Rural Water District	Interconnect with NRWD	2/23/22	2,175,000	84,064	2,090,936
SWC	2050-156-21	5000	2021-23	Dakota Rural Water District	Service to Hannaford and WTP Expansion	4/12/22	315,000	59,400	255,600
Secretary	2050-157-21	5000	2021-23	Central Plains Water District	Maddock Water Treatment Plant Feasibility Study	5/3/22	26,000	0	26,000
SWC	2050-165-21	5000	2021-23	Greater Ramsey WD	North System Capacity Improvements	6/7/22	590,000	0	590,000
SWC	2050-166-21	5000	2021-23	Rolette County	TMPUC Highway 43 Corridor Expansion	6/7/22	2,600,000	137,842	2,462,158
SWC	2050-168-21	5000	2021-23	Missouri West Water System	South Mandan Expansion	8/11/22	81,000	0	81,000
					TOTAL RURAL WATER SUPPLY 2021-2023		***37,805,171***	***7,312,209***	***31,078,883***
SB2345	2050-77-21	5000	2021-23	Dakota Rural Water District	2019 Expansion	8/12/21	299,409	299,409	0
SB2345	2050-92-19	5000	2019-21	East Central Regional Water District	2019 Expansion Phase IV	10/8/20	81,282	81,282	0
SB2345	2050-113-19	5000	2019-21	North Prairie Regional Water District	Minot to Velva Highway 52 Improvement	10/8/20	763,167	763,167	0
SB2345	2050-120-19	5000	2019-21	East Central Regional Water District	Grandin Water Supply	6/8/21	2,555	2,555	0
SB2345	2050-126-21	5000	2021-23	East Central Regional Water District	Hatton Water Supply	4/12/22	249,363	249,363	0
SB2345	2050-130-19	5000	2019-21	Barnes Rural Water District	2021 Storage Expansion	10/14/21	573,856	573,856	0
SB2345	2050-132-21	5000	2021-23	McLean-Sheridan Rural Water District	McClusky Water Tower Replacement	2/23/22	13,593	13,593	0
SB2345	2050-135-21	5000	2021-23	East Central Regional Water District	WTP and Transmission Expansion	8/11/22	488,691	488,691	0
SB2345	2050-136-21	5000	2021-23	McLean-Sheridan Rural Water District	System Improvements Phase 2	2/23/22	479,917	479,917	0
SB2345	2050-155-21	5000	2021-23	Cass Rural Water District	ND Soybean Processors Facility and Pipeline	4/12/22	780,000	96,212	683,788
SB2345	2050-156-21	5000	2021-23	Dakota Rural Water District	Service to Hannaford and WTP Expansion	4/12/22	30,600	30,600	0
					TOTAL RURAL WATER SUPPLY		***65,640,462***	***13,537,164***	***52,689,217***

PROGRESS REPORT REQUIRED

SWC Board Approved to Continue

	BUDGET	***APPROVED***	***BALANCE***
OTHER RURAL WATER	***58,465,000***	***37,805,171***	***20,659,829***
OTHER RURAL WATER - COMPLETED	***1,135,000***	***1,135,000***	***0***
BUDGET RURAL WATER 2021-2023	***59,600,000***	***38,940,171***	***20,659,829***

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

COMPLETED RURAL WATER

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Sep-22* Balance
				Rural Water Supply:					
SWC	2050-34	5000	2017-19	North Prairie Rural Water District	Storage and Water Main	10/6/15	26,708	26,708	81,544.00
SWC	2050-78-19	5000	2019-21	McLean-Sheridan Rural Water District	2019 Expansion	4/9/20	669,008	669,008	-
SWC	2050-91-19	5000	2019-21	Agassiz Water Users District	2019 Expansion	4/9/20	206,532	206,532	-
					TOTAL RURAL WATER SUPPLY CARRYOVER		***902,248***	***902,248***	***81,544***
SWC	2050-152-21	5000	2021-23	Rolette County	Turtle Mountain Public Utilities: Thorne Reservoir	2/23/22	1,135,000	1,135,000	-
					TOTAL RURAL WATER SUPPLY 2021-2023		***1,135,000***	***1,135,000***	***0***
				State Fiscal Recovery Funds:					
SB2345	2050-77-21	5000	2021-23	Dakota Rural Water District	2019 Expansion	8/12/21	299,409	0	299,409.00
SB2345	2050-92-19	5000	2019-21	East Central Regional Water District	2019 Expansion Phase IV	10/8/20	81,282	0	81,282.00
SB2345	2050-113-19	5000	2019-21	North Prairie Regional Water District	Minot to Velva Highway 52 Improvement	10/8/20	763,167	0	763,166.53
SB2345	2050-120-19	5000	2019-21	East Central Regional Water	Grandin Water Supply	6/8/21	2,555	0	2,555.02
SB2345	2050-126-21	5000	2021-23	East Central Regional Water District	Hatton Water Supply	4/12/22	249,363	0	249,363.36
SB2345	2050-130-19	5000	2019-21	Barnes Rural Water District	2021 Storage Expansion	10/14/21	573,856	0	573,855.62
SB2345	2050-132-21	5000	2021-23	McLean-Sheridan Rural Water District	McClusky Water Tower Replacement	2/23/22	13,593	0	13,592.56
SB2345	2050-135-21	5000	2021-23	East Central Regional Water District	WTP and Transmission Expansion	8/11/22	488,691	0	488,691.25
SB2345	2050-136-21	5000	2021-23	McLean-Sheridan Rural Water District	System Improvements Phase 2	2/23/22	479,917	0	479,917.36
SWC	2050-140-21	5000	2021-23	McLean Sheridan RWD	Service to Blue Flint Ethanol Plant	10/14/21	529,969	0	529,968.65
SB2345	2050-140-21	5000	2021-23	McLean Sheridan Rural Water District	Service to Blue Flint Ethanol Plant	10/14/21	264,984	264,984	-
SB2345	2050-156-21	5000	2021-23	Dakota Rural Water District	Service to Hannaford and WTP Expansion	4/12/22	30,600	0	30,600.00
					TOTAL RURAL WATER SUPPLY 2021-2023		***3,777,386***	***264,984***	***3,512,401***
					TOTAL RURAL WATER SUPPLY		***5,814,634***	***2,302,232***	***3,593,945***

SWC Board Approved to Continue

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

FLOOD CONTROL

Sep-22

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
				Flood Control:					
SB 2020	1928-19	5000	2019-21	Fargo Metro Flood Diversion	Fargo Metro Flood Diversion Authority 2019-2021	10/8/20	44,000,000	36,916,187	7,083,813
SWC	1974	Rural	2017-19	Souris River Joint WRD	Mouse River Rural Projects	6/19/19	1,045,902	1,045,902	0
SWC	1974	Rural	2019-21	Souris River Joint WRD	Mouse River Rural Projects	6/19/19	21,913,543	14,781,890	7,131,653
SWC	1974	M-15	2017-19	Souris River Joint WRD	Mouse River Municipal Projects carryover 2015-17	3/29/17	415,310	415,310	0
SWC	1974	M-17	2017-19	Souris River Joint WRD	Mouse River Municipal Projects carryover 2017-19	4/12/18	8,992,670	6,543,124	2,449,547
SWC	1974	M-19	2019-21	Souris River Joint WRD	Mouse River Municipal New Projects 2019-21	6/19/19	5,907,657	3,034,250	2,873,407
SWC	2107-02	5000	2017-19	City of Minot	SWIF 2018 Outfall Pipe Project	10/11/18	131,415	101,965	29,450
SWC	1504-09	5000	2019-21	Valley City	Permanent Flood Protection PH IV and V	4/9/20	10,926,068	80,137	10,845,930
SWC	1504-10	5000	2019-21	Valley City	Permanent Flood Protection Storage Building	6/8/21	150,000	122,175	27,825
SWC	1991-13	5000	2021-23	Lisbon	Levees C & E Liftstation	6/7/22	80,489	0	80,489
SWC	2111	5000	2019-21	Maple River WRD	Davenport Flood Risk Reduction	4/9/20	2,012,115	63,254	1,948,861
SWC	2118	5000	2017-19	Cass County Joint WRD	Sheldon Subdivision Levee	10/11/18	370,200	0	370,200
SWC	416-02	5000	2019-21	City of Devils Lake	Devils Lake Flood Risk Management Levee	4/8/21	266,250	0	266,250
SWC	2129	5000	2019-21	Burleigh County WRD	Sibley Island Flood Control Project	8/8/19	48,473	8,409	40,064
SWC	2131	5000	2017-19	Lower Heart River WRD	Lower Heart Flood Risk Reduction	10/8/20	781,430	505,501	275,929
					TOTAL FLOOD CONTROL CARRYOVER		***97,041,522***	***63,618,103***	***33,423,419***
SWC	1974	MRA-21	2021-23	Souris River Joint WRD	Mouse River Municipal, Rural, and Rural Acquisitions	8/12/21	71,350,000	916,271	70,433,729
SWC	475	5000	2021-23	Steele County WRD	Golden Lake Complex Improvement Study	10/14/21	60,000	40,649	19,351
SWC	2131	5000	2017-19	Lower Heart River WRD	Lower Heart Flood Risk Reduction	10/8/20	209,285	0	209,285
SWC	2168	5000	2021-23	Bismarck	Wastewater Treatment Plant Effluent Flood Control-PreCon	10/14/21	72,000	36,889	35,111
SWC	2168	5000	2021-23	Bismarck	Wastewater Treatment Plant Effluent Flood Control-Construct	8/11/22	170,009	0	170,009
Secretary	1902	5000	2021-23	Emmons County WRD	Spring Creek Diversion Study	5/3/22	36,300	0	36,300
					TOTAL FLOOD CONTROL 2021-2023		***71,897,594***	***993,810***	***70,903,784***
					.				
					TOTAL FLOOD CONTROL		***168,939,116***	***64,611,913***	***104,327,203***
				Floodway Property Acquisitions:					
SWC	1974-MA19	5000	2019-21	Minot Acquisitions	Minot Phase - Floodway Acquisitions	6/19/19	7,035,716	7,035,716	0
SWC	1974-RA19	5000	2019-21	Rural Floodway Acquisitions	Mouse River Rural - Floodway Acquisitions	6/19/19	0	0	0
Secretary	1504-05	5000	2021-23	Valley City	Valley City - Floodway Acquisitions	1/19/22	71,340	49,760	21,580
SWC	1504-05	5000	2021-23	Valley City	Valley City - Floodway Acquisition 2022	8/11/22	207,595	0	207,595
SWC	1991-05	5000	2017-19	Lisbon	Lisbon - Floodway Acquisition	5/8/19	20,759	0	20,759
					TOTAL FLOOD FLOODWAY PROPERTY ACQUISITIONS CARRYOVER		***7,335,410***	***7,085,476***	***249,933***
SWC	1974	MA-21	2021-23	Souris River Joint WRD	Minot Phase - Floodway Acquisitions 2021-23	8/12/21	13,150,000	1,563,793	11,586,207
					TOTAL FLOOD FLOODWAY PROPERTY ACQUISITIONS 2021-2023		***13,150,000***	***1,563,793***	***11,586,207***
					FLOODWAY PROPERTY ACQUISITIONS		***20,485,410***	***8,649,269***	***11,836,141***
					TOTAL FLOOD CONTROL		***189,424,526***	***73,261,182***	***116,163,344***
				Discretionary Funding Projects:					
SWC	1851	5000	2021-23	ND State Water Commission	Drought Disaster Livestock Water Supply Assistance	7/30/21	2,000,000	0	2,000,000
SWC	0	5000	2021-23	ND State Water Commission	Emergency Livestock Water Supply Program	1/0/00	2,000,000	110,559	1,889,441
				Basinwide Plan Implementation:					
SWC	PS/WRD/UPI	5000	2021-23	Upper Sheyenne River Joint WRB	Upper Sheyenne River Watershed Pilot Project	8/12/21	1,100,000	221,854	878,146
					TOTAL		***194,524,526***	***73,593,595***	***120,930,931***

PROGRESS REPORT REQUIRED

SWC Board Approved to Continue

	BUDGET	***APPROVED***	***BALANCE***
FLOOD CONTROL	***116,721,773***	***85,326,529***	***31,395,244***
FLOOD CONTROL - COMPLETED	***30,000***	***30,000***	***0***
CONVEYANCE	***5,748,227***	***5,748,227***	***0***
BUDGET FLOOD CONTROL 2021-2023	***122,500,000***	***91,104,756***	***31,395,244***

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

COMPLETED FLOOD CONTROL

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Sep-22* Balance
				Flood Control:					
SB 2020	1928-17	5000	2017-19	Fargo Metro Flood Diversion	Fargo Metro Flood Diversion Authority 2017-2019	2/14/19	6,966,383	6,966,383	0
SB 2371	1344-02	5000	2017-19	Lisbon	Sheyenne River Valley Flood Control Project	8/8/16	78,000	78,001	0
SWC	1991-10	5000	2017-19	Lisbon	Permanent Flood Protection - Levee F Project	4/12/18	16,090	16,090	0
SE	2124	5000	2017-19	City of Belfield	Heart River & Tributaries Flood Control Study	11/6/18	0	0	27,000
SWC	1504-03	5000	2017-19	Valley City	Permanent Flood Protection PH II	12/9/16	0	0	234,498
SWC	1504-08	5000	2017-19	Valley City	Permanent Flood Protection Erosion Sites	4/9/19	44,560	44,462	0
SWC	1771-01	5000	2017-19	Grafton	Grafton Flood Control Project	10/12/16	396,733	199,698	0
SWC	1771-01	5000	2017-19	Grafton	Grafton Flood Control Project	10/12/16	0	0	1,864,788
					TOTAL FLOOD CONTROL CARRYOVER		***7,501,767***	***7,304,634***	***2,126,286***
0	0	0	0	0	0	1/0/00	0	0	0
					TOTAL FLOOD CONTROL 2021-2023		***0***	***0***	***0***
					TOTAL FLOOD CONTROL		***7,501,767***	***7,304,634***	***2,126,286***
				Floodway Property Acquisitions:					
SB 2371	1504-05	5000	2017-19	Valley City	Valley City - Floodway Acquisitions	12/8/17	0	0	260,280
					TOTAL FLOOD FLOODWAY PROPERTY ACQUISITIONS CARRYOVER		***0***	***0***	***260,280***
Secretary	1504-05	5000	2021-23	Valley City	Valley City - Floodway Acquisitions	8/18/21	30,000	30,000	0
					TOTAL FLOOD FLOODWAY PROPERTY ACQUISITIONS 2021-2023		***30,000***	***30,000***	***0***
					FLOODWAY PROPERTY ACQUISITIONS		***30,000***	***30,000***	***260,280***
					TOTAL FLOOD CONTROL		***7,531,767***	***7,334,634***	***2,386,566***
				Discretionary Funding Projects:					
0	0	0	0	0	0	0	***0***	***0***	***0***
				Basinwide Plan Implementation					
								0	***0***
					TOTAL		***7,531,767***	***7,334,634***	***2,386,566***

SWC Board Approved to Continue

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

WATER CONVEYANCE

Sep-22

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
				Drain & Channel Improvement Projects:					
SWC	1064	5000	2019-21	Rush River WRD	Cass County Drain 2 Channel Improvement	6/8/21	605,379	473,597	131,783
SWC	1090	5000	2019-21	Southeast Cass WRD	Cass County Drain 40 Channel Improvements 2021	6/8/21	320,017	21,798	298,219
SWC	1222	5000	2015-17	Sargent Co WRD	Drain No 11 Channel Improvements	10/12/16	1,350,501	16,924	1,333,577
SWC	1951	5000	2015-17	Maple River WRD	Lynchburg Channel Improvements	7/6/16	505,707	488,713	16,994
SWC	1975	5000	2019-21	Walsh Co. WRD	Walsh County Drain 31 Improvements	6/8/21	287,349	59,440	227,909
SWC	1990	5000	2011-13	Mercer Co. WRD	Lake Shore Estates High Flow Diversion Project	3/7/12	43,821	0	43,821
SWC	2084	5000	2019-21	Richland County WRD	Richland County Drain 31 Reconstruction	6/8/21	174,771	34,216	140,555
SWC	2094	5000	2019-21	McLean County WRD	Fort Mandan/4H Camp Access Road	4/9/20	67,996	0	67,996
SWC	2112	5000	2019-21	Pembina Co. WRD	Pembina Co Drain #81	2/13/20	284,982	284,982	0
SWC	2135	5000	2019-21	Grand Forks-Traill County Joint WRD	Grand Forks County Legal Drain No.59	12/11/20	2,783,837	2,525,360	258,477
SWC	2138	5000	2019-21	Pembina County WRD	Drain No. 82	12/6/19	985,718	62,646	923,072
SWC	2140	5000	2019-21	Grand Forks-Traill County Joint WRD	Thompson Drainage	4/9/20	613,751	565,813	47,938
SE	2143	5000	2019-21	Traill Co. WRD	Hillsboro Drain No. 26 Channel Improvements	3/27/20	7,612	0	7,612
SWC	2157	5000	2019-21	Maple River WRD	Upper Swan Creek Channel Improvements	6/8/21	698,468	31,086	667,382
SWC/SE	1413-01	5000	2019-21	Traill Co. WRD	Camrud Drainage Improvement District No. 79	4/9/20	740,307	659,731	80,577
SWC	2152	5000	2019-21	Enderlin Park Board	Maple River Bank Stabilization Project	12/11/20	132,500	90,875	41,625
SWC	2155	5000	2019-21	Richland County, Center Township	Wild Rice River Bank Stabilization	10/8/20	44,423	40,929	3,494
SE	2156	5000	2019-21	Bottineau County WRD	McHenry Laterals A and B	10/8/20	362,492	236,258	126,234
SE	2159	5000	2019-21	North Cass WRD	Cass County Drain 18 Extension	10/14/21	10,350	0	10,350
					TOTAL RURAL FLOOD CONTROL CARRYOVER		***10,019,981***	***5,592,367***	***4,427,614***
SWC	1061	5000	2021-23	Bottineau County WRD	Stone Creek Lateral B Construction	2/23/22	157,537	1,341	156,196
Secretary	1085	5000	2021-23	Maple River WRD	Cass County Drain 34 Planning Study	12/21/21	22,500	20,871	1,629
SWC	1085	5000	2021-23	Maple River WRD	Cass County Drain 34 Final Design	8/11/22	82,800	0	82,800
Secretary	1088	5000	2021-23	Maple River WRD	Cass County Drain 37 Improvement Project	1/12/22	12,375	9,375	3,000
SWC	1108	5000	2021-23	Grand Forks County WRD	Drain 9 Improvements	4/12/22	230,983	0	230,983
SWC	1142	5000	2021-23	Pembina County WRD	Drain 16 Expansion Analysis	6/7/22	112,590	0	112,590
SWC	1153	5000	2021-23	Pembina Co. WRD	Pembina Co Drain 34 Reconstruction Project	1/21/22	961,125	0	961,125
SWC	1175	5000	2021-23	Richland County WRD	County Drain 1 Reconstruction Phase I	6/7/22	99,355	0	99,355
SWC	1221	5000	2021-23	Sargent County WRD	County Drain No. 9/11	8/12/21	35,618	0	35,618
SWC	1241	5000	2021-23	Traill Co. WRD	Blanchard-Norman Drain 23-40	4/12/22	1,215,547	70,705	1,144,842
Secretary	1296	5000	2021-23	City of Walhalla	Pembina River Bank Stabilization	4/19/22	3,750	0	3,750
Secretary	1415	5000	2021-23	Richland County WRD	Drain 66A Feasibility/Planning Study	8/18/22	18,630	0	18,630
SWC	1650	5000	2021-23	Sargent Co WRD	County Drain No.7	8/12/21	185,927	24,278	161,650
Secretary	1667	5000	2021-23	Traill Co. WRD	Goose River Snagging and Clearing 2022-2023	9/13/22	49,300	0	49,300
SWC	1923	5000	2021-23	Pembina Co. WRD	Drain 66 Outlet Feasibilty Review	8/11/22	82,980	16,890	66,090
Secretary	1934	5000	2021-23	Traill Co. WRD	Elm River Snagging and Clearing 2022-2023	9/13/22	49,300	0	49,300
Secretary	1978	5000	2021-23	Richland-Sargent Joint WRD	Richland-Sargent Drain 1 Improvements Phase 3	3/18/22	20,025	5,359	14,666
SWC	1999	5000	2021-23	Pembina Co. WRD	Tongue River Cut-off Channel Improvements	8/12/21	145,980	69,286	76,694
SWC	2140	5000	2021-23	Grand Forks-Traill County Joint WRD	Thompson Drainage Improvement District 72	8/12/21	168,148	0	168,148
Secretary	2148	5000	2021-23	Bottineau County WRD	South Landa Drain - Preconstruction	7/11/22	72,000	0	72,000
SE/SWC	2159	5000	2019-21	North Cass WRD	Cass County Drain 18 Extension	10/14/21	147,149	0	147,149
SWC	2162	5000	2021-23	Steele Couty WRD	Drain 1 Lateral A - Construction Phase	9/30/21	128,007	84,535	43,472
SWC	2163	5000	2021-23	Nelson County WRD	Petersburg Infrastructure and Flood Mitigation	10/14/21	78,509	0	78,509
Secretary	2167	5000	2021-23	Steele County WRD	Steele County Drain 11 Outlet Improvements	8/18/21	74,250	16,358	57,892
SWC	2171	5000	2021-23	Maple River WRD	Cornell Township Drainage Improvement District 80	12/10/21	31,500	14,013	17,487
SWC	2178	5000	2021-23	Cass County Highway Dept	Wild Rice River Bank Stabilization	6/7/22	732,950	0	732,950
Secretary	2179	5000	2021-23	Cass County Highway Dept	Normann Township Bank Stabilization - Precons	5/17/22	25,000	0	25,000
Secretary	2183	5000	2021-23	Morton County WRD	Missouri River Natural Area Bank Protection Study	9/13/22	17,450	0	17,450
Secretary	2185	5000	2021-23	City of Flasher	West Flasher Drainage Improvements	9/13/22	13,650	0	13,650
Secretary	2186	5000	2021-23	Barnes County WRD	Sheyenne River Bank Stabilization Study	8/18/22	16,250	0	16,250
					TOTAL RURAL FLOOD CONTROL 2021-2023		***4,991,185***	***333,009***	***4,658,176***
					TOTAL RURAL FLOOD CONTROL		***15,011,166***	***5,925,376***	***9,085,790***
				Snagging & Clearing Projects:					
SWC	568	5000	2019-21	Southeast Cass WRD	Sheyenne River Snag & Clear	8/8/19	84,852	0	84,852
SE	1277	5000	2019-21	Emmons County WRD	2020-2021 Beaver Creek Snag & Clear	12/10/20	74,000	0	74,000
SWC	1868	5000	2019-21	Southeast Cass WRD	2020-2021 Wild Rice River Snag & Clear	12/11/20	9,956	0	9,956
SE	1945	5000	2019-21	Rush River WRD	Rush River Snagging & Clearing	2/10/21	70,000	0	70,000
SE	2095	5000	2019-21	Barnes Co WRD	2019 Sheyenne River Snag & Clear Reach 1 - Project 2	9/16/19	7,435	0	7,435
SWC	2095	5000	2019-21	Southeast Cass WRD	2020-2021 Sheyenne River Snag & Clear	12/11/20	39,244	0	39,244
					TOTAL SNAGGING & CLEARING CARRYOVER		***285,487***	***0***	***285,487***
Secretary	662	5000	2021-23	Walsh County WRD	Park River Snag & Clear 2021	8/13/21	40,538	784	39,754
Secretary	1271	5000	2021-23	Southeast Cass WRD	Rose Coulee Snagging and Clearing	8/18/21	50,000	21,563	28,437
SWC	1694	5000	2021-23	Pembina County WRD	2022-2033 Tongue River Snag and Clear	8/11/22	98,500	0	98,500
Secretary	1816	5000	2021-23	Barnes Co WRD	Sheyenne River Snag & Clear 2021-2022	1/19/22	50,000	48,893	1,107
SWC	1868	5000	2019-21	Southeast Cass WRD	2021-2022 Wild Rice River Snag & Clear	8/11/22	98,000	1,823	96,177
SWC	2095	5000	2021-23	Southeast Cass WRD	2022-2023 Sheyenne River Snag & Clear	8/11/22	98,000	0	98,000
Secretary	2095	5000	2021-23	Barnes Co WRD	2022-2023 Sheyenne River Snag & Clear	8/30/22	50,000	0	50,000
					TOTAL SNAGGING & CLEARING 2021-2023		***485,038***	***73,063***	***411,975***
					TOTAL SNAGGING & CLEARING		***770,525***	***73,063***	***697,462***
					TOTAL WATER CONVEYANCE		***15,781,691***	***5,998,439***	***9,783,252***
					TOTAL		15,781,691	5,998,439	9,783,252

PROGRESS REPORT REQUIRED

SWC Board Approved to Continue

	BUDGET	APPROVED	BALANCE
WATER CONVEYANCE	***5,476,223***	***5,476,223***	***0***
COMPLETED WATER CONVEYANCE	***272,004***	***272,004***	***0***
BUDGET WATER CONVEYANCE 2021-2023	***5,748,227***	***5,748,227***	***0***

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

COMPLETED WATER CONVEYANCE

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Sep-22* Balance
SWC	1059	5000	2017-19	Bottineau Co WRD	Baumann Legal Drain	12/7/18	156,132	225	155,907
SWC	1217	5000	2019-21	Tri-County WRD	Drain No 6	10/10/19	174,013	71,180	102,833
SE	1299	5000	2019-21	Ransom County	Maple River Bridge Bank Stabilization	6/11/21	50,267	40,423	9,844
SWC	1520	5000	2017-19	Walsh Co. WRD	Walsh County Drain 30-2	10/11/18	82,318	308	82,010
SE	1638	5000	2019-21	Rush River WRD	Auka Ring Dike	5/20/21	55,000	55,000	0
SE	1667	5000	2019-21	Traill County WRD	Goose River Snagging & Clearing	10/27/20	44,683	44,683	0
SWC	1694	5000	2019-21	Pembina County WRD	Tongue River Snag and Clear, City of Cavalier	10/8/20	98,400	94,726	3,674
SE	1934	5000	2019-21	Traill County WRD	Elm River Snagging & Clearing	10/27/20	45,739	45,739	0
SWC	1999	5000	2019-21	Pembina Co. WRD	Tongue River Cutoff Channel Improvements	2/13/20	6,812	6,082	730
SE	2016	5000	2015-17	Pembina Co. WRD	Establishment of Pembina County Drain No. 80	4/10/17	3,981	3,981	0
SWC	2087	5000	2015-17	Walsh Co. WRD	Drain #87/McLeod Drain	3/29/17	374,907	166,028	208,878
SWC	2104	5000	2019-21	Bottineau Co. WRD	Overgaard Extension	2/13/20	57,899	0	57,899
SWC	2136	5000	2019-21	Pembina County WRD	Drain No. 39	4/9/20	27,683	12,060	15,623
Secretary	2144	5000	2019-21	Ransom County	Virgil Schultz Bridge Bank Slope Stabilization	5/5/20	36,531	36,531	0
SE	2149	5000	2019-21	Maple River WRD	Tower Township Improvement District No. 79	12/2/20	8,051	0	8,051
SE	2153	5000	2019-21	Traill Co. WRD	Hong Drainage Improvement District No. 81	11/16/20	2,279	779	1,501
SE	2162	5000	2019-21	Steele Couty WRD	Drain 1 Lateral A - Preliminary Design Phase	4/13/21	9,000	9,000	0
SWC	PS/WRD/MER	5000	2019-21	Mercer County WRD	Knife River Bank Stabilization	10/8/20	87,831	80,173	7,658
					TOTAL WATER CONVEYANCE CARRYOVER		***1,321,525***	***666,917***	***654,608***
SWC	568	5000	2021-23	Southeast Cass WRD	2021-2022 Sheyenne River Snag & Clear	12/10/21	98,000	98,000	0
SWC	1061	5000	2021-23	Bottineau County WRD	Stone Creek Lateral B	10/14/21	20,250	20,250	0
SWC	1842	5000	2021-23	Richland County WRD	Wild Rice River Snagging and Clearing 2021	10/14/21	85,000	85,000	0
Secretary	2144	5000	2021-23	Ransom County	Virgil Schultz Bridge Bank Slope Stabilization	8/18/21	18,754	18,754	0
SWC	2170	5000	2021-23	Richland County WRD	Sheyenne River Snag & Clear	8/30/21	50,000	50,000	0
					TOTAL WATER CONVEYANCE 2021-2023		***272,004***	***272,004***	***0***
					TOTAL		1,593,529	938,921	654,608
					SWC Board Approved to Continue				

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

GENERAL PROJECTS

Sep-22

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	Balance
				Hydrologic Investigations:					
SWC	2041	3000	2017-19	USGS	Stream Gage Joint Funding Agreement	6/7/22	932,510	581,023	351,488
					TOTAL CARRYOVER		***932,510***	***581,023***	***351,488***
					Subtotal Hydrologic Investigations		***932,510***	***581,023***	***351,488***
				General Water Management:					
SWC	269	5000	2017-19	Walsh Co. WRD	Fordville Dam Rehabilitation	6/19/19	45,098	20,594	24,504
SWC	391	5000	2019-21	Sargent Co WRD	Silver Lake Dam Improvements	4/9/20	46,047	17,491	28,556
SWC	394	5000	2019-21	Golden Valley Co WRD	Odland Dam Rehabilitation Project	12/11/20	306,000	169,099	136,901
SE	477	5000	2019-21	City of Valley City	Mill Dam Rehabilitation	11/16/20	74,625	0	74,625
SE	531	5000	2017-19	Benson Co WRD	Bouret Dam Rehabilitation	12/20/18	8,124	8,124	0
SE	531	5000	2019-21	Benson Co WRD	Bouret Dam Rehabilitation	12/2/20	75,000	24,962	50,038
SE	632	5000	2019-21	Bottineau County Highway Dept	Antler Dam Repair	1/16/20	31,207	29,728	1,479
SWC	688	5000	2017-19	Grand Forks Co WRD	Larimore Dam Rehabilitation	6/19/19	43,211	20,524	22,687
SWC	980	5000	2015-17	Cass Co. Joint WRD	Rush River Watershed Detention Study	1/7/16	38,602	0	38,602
SE	1264	5000	2013-15	Barnes Co WRD	Little Dam Repurposing Feasibility Study	6/17/15	5,797	0	5,797
SE/SWC	1267	5000	2019-21	Bottineau County WRD	Westhope Dam Rehabilitation	6/9/20	71,293	0	71,293
SE	1289	5000	2015-17	McKenzie Co. Weed Board	Control of Noxious Weeds on Sovereign Land	3/23/21	40,111	4,945	35,166
SWC	1303	5000	2015-17	Sargent Co WRD	Shortfoot Creek Watershed Planning Program	3/9/16	45,560	27,613	17,946
SE	1378	5000	2019-21	Barnes Co WRD	Clausen Springs Dam EAP	2/7/20	3,304	0	3,304
SWC	1389	5000	2013-15	Bank of ND	BND AgPace Program	2/11/21	220,291	48,685	171,606
SE	1431	5000	2019-21	USGS/LaMoure County	Rapid Deployment Gages under FEMA Hazard Mit	10/17/19	500	0	500
SE	1453	5000	2017-19	Hettinger County WRD	Karey Dam Rehabilitation Design & Planning	12/14/18	48,284	48,284	0
SE	1453	5000	2017-19	Hettinger County WRD	Karey Dam Rehabilitation Project	4/9/19	181,661	78,146	103,515
SWC	1785	5000	2019-21	Maple River WRD	Maple River Dam Site T-180 Improvements	2/13/20	35,759	0	35,759
SWC	1851-01	5000	2015-17	ND State Water Commission	Drought Disaster Livestock Water Supply Assistance	6/8/21	3,853,243	3,051,610	801,632
SWC	1968	5000	2017-19	Garrison Diversion	MM 0 and MM 0.4 Irrigation Project	12/7/18	1,620,054	0	1,620,054
SE	2055	5000	2015-17	Red River Joint Water Resource District	Lower Red Basin Regional Detention Study	11/3/20	77,905	25,839	52,066
SWC	2059	5000	2015-17	Park River Joint WRD	North Branch Park River NRCS Watershed Study	10/6/15	4,904	0	4,904
SWC	2060	5000	2017-19	Walsh Co. WRD	Matejcek Dam Rehabilitation	10/11/18	85,993	32,994	52,999
SE	2073	5000	2019-21	Walsh Co. WRD	BTAG Oslo, MN Area Hydraulic Analysis	4/15/21	3,139	0	3,139
SE	2089	5000	2015-17	Maple River WRD	Tower Township Improvement District No. 77 Study	12/19/16	11,769	0	11,769
SE	2090	5000	2015-17	International Water Institute	River Watch Program	8/2/19	17,330	0	17,330
SWC	2103	5000	2017-19	Walsh Co. WRD	Bylin Dam Rehabilitation	6/19/19	50,341	45,692	4,649
SE	2109	5000	2017-19	Logan County WRD	McKenna Lake Feasibility Study	6/21/17	2,247	0	2,247
SE	2109	5000	2017-19	Logan County WRD	McKenna Lake Hydrologic Study	9/12/18	4,271	4,270	2
SWC	2109-02	5000	2019-21	Logan County WRD	McKenna Lake Hydrologic Study Phase 2	10/8/20	89,786	39,496	50,290
SWC	2115	5000	2017-19	Applied Weather Associates, LLC	(PMP) Probable Maximum Precipitation Estimates	10/11/18	11,822	6,130	5,692
SWC	2121	5000	2017-19	Pembina Co. WRD	Senator Young Dam Rehabilitation	6/19/19	53,205	22,146	31,059
SWC	2123	5000	2017-19	Geotech, Inc.	Airborne Electromagnetic (AEM) 2018	8/9/18	23,104	0	23,104
SE	2164	5000	2019-21	City of Dickinson	East Broadway Dam Rehabilitation	4/1/21	34,732	34,513	219
SE	1396-01	5000	2013-15	State Water Commission	Missouri River Recovery Program	11/17/15	46,510	0	46,510
SWC	ARB-WMI-19-1	7600	2019-21	Weather Modification, Inc.	Atmospheric Resource Operations and Research Gr	6/19/19	307,223	0	307,223
					TOTAL GENERAL WATER CARRYOVER		***8,081,912***	***4,341,909***	***3,857,165***
Secretary	275	5000	2021-23	Ransom Co. WRD	Fort Ransom Dam Rehabilitation Feasibility Study	4/19/22	37,500	0	37,500
Secretary	287	5000	2021-23	Fort Clark Irrigation District	Fort Clark Irrigation	9/2/22	32,790	0	32,790
Secretary	653	5000	2021-23	McLean County WRD	Katz Dam Spillway Safety Improvements	3/17/22	13,088	0	13,088
SE	671	5000	2021-23	Wells Co. WRD	Harvey Dam Hydrologic and Hydaulics Analysis	7/23/21	12,800	0	12,800
SWC	849-01	5000	2021-23	Pembina Co. WRD	Tongue River NRCS Watershed Plan Implementation	12/10/21	441,086	1,595	439,491
SWC	1264	5000	2021-23	Barnes Co WRD	Valley City Little Dam Improvement Project	10/14/21	102,000	0	102,000
SE	1403	5000	2021-23	NDSU	ND Water Resource Institute grant student stipends	5/23/22	25,000	25,000	0
SWC	1859	5000	2021-23	ND Dept of Environmental Quality	NPS Pollution	8/12/21	200,000	0	200,000
SWC	1860	5000	2021-23	ND Dept of Trust Lands	Permanent Trust Lands Water Supply Program	7/30/21	100,000	5,460	94,540
Secretary	1869	5000	2021-23	Burleigh County WRD	McDowell Dam Supplemental Water Supply	3/21/22	45,177	0	45,177
Secretary	1968-21	5000	2021-23	Garrison Diversion	MM 9L Irrigation Project	5/17/22	74,243	68,534	5,710
SE	1923	5000	2019-21	Pembina Co. WRD	Drain 66 Outlet Feasibility Review	5/4/21	69,930	0	69,930
SE	2165	5000	2021-23	USGS	Red River Low Flow Study	6/21/21	25,000	0	25,000
SWC	2169	5000	2021-23	Minot	Water Supply Low Head Dam Remediation	6/7/22	325,326	45,094	280,232
SWC	2172	5000	2021-23	Missouri River Joint WRB	Coordinator and Outreach	4/12/22	73,835	0	73,835
SWC	2173	5000	2021-23	Elm River Joint WRD	Elm River Dams 1 and 2 Improvements	2/2/22	213,000	31,950	181,050
Secretary	2174	5000	2021-23	Garrison Diversion	MM 7.4 Irrigation Project	3/17/22	71,957	61,970	9,987
SWC	2176	5000	2021-23	University of North Dakota	Cold Region Hydrologic Modeling	4/12/22	165,000	0	165,000
Secretary	2180	5000	2021-23	Reed Township	Sheyenne Riverbank Stabilization Analysis	7/14/22	17,300	0	17,300
SWC	2181	5000	2021-23	Pembina Co. WRD	Bourbanis Dam Partial Decommission/Removal	8/11/22	656,702	0	656,702
SWC	2182	5000	2021-23	Elm River Joint WRD	Elm River Dam 3 Improvements	8/11/22	213,000	0	213,000
Secretary	2187	5000	2021-23	Pembina Co. WRD	City of Crystal Flood Risk Reduction	9/7/22	27,600	0	27,600
Secretary	2188	5000	2021-23	Pembina Co. WRD	City of Cavalier Flood Risk Reduction	9/13/22	28,800	0	28,800
SE	PS/IRR/WES	5000	2021-23	Western Heart River Irrigation District	Dahners Irrigation Project	8/11/22	45,980	0	45,980
SE	AOC/WEF/MAG	5000	2021-23	ND Water Education Foundation	North Dakota Water Magazine	1/3/22	26,000	13,000	13,000
SE	PS/WRD/DEV	5000	2021-23	Devils Lake Basin Joint WRB	Board Manager	8/18/21	60,000	30,000	30,000
SWC	ARB-WMI-21-1	7600	2021-23	Weather Modification, Inc.	Atmospheric Resource Operations and Research Gr	8/12/21	429,980	0	429,980
SE	PS/WRD/MRJ	5000	2021-23	Missouri River Joint WRB	MRRIC Terry Fleck	8/19/21	42,000	20,294	21,706
SWC	AOC/ASS	5000	2019-21	Assiniboine River Basin Initiative	ARBI's Outreach Efforts 21-23	6/8/21	100,000	50,000	50,000
SWC	AOC/RRB	5000	2019-21	Red River Basin Commission	Red River Basin Commission Contractor 21-23	6/8/21	200,000	100,000	100,000
					TOTAL GENERAL WATER 2021-2023		***4,343,744***	***452,897***	***3,773,685***
					TOTAL GENERAL WATER		***12,425,656***	***4,794,806***	***7,630,850***
					TOTAL		**12,425,656**	**4,794,806**	**7,630,850**

PROGRESS REPORT REQUIRED

SWC Board Approved to Continue

	BUDGET	***APPROVED***	***BALANCE***
GENERAL WATER	***13,879,972***	***4,343,744***	***9,536,228***
COMPLETED GENERAL WATER	***347,303***	***288,803***	***58,500***
BUDGET GENERAL WATER 2021-2023	***14,227,275***	***4,632,547***	***9,594,728***

DEPARTMENT OF WATER RESOURCES
PROJECT SUMMARY
2021-2023 Biennium
Resources Trust Fund

COMPLETED GENERAL PROJECTS

Approved By	SWC No	Dept	Approved Biennium	Sponsor	Project	Approved Date	Total Approved	Total Payments	*Sep-22* Balance
					Hydrologic Investigations:				
0	0	0	0	0	0	1/0/00	0	0	0
							0	***0***	***0***
SE	1378	5000	2019-21	Barnes Co WRD	Clausen Springs Dam Improvements	2/7/20	17,258	2,748	14,510
SWC	160	5000	2017-19	McLean Co WRD	Painted Woods Lake Flood Damage Reduction & Habitat	8/9/18	5,547	5,547	0
SWC	394	5000	2019-21	Golden Valley Co WRD	Odland Dam Rehabilitation Project	4/9/20	571,582	571,582	0
SWC	531	5000	2017-19	Benson Co WRD	Bouret Dam Rehabilitation	4/9/19	79,058	79,058	(0)
SWC	980	5000	2015-17	Cass Co. Joint WRD	Upper Maple River Watershed Detention Study	6/11/21	35,910	35,910	0
SE	2072	5000	2015-17	Barnes Co WRD	Ten Mile Lake Flood Risk Reduction Project	6/8/16	4,901	4,901	0
SWC	2141	5000	2019-21	Pembina Co. WRD	Weiler Dam Gate and Catwalk Retrofit	4/9/20	28,661	20,505	8,156
SE	2154	5000	2019-21	Elm River Joint WRD	Elm River Watershed Study	11/3/20	1,035	1,035	0
SWC	2161	5000	2019-21	AE2S	Strategic Governance and Finance Study	6/8/21	115,975	115,975	0
					TOTAL GENERAL WATER CARRYOVER		***859,926***	***837,260***	***22,666***
SE	249	5000	2021-23	City of Mott	Mott City Dam Feasibility Study	7/23/21	57,344	0	57,344
SE	1403	5000	2021-23	NDSU	ND Water Resource Institute grant student stipends	6/11/21	25,000	25,000	0
SWC	2154	5000	2021-23	Elm River Joint WRD	Elm River Watershed Study	8/12/21	36,000	34,844	1,156
SWC	2161	5000	2021-23	AE2S	Strategic Governance and Finance Study	12/21/21	74,959	74,959	(0)
SWC	2177	5000	2021-23	ND AGRICULTURAL WEATHER NETV	NDAWN	3/28/22	1,500	1,500	0
SE	AOC/WEF/TOURS	5000	2019-21	ND Water Education Foundation	2022 Summer Water Tours	4/20/22	2,500	2,500	0
HB2009	1986	5000	2021-23	ND Dept of Agriculture	Wildlife Services	7/1/21	125,000	125,000	0
Secretary	AOC/IRA	5000	2021-23	ND Irrigation Association	Strenthen and Expand Irrigation in ND	7/1/22	25,000	25,000	0
					TOTAL GENERAL WATER 2021-2023		***347,303***	***288,803***	***58,500***
					TOTAL GENERAL WATER		***1,207,229***	***1,126,063***	***81,166***
					TOTAL		1,207,229	1,126,063	81,166

PURPOSE FUNDING SUMMARY
State Water Commission Cost-Share
for December 9, 2022
November 30, 2022

2021-2023 Unobligated Appropriation 10-31-22

Flood Control

			Unobligated Appropriation	$ 30,964,541
				Cost-Share
Other	1	Valley City: Permanent Flood Protection Project (Reallocation of Funds - $297,779)		$ -
	2			
	3			
			Current Requests	$ -
			Anticipated Requests	$ 14,679,485
			Anticipated Unobligated Appropriation =	$ 16,285,056

General Water

			Unobligated Appropriation	$ 9,005,978
				Cost-Share
Preconstruction	1	City of Minot: Little Roosevelt Low Head Dam Remediation		$ 168,750
	2			
	3			
			Current Requests	$ 168,750
			Anticipated Requests	$ 8,243,987
			Anticipated Unobligated Appropriation =	$ 593,241

Water Supply

			Unobligated Appropriation	$ 37,421,353
				Cost-Share
Preconstruction	1	Western Area Water Supply: NWRWD East Williston CR9 Rural Distribution (Anticipated Const $5,946,400)		$ 398,250
Construction	2	Casselton: Watermain Replacement and Looping 2023-1		$ 761,700
	3			
			Current Requests	$ 1,159,950
			Anticipated Requests	33,563,070
			Anticipated Unobligated Appropriation =	$ 2,698,333

Rural Water

			Unobligated Appropriation	$ 19,798,829
				Cost-Share
Preconstruction	1	McLean Sheridan RWD: System Expansion Phase 2 (Anticipated Const $3,914,600)		$ 673,400
Construction	2	Cass RWD: 2022 System Wide Distribution Improvements		$ 288,750
Construction	3	Dakota RWD: Service to Hannaford		$ 3,810,000
Construction	4	North Prairie RWD: Minot to Velva Highway 52		$ 729,000
Construction	5	All Seasons WUD: System 4 to System 1 Connection		$ 2,180,000
			Current Requests	$ 7,681,150
			Anticipated Requests	27,554,900
			Anticipated Unobligated Appropriation =	$ (15,437,221)

Discretionary

			Unobligated Appropriation	$ 2,000,000
				Cost-Share
	1			$ -
			Current Requests	$ -
			Anticipated Requests	$ -
			Anticipated Unobligated Appropriation =	$ 2,000,000

Capital Assets

			Unobligated Appropriation	$ 120,813,303
		SWPP		**Cost-Share**
	1	SWPP: Hydraulic Improvements Contract HI-2021		$ 5,660,000
			Current Requests	$ 5,660,000
			Anticipated Requests	-
		NAWS		
	1	Snake Creek Intake Modifications Contract 6-1A (Procurement)		$ 9,500,000
	2	Snake Creek Intake Modifications Contract 6-1A (Demolition) - Bid opening December 1, 2022		$
			Current Requests	$ 9,500,000
			Anticipated Requests	-
			Capital Assets Current Requests	**$ 15,160,000**
			Anticipated Capital Assets Requests	$ -
			Anticipated Unobligated Appropriation Capital Assets =	$ 105,653,303

State Fiscal Recovery Funds (SFRF)

			Unobligated Appropriation	$ 32,934,124
Construction	1	Cass RWD: Service to ND Soybean Processors (Request Const $9,803,000 - SFRF)		$ 9,803,000
	2	State Fiscal Recovery Funds may be used for other above projects.		
			Current Requests	$ 9,803,000
			Payments	$ 42,065,876
			Anticipated Requests	$ 17,803,000
			Anticipated Unobligated Appropriation =	$ 5,328,124

2021-2023 Unobligated Appropriation for Purpose and Capital Assets	$ 252,938,129
Current Requests	$ 33,972,850
Anticipated Requests	$ 101,844,442
2021-2023 Anticipated Unobligated Appropriation =	$ 117,120,837

APPENDIX B

FINAL DRAFT
Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool for Water Resources Cost-Share Program Administration

October 2022

Jay A. Leitch and Charles Fritz[1]

[1] Leitch is a consultant to the International Water Institute and Fritz is the International Water Institute, Fargo, ND, Executive Director. NOTE: The intended audience for this report is North Dakota Water Department of Water

Contents

Resources (NDDWR) to enhance their Economic Analysis (EA) process. As such, it is written in a first-person conversational narrative tone.

Goal

Identify existing or develop a process, including metrics, to incorporate the economic benefits of snagging and clearing into North Dakota's Economic Assessment Worksheet (NDSWC 2019) for water resources projects.

Definition and Purpose

Snagging and clearing (S&C) (or clearing and snagging) is the removal of flow obstructions in streams, rivers, engineered channels, and harbors pre- and post-flood events. S&C includes removal of all types of woody vegetation (floating trees, fallen trees, logjams), boulders, sandbars, car bodies, appliances, and even buildings after hurricanes. The purpose of S&C is to increase channel flow capacity (i.e., reduce Manning's Roughness Coefficient, or "Manning's n") by removing debris that could contribute to localized flooding and damage to transportation infrastructure.

Background

S&C has been a routine waterway conveyance maintenance procedure in North Dakota for over one hundred years. Most pre-flood S&C activity take place during the winter months when waterways are frozen, and access is easier. During winter, contractors remove woody debris from above the waterline and on the riverbank below the ordinary high-water mark. The primary purpose of S&C projects is to protect downstream bridges from damage due to woody debris pile-up and overland flooding or channel escape.

The North Dakota State Water Commission (now the Department of Water Resources) cost-shared S&C prior to the 1981-1983 Biennium to 2017, when the ND Legislature modified state statute affecting Water Commission cost-share policy. In 2019, the Legislature again modified state statue, allowing the Water Commission the ability to cost-share S&C projects. The North Dakota Department of Water Resources (NDDWR) routinely supported 10 to 20 projects/biennium. State cost-share for S&C increased from 25% to 50% in 2005, which led to an increase in S&C projects in the State. Currently, projects less than $200,000 may receive 50% cost share, while projects >$200,000 are required to use the EA process (NDSWC 2019). This led to a proliferation of S&C projects less than $200,000, and direction by the NDDWR to study S&C benefits.

Method

Our four-step method for developing a routine to include S&C in the ND Economic Assessment Worksheet (EA) included a literature review, personal contacts, trial development, and an external review.

1. Literature Review - we conducted a thorough literature review using numerous search engines and key words. Search engines included: Google, Google Scholar, Bing, and Yahoo. Key words included: snagging, clearing, logjam, re-snagging, de-snagging, and driftwood. Each relevant-looking source was reviewed, including a review of the literature cited. We searched until our results became redundant.

2. Personal Contacts - following a thorough and exhaustive literature review, we contacted personnel from several local, state, and Federal agencies and engineering firms for examples of economic information on the benefits of S&C.

3. Trial Development - using what we learned from steps (1) and (2) we developed a plausible routine for estimating S&C benefits.

4. External Review - to be confident our routine was economically sound and acceptable to users, we asked for an external review from three engineers at three different regional engineering firms and three economists.

Literature Review

We reached four general conclusions from our literature search. First, there is plenty of information about S&C, but scant useful information pertaining to the measured economic values of S&C. Second, there are good discussions and descriptions of S&C and its intended purposes and assumed effects, with some being numerically rated. Third, the peer-reviewed literature has a plethora of articles dealing with the technical aspects of hydrogeomorphology as it relates to S&C. Finally, over the past three or four decades, all types of sourced literature show a 180-degree shift away from encouraging S&C toward promoting re-snagging for environmental purposes. Re-snagging refers to the re-introduction of woody debris to increase biodiversity in riverine habitats.

Dearth of Benefit Metrics

- The literature, of all types (peer reviewed, grey literature, agency rules and regulations, project studies, and engineering reports), was entirely void of useful economic information on the benefits of S&C. The Natural Resources Conservation Service (NRCS) had the most detailed accounting of S&C with lists (Appendix A) of the effects of conservation practices (including S&C [practice Code 326]). Gordon (2013), West National Technology Support Center economist, stopped just short of attaching monetary units to the effects of S&C. Selected Corps of Engineers, NRCS, and NDDWR documents are included below, highlighting a sample of the information available in the literature.

Corps of Engineers (Corps)

- Section 208 of the *1954 Flood Control Act* (amended by *1974 WRDA*) authorizes the Corps to remove snags and debris from navigable water in the interests of flood control (Corps 1989). Each project/reach must be economically justified. We reviewed several Corps reports and found them to be similar, with little specific economic data regarding benefits.

A Corps study of the Red River of the North was done at the request of locals concerned about the effect Dutch elm disease would have on flood levels in/near Fargo and Moorhead (Corps 1989). The proposed plan's objective was to reduce the local flood threat. Specific takeaways include:

- S&C is feasible in about 10 miles of the downstream reach,
- S&C is not feasible in the upstream reach due to fewer trees resulting in minimal effect,
- annual maintenance is needed to maintain effectiveness at an annual cost of about 10%.
- with annual maintenance, the project life is 50 years,
- a substantial amount of debris would be left below the waterline for aquatic habitat,

- the effect trees and snags have on water surface profiles is difficult to predict,
- trees and snags will increase the roughness and reduce hydraulic efficiency,
- effect of trees and snags is minimal for low frequency floods,
- woody debris would increase the water surface profile up to 5 feet for a 2-year flood and less than ½ foot for the 100-year flood, and
- 'with project' average annual (urban) damage is reduced by 9.5% for high frequency floods when S&C is maintained.

A recent Corps study of debris in the **Waccamaw River** in South Carolina (Corps 2021) reported results like the 1989 Red River study.

- Accumulated debris contributes to nuisance flooding,
- S&C would alleviate nuisance flooding,
- S&C would reduce the risk of structural/infrastructure damage,
- S&C would reduce safety hazards to boaters,
- water surface elevation for a 100-year storm would be reduced by about 1 foot, and
- S&C would increase channel conveyance and result in small reductions in floods.

Most of the conclusions in this study were based on other studies (Shields and Nelson 1984, Shields and Gippel 1995, and The Wildlife Society 1983).

A Section 208 Corps study of the **Deep River** in Indiana (Corps of Engineers 2004) concluded that S&C would have "...positive effects on riverine and floodplain functions, thus reducing the chances for unnatural erosion and flooding". The project goals were to clean up the river, improve water quality, and return flow velocities to the stream. Increasing attention to invasive and endangered species and aquatic habitat were noted in this study.

A Corps Environmental Impact Research Program Technical Report (Smith et al., 1992) investigated the effects of large woody debris (LWD) removal and concluded "Removal of LWD from the study area decreased near-bank-full friction factor by about one third" (page 60).

A reconnaissance report (Corps 1975) and an EIS (Corps 1976) for a **Pembina River** S&C project included economic information, but no details. A B/C ratio of 1.47 was reported (p. 6, Corps 1976) concluding only the S&C alternative, of five alternatives presented, was feasible (Corps 1975). The B/C was based on a 25-year project, however, that contradicts the following excerpt from the report:

> *It is expected to reduce flooding on approximately 760 acres of land and would be most effective for flood flows at or near bankfull capacity. The project would reduce damages caused by the 2- to 5-year frequency flood and would have progressively less effect on floods less frequent than the 5-year flood. It would have little effect on the very infrequent floods*. (p. 1, Corps 1976)

A 1975 study of the **Wild Rice River** (NDSWC 1975) prepared for the Corps reported that S&C would reduce Manning's "n" from 0.045 to 0.040, thereby lowering the local flood stage. The study also noted

that “Floods on the Wild Rice River usually occur in the spring and the most severe floods occur in March or April, occasionally extending into May” (p. 1), highlighting the importance of seasonality in estimating S&C benefits.
A Corps study on the Minnesota side of the Red River Valley of the **Snake River** (Corps 1982) reported some common findings:

- Damages caused by the 3- to 5-year floods would be reduced by S&C,
- project is expected to reduce cropland flood damages by 17 percent,
- S&C would have progressively less effect on floods over 5-year frequency and have no effect on infrequent floods,
- S&C component has a B/C of 2.2 (with little evidence provided as to source of benefit),
- snow-filled channels can have the same effect as snags, and
- S&C would cause a significant loss of fish and wildlife habitat.

A Corps report from New Mexico reported a B/C ratio of 1.1 for a 10-year project (Corps 1972). However, S&C and channelization were combined, so the contribution of S&C is unknown. The channel in the project area had been cleared of obstructing vegetation only six years prior (p. 3).

NDDWR - The agency literature includes many S&C pre-project reports. A preliminary engineering report on the north branch of the **Elm River** presents four alternatives to reduce breakout flows (Thielman 1991). Hydraulic analyses using HEC-1 and HEC-2 were used to estimate changes in flow rates. Cross section geometry was one of the metrics studied. S&C was the fourth alternative considered, however “A problem associated with this alternative is that snagging and clearing is a short-term solution and in all likelihood the channel will require further work in the future” (p. 27).

A study of **Beaver Creek** (Sando 1988) indicated that the negative effect of snags decreases with larger floods. The author said S&C “...would alleviate and minimize flood damages not only to the City of Linton and adjacent farmland but will protect the integrity of bridges and structures....” (p. 25), but no specific economic data were presented. The author recommends “...snagging and clearing is efficacious and capable of decreasing flood stages, but it is limited in value. ...a snagging and clearing project will lessen the severity, length, and recurrence interval of floods but will not prevent floods....” (page 27).

A North Dakota project report on the **Sheyenne River** said, “If flow is hindered through these sections, the backwater could build up and threaten property within Valley City, or the subdivision just south of the city.” (Gjestvang 1981, p. 13). Another report on the **Sheyenne River** (Binegar 1986) mentioned the seasonality of flooding damages in North Dakota, noting that most floods were in March or April, but occasionally in May. Early Spring flooding rarely causes cropland flooding damages.

A **Park River** S&C report discussed the issue of downstream bridges (Kirk 1980). It was noted that bridges could be assessed to estimate their ability to safely pass floods of various return frequencies. There needs to be sufficient waterway opening beneath the bridge deck to pass debris. Bridge piers need to be spaced far enough apart to pass debris.

These NDDWR studies provide a subjective description of the potential benefits of S&C but lack any objective economic or probabilistic data. Likewise, the Federal agency literature contains much information about S&C, especially the NRCS, but there are no economic data available. We reviewed scores of additional sources, without finding any useful information to support our goal.

Descriptions and Effects - The literature providing detailed descriptions is useful in understanding why S&C is/was a popular practice and offers some guidance toward developing economic data. The documents referenced below provide some information to help design a S&C routine for the ND EA.

NRCS has a numerical scoring list for assigning a plus (for an increase) or minus (for a decrease) in the value of the effect (Appendix B), and a network diagram for assigning a value of -2, -1, 0, +1, or +2 to the effects of S&C (Appendix C). The NRCS numerical scale for valuing S&C effects indicated a net of -4. While the scoring list helps understand the effects of S&C as a conservation practice, it does not offer any economic metrics. Similarly, NRCS identifies three levels of S&C: (1) light, (2) medium, and (3) heavy (NRCS 2014). These subjective categories are of little help in developing analytical metrics.

The NRCS (2007) found that S&C would have little or no effect on urban flooding in two counties in West Virginia. They concluded that property buyouts were the best alternative. However, if a community meets the criteria for 'disadvantaged community', the net benefits rule would not apply. Further, NRCS argued:

> *Nonmonetary benefits that are not reflected in the benefit to cost ratio are substantial. There are incalculable benefits to reducing risk to life and property, improving the quality of life to a distressed community, and restoring environmental integrity to the natural floodplain of* ***Dunloup Creek****.* (p. 10).

NRCS's argument regarding non-monetary benefits not being reflected in the benefit cost ratio is erroneous. Words such as 'substantial' or 'incalculable' to describe benefits are useless to any economic valuation discussion. All benefits must be paired with the probabilities of events to understand their economic value. Economic valuation methods have been accepted by the professional community for most of the last century. Furthermore, improvements to methods measuring or inferring economic value have been extensively substantiated in the literature.

The notion that logjams/snags may be a negative factor during high frequency flood events but not during low frequency events was strongly supported in the literature (e.g., Corps 1975, 1975a, 1976). However, no rigorous distinction of the line between low and high frequency events is available. High frequency flooding (generally referring to floods in the range of 2 to 5-year events) are largely contained withing the stream/river banks.

Snagging and clearing is often done post-flood for low frequency events, especially those associated with hurricanes. Post-flood S&C is usually a clean-up exercise rather than a channel improvement exercise.

Other state and federal agencies had similar descriptions of S&C along with lists of the purposes, but no useful information regarding economic values. The literature agrees that the primary purpose of pre-flood S&C is to reduce urban and cropland flood damages and to reduce infrastructure damage by:

- Restoring flow capacity and direction,
- Clearing stream channels in the interest of flood control,
- Preventing excessive bank erosion,
- Reducing formation of bars,
- Reducing sediment accumulation, and
- Minimizing blockages by debris and ice.

A frequently reported metric in the S&C literature is the reduction in Manning's "n". NDSWC (1974) reported an estimated reduction from 0.046 to 0.035 with snagging and clearing (p. 9). The study further noted

> *An efficient Snagging and Clearing operation allows more carrying capacity of the river channel. This more rapid export of water from the reach results in less flooding within the reach. However, more water will flow to downstream areas in a shorter time period* (p. 34).

A 1975 study of the **Wild Rice River** (NDSWC 1975) prepared for the Corps reported that S&C would reduce Manning's "n" from 0.045 to 0.040. Smith et al. (1992) found that S&C would reduce Manning's "n" by 1/3. Since most S&C in North Dakota is primarily done above the water line during winter months, there would be no reductions in Manning's "n" below the waterline.

There is no shortage of documentation on the practice of S&C. Scores of reports and agency guidelines are available, especially prior to the 21st Century. The bulk of the literature is/was authored by entities largely supportive of S&C, providing subjective justification for projects. The effects of S&C are site specific and rarely quantified in monetary terms.

Hydrogeomorphology - There is a large body of research reported in the peer-reviewed literature on technical/scientific aspects of surface water moving in natural and engineered watercourses. While interesting from a technical perspective and helpful for engineering channels or restoring streams, the peer-reviewed literature provides no objective data on the economics of S&C.

Scientific journals containing technical papers related to S&C include, but are not limited to, *River Research and Applications, Water Resources Research, Journal of Hydraulic Engineering, JGR Earth Science, Earth Surface Processes and Landforms, Ecological Applications, Reviews of Geophysics, Journal of Flood Risk Management,* and *Ecohydrology*. Research, basic and applied, reported in these types of journals forms the necessary foundations for developing verifiable estimates of the economic effects of S&C, but economists have not carried out that necessary last step in the process.

Some examples of technical literature relevant to an objective understanding of the effects of woody debris in waterways include:

- Angradi et al. 2004, a look at large woody debris in the Upper Missouri River in North Dakota.

- Wohl and Iskin. 2022, regarding the transience of channel-spanning logjams. Found the median jam persistence to be 1 to 2.5 years.
- Shields and Gippel. 1995, effects of woody debris removal on flow resistance.
- Livers and Wohl. 2021, partial vs. stream-spanning logjams.
- Wohl et al. 2010, a call for common metrics in logjam studies.
- Gregory and Davis. 1992, management implications of woody debris.
- Shields. 1984, environmental aspects of C&S.

There is no shortage of peer-reviewed literature in scientific journals on many technical aspects of S&C. Each of the above articles contains a long listing of additional sources of information. However, as pointed out in Corps reports, S&C projects are not large enough to warrant the added expense of detailed engineering or hydraulic modeling (much less economic modeling).

Paradigm Shift -The literature on S&C began to shift away from clearing snags to re-snagging as the environmental aspects of snags in rivers became known. Snags in the **Missouri River** were noted as a navigational hazard as early as 1673, with efforts to remove snags starting as early as 1838 (Blevins 2006). Blevins writes about the USGS (and EPA) current position away from snagging and channel improvements.

The Corps of Engineers conducted snagging operations in Puget Sound as early as 1885 to remove hazards to navigation. The *Rivers and Harbors Act of 1902* (and subsequent updates) authorized the Corps to participate in snagging operations (through Section 208). The Army Corps of Engineers current position on S&C is:

> *Channel excavation and snag removal should be accomplished with the minimum streambank clearing needed to provide access to the stream and should not be undertaken unless it is absolutely necessary*. (Smith et al. 1992).

The NRCS likewise has long identified S&C a useful conservation practice. However, the tide has shifted and now NRCS's position is:

> *This practice is not recommended (Clearing and Snagging [326]) if after careful study it is determined that the work may cause channel erosion, damage to fish or wildlife or other negative impacts.* (NRCS 2013).

The US Forest Service also promotes re-snagging as part of stream restoration (Yochum 2018).

An international perspective (Australia) noted that:

> *The snags will have no net impact on water flow and will enhance native fish habitat, thereby leading to a more sustainable native fish community, … (*Goulburn Broken Catchment Management Authority 2011).

This is contrary to the literature reporting a reduction in channel roughness, which highlights the event and site-specific nature of S&C benefits.

The European Commission funded an extensive literature review (over 200 sources) of river restoration, including at least 39 peer-reviewed papers addressing the economic benefits of river restoration (Brouwer et al. 2015). The bulk of the report is on economic methods, concluding "One thing they [economic methods] have in common, is that their application is often time-consuming and relatively expensive. Therefore, in many cases, value transfer methods are applied instead." (p. 94) Value transfer methods use values estimated elsewhere, all other things approximately equal, instead of estimating values for a specific project.

Several S&C projects in North Dakota have been deauthorized and others have been recommended for deauthorization because they "...have outlived their usefulness and are no longer needed...." (p. 45 Corps 2015).

The Sierra Club, a proponent of in-stream habitat, suggests that floods are a natural S&C tool (Schooley 1971). However, they fail to mention where the debris ends up after a flood carries it away or whether downstream bridges are protected from, or designed to pass, woody debris.

Most of the S&C literature over the past several decades (starting in the 1980s) is about the many positive environmental values of putting snags back into watercourses. Engineered log jams (ELJ) have increasing appeal to hydrogeologists. The cost of agency requirements for mitigation often exceeds any downstream benefits of S&C. In short, the tide has shifted away from routine S&C toward reclaiming environmental benefits through re-snagging. S&C in North Dakota is atypical in that it is accomplished in winter and does not generally affect snags below the water line, thus having minimal impact on in-stream habitat or flow.

When the search of literature became redundant, we felt we had found most useful information (or the lack thereof). There is not much, if anything, published on the economics of S&C. There is considerable literature on the practice of S&C and there is a wealth of scientific articles on technical aspects or channel geomorphology. However, the tide has shifted toward minimizing S&C to the point of re-snagging for its ecological benefits.

We reviewed several hundred reports across a range of literature types covering projects in several states and overseas. Reports on several North Dakota rivers were carefully reviewed with the following common characteristics:

- S&C is often combined with other measures, so the S&C benefits are difficult to isolate,
- agency reports are mostly general boiler plate,
- snags are environmentally beneficial,
- snags may aggravate localized flood conditions,
- livestock fences may exacerbate snagging problems,
- S&C reduces Manning's "n" (when done below the waterline),
- S&C reduces flood damages up to about the 5-year return frequency flood,

- North Dakota S&C activity is atypical, and
- S&C has a useful life of 1 to 3 years without maintenance.

Personal Contacts

After an exhaustive literature search failed to reveal much, if any, useful economic information, we contacted at least 50 individuals in water resource management positions at the Federal, state, and local levels in both the public and private sectors.

Agencies contacted included:

Federal
Corps North Central Division, St. Paul District, Missouri River Division, and Omaha District, as well as some individuals within the Corps known by the authors.
NRCS state offices in North Dakota and Minnesota.

State
Minnesota Board of Water and Soil Resources.
Minnesota DNR.
North Dakota Department of Water Resources.
North Dakota Department of Transportation.
South Dakota.

Local
Minnesota Red River Basin Watershed districts (via survey, Appendix D).
Water resource districts on the North Dakota side of the Red River.
County engineer staff in North Dakota counties.

Dr. Leitch attended the North Dakota Water 2022 Joint Summer Water Meeting and Executive Briefing on July 12th in Fargo, ND. Following the mid-morning break, the moderator announced that Dr. Leitch was in attendance and would like to visit with anyone interested in S&C. Dr. Leitch remained at the meeting venue for another 5 hours, but no one approached him with S&C concerns/ideas. He was able to visit with some water district managers and engineers during subsequent breaks.

Having exhausted our list of potential contacts in water resource management positions, we arranged a meeting with engineers from three regional engineering firms. These were individuals that would likely assist local water management districts to complete their state cost-share requests for S&C projects. We covered a short list of S&C topics during our visits with water resources managers/practicians/engineers which led us to several observations.

1. Historical occurrences of damage to bridges/roads by snags/floating debris: anecdotal, with a couple reports of specific costs to repair bridge damage attributed to woody debris. We were unable to find reports of the frequency of debris removal from bridges, or damage to bridges, only anecdotal evidence in one county.

2. Historical occurrences of cropland flooding during high frequency flood events (extent, duration, timing) exacerbated by snags: no information was provided. Nobody we talked to even mentioned cropland flooding in the absence of S&C.

3. Historical occurrences of livestock fence and utility line damage during high frequency flood events attributed to floating debris: acknowledgement that such damage could happen, but no specific instances to report.

4. Historical occurrences of built-up area high frequency flood damages exacerbated by waterborne woody debris: no information, but concern that it would be a problem in the absence of S&C.

5. Frequency of S&C: response was "routine" to "never in recent memory". Only a few reported doing S&C on a regular basis, most couldn't recall when it was last done. Generally, watershed districts on the Minnesota side of the Red River do not routinely do S&C. It is worth noting that there is no readily available funding assistance for S&C in Minnesota beyond local sources. Occasionally an agency will offer S&C through *ad hoc* volunteer programs (E.g., Sentence-to-Serve). Watersheds reported occasional debris clean-up after floods, but little if any damage to bridges or other infrastructure was reported.

   One comment from North Dakota was that some water districts "cost-share themselves into poverty when State money is available". This implies they may do S&C more often than needed due to the attraction of outside funds.

6. River miles/reaches/stretches affected by snags: information provided on one specific case (Sheyenne River in Cass County). Information on time and place of specific S&C projects wasn't readily available. We collected several invoices/bids for both S&C and debris removal, which are used below in the routine for assessing the benefits of S&C.

7. Absence of S&C imposes a safety hazard to travel: "Snags can lead to debris which can lead to bridge/road damage which can lead to fatalities." The value of a statistical life is in the ballpark of $7.5 million (FEMA 2020). We found that no lives have been lost in ND or MN in the past 10 years due to debris damaging roads/bridges. However, 1 in 5 accidental deaths (23%) are construction related. As such, there is a higher probability (i.e., a greater chance) of injury or death from S&C activity than from debris damage to bridges.

8. Are we overlooking any S&C benefits? Some respondents suggested that "Not all the benefits have been included in the BCA of S&C." However, if every effort is made to include all likely benefits, then to be accurate/objective the values of not doing S&C, or intangible environmental values held by non-local taxpayers need to be included. We assumed these outlier benefits/costs to be small on both sides of the ledger and cancel each other out.

9. What is the cost to do S&C: The goal of this overall exercise is to estimate the benefits of S&C, so we didn't spend much time on the costs. However, we were provided with information to suggest that the cost is in the ballpark of $30 to $90/CY for material removal and disposal.

10. What is the cost to repair a bridge damaged by woody debris? It is difficult to isolate the amount of damage done by woody debris from that done by ice jams, lack of maintenance, or previous incidents. One county (with over 500 bridges) reported five occurrences from 2010 to 2022 ranging in cost from $6,900 to $91,400 (average = $38,000). The condition of bridges varies from good to poor, with some either on, or eligible for, the National Register of Historic Places (bridgereports.com). The antecedent bridge condition is important when determining responsibility for repair costs.

11. What is the cost of woody debris removal from bridges? This is another instance where most of the data came from one county. Reported costs ranged from $1,700 to $5,100 (approx. average = $3000/project). One debris removal invoice from 2022 was for $10,842 for two bridges, which would up the average slightly. (Note: we used the 2022 invoice to estimate the cost of woody debris removal to be $5,000/event.)

> "Much like road ditch mowing or moldboard plowing before conservation tillage, S&C is the thing to do to maintain channel capacity. ***We've always done it this way!"***
>
> ***"***If the locals vote for it, it must be a good project."

The numerous personal contacts did not provide much specific information from which to build a numeric routine for evaluating the benefits of S&C. What we did learn was contradictory. Some do S&C as a matter of routine and say it protects bridges and saves lives, others almost never do S&C and say they haven't had bridge damage due to woody debris in their memories.

Our approach to gathering information through personal contacts was not statistically based; rather, we cast a wide net hoping to capture as much information as possible. Unfortunately, others were unable to provide useful information to assign S&C benefits. As a result, the next step is not based on rigorous sampling and subsequent statistical analysis, but on the best, reasonable estimates we were able to make from the information acquired and reviewed.

Trial Development – A Plausible Routine for S&C Benefits

Clearly one size does not fit all and there may be net positive benefits to S&C projects in North Dakota watercourses. Both the positive and negative effects of snags/snagging are extremely site specific. However, as a result of our literature review and numerous personal contacts we were able to make several reasonable, information-based assumptions with which to develop a routine for including the benefits of S&C in the ND EA. We developed numbers for S&C benefit dollar values, probabilities of S&C-related events, information about bridges in the state, and an example of S&C EA. (Note: we are open to adjusting any of these metrics if we are provided with substantiated data that supports making the adjustment.)

There are potentially many variables/parameters in an algorithm (aka technique, method, model) for estimating S&C benefits, such as:

- Channel/stream characteristics including flows at various flood levels, width, sinuosity, Manning's 'n', riparian cover/land-use, extent of blockage by woody debris, urban damages in x-year flood, and cropland damages in x-year flood.

- Bridge characteristics including design, year built, condition, capacity to pass woody debris, # daily crossings, repair/replacement cost, erosion protection in-place, debris removal costs, seasonality of use, and value of a human life.

- S&C specifics including project location relative to bridges, river miles in project, time since last S&C, equipment accessibility, and constraints/mitigation requirements.

- Chance/probability/likelihood/frequency of an event happening: see below.

Complicating the difficulties of developing estimates for the above-listed variables is that many are probabilistic, meaning there is only a chance (i.e., a probability) they will occur each year. A benefit algorithm incorporates these probabilities, some of which are joint probabilities (i.e., the second event [with a separate probability] only occurs if the first event happens; likewise, a third event only occurs if the first two events occur). This is expressed mathematically as:

$$P(A \text{ and } B) = P(A) * P(B).$$

For example, if the probability of A is 20% and the probability of B is 10%, the probability of A and B is 0.2 x 0.1 = 0.02. Sequential event C, with a probability of 0.1 would have a joint probability of 0.2x0.1x0.1 = 0.002

Given the statistical weaknesses (i.e., lack of statistical confidence) of the values of many of the variables/parameters, we do not attempt to give any false impressions of mathematical precision/accuracy. That type of precision can only be achieved through specific observations over time collected through an accepted research method. In the absence of such research, we present the following values for one stretch of S&C at one point along a watercourse—in other words, for one S&C project.

Assumptions

1. The value of a statistical human life is $10 million (rounded up from $7 to $8 million currently used by Federal agencies). Without a value, benefit analysis cannot be accomplished. Suggesting a human life is priceless changes the EA scope and direction and defeats the purpose of the EA. However, a counter argument in this case is that 23% of accidental deaths in the US are construction-related (Jones 2021), which increases the cost of preventive S&C. (Note: A reminder to readers that this assessment is done from society's [the State of ND] perspective, which clearly differs from individual perspectives of the value of human life.)

2. The cost of post-flood debris removal from bridges is roughly $3,000/event. However, we will assume the cost to be $5,000/event (as reported for two events in 2022).

3. The cost to repair debris damage to bridges is $38,000/damaged bridge. However, since bridges vary so widely in both structure and condition, some modifiers may be used for case-by-case analyses. For example, bridges in 'good' condition use 1.0x$38,000, bridges in 'fair' condition use 0.5x$38,000, bridges in 'poor' condition use 0.1x$38,000 as the portion of the cost to repair assigned to water management organizations. Most of the cost to repair a bridge in poor condition should be the responsibility of the road authority. (EA analysts are asked to enter bridge condition [and ID number] from the national bridge inventory.)

   Likewise, a 'bridge' that is two concrete culverts may cost far less to repair than a steel-structure bridge with six spans. On the other hand, the longer bridge over a larger waterway may be designed to allow larger volumes of woody debris to pass without damage. In one county with about 500 bridges, they vary in length from about 20 feet to over 1300 feet (the longest bridge is a grade-separation bridge over 1700 feet, which is not applicable to this study). To account for bridge width, use a multiplier: up to 100' use 0.5x, from 100' to 500' use 1.0x, and above 500' use 0.5x for the cost to repair.

4. Dollar values for urban damages are estimated by analyst—see below.

5. S&C in many locations is used to enhance stream navigation for both commercial and recreational uses. Given the nature of S&C in North Dakota (i.e., above the water line), it likely has little to no benefit to navigation in the state. Similarly, above the waterline, S&C does little to affect channel roughness (i.e., Manning's "n").

6. Dollar values for cropland damages are estimated by the EA model—analysts enter an estimate of acres affected (with/without damages and no double counting already protected acres). Since both seasonality and inundation affect cropland damages, these factors need to be considered if "cropland acres flooded" is more than a few (e.g., greater than 100) acres.

7. Some individuals contacted suggested there are other benefits/values to individuals both up - and down-stream. These benefits would be difficult to measure and to justify and would likely cancel out by unrecognized costs to individuals up- and down-stream.

8. There is an annual 1 in 100,000 chance/probability of loss of life at a specific bridge damaged by woody debris. There are over 4,000 bridges in the state with nearly 2,400 on rural, local roads which average 4.5 crossings/day. There is a total of about 5.6 million bridge crossings each day in the state. We did not find any evidence of flood-damaged-bridge-related fatalities in the past two decades, so, given the unlikely chance, we estimated a number. In the big picture, whether the chance is 1/10,000, 1/100,000, or 1/million, the S&C benefit value is relatively small.

9. There is a 1-in-2 chance (50%) of a debris pile at a specific bridge during each 1-in-5 flood. In other words, every other time there is a 1-in-5 flood, there is woody debris piled up at the bridge. When combined with the 20% chance of a flood, that results in a 10% chance of debris piling up at a specific bridge in any given year. Some of the people we visited with said "incidents will occur if S&C isn't accomplished" while others said in the absence of S&C no

incidents have occurred. The literature consistently reported that woody debris problems did not occur during low frequency floods.

A factor could be used to include possible debris damages during low frequency floods. Our suggestion would be to multiply the total benefit value by 1.1 to include 1-in-10 floods, by 1.04 for 1-in-25 floods, by 1.02 for 1-in-50 floods, by 1.01 for 1-in-100 floods, or by 1.17 to include all floods.

10. There is a 1-in-100 chance of a 'debris incident' causing damage to a specific bridge during a high frequency flood event. In other words, the joint (i.e., triple) probability of a 1-in-5 flood (0.2) * woody debris pile (0.5) * bridge damage 0.01 equals a 1-in-100 chance which equals a "debris incident" damage probability of 1 in 1,000.

11. S&C projects have a useful life of 5 years, or 25 years with 5% annual maintenance (the literature suggested a 5-year life with 10% annual maintenance). A project's useful life determines how many future years are used in the EA calculations. Critical to the EA calculations is the choice of a discount rate. Lower discount rates yield higher net present value of future benefits (or costs). For example, increasing the useful life to 10 years adds 86% to benefits when using a 3% discount rate, or 78% when using a 5% discount rate. We recommend using the current discount rate in the EA model.

12. S&C reduces urban flood damage resulting from floods up to 5-year return period by 10%. This generally assumes every 5-year flood (0.2 probability) with bridge debris (0.5 probability) results in urban damage. Most urban areas are protected from high frequency flooding, in which case there would be no high frequency flood damage. Analysts enter degree of existing urban area flood protection (if greater than 5-year protection, then there is no benefit to S&C). If there is no existing protection, estimate the dollar damages from a 1-in-5 flood and multiply by 0.1 for the reduction in damage and 0.1 for the likelihood of a flood + debris for a joint probability/reduction multiplier of 0.01. Analysts also enter the river distance from the debris piled bridge to the nearest built-up area.

13. S&C reduces cropland flood damage by 20% (use the EA county-specific /acre damage figure) during a 1-in-5 event. Analysts enter estimate of cropland flooded during 1-in-5 events. 20% of this number multiplied by 10% (flood + debris chance) is the cropland damage value/year (0.2x0.1=0.02).

14. The extent of snags across the channel would mainly affect navigation and will be ignored in this analysis.

15. Nearly the entire focus on S&C is to protect bridges, therefore whether a S&C project covers 1 or 10 river miles has little effect on the chance/probability of a debris pile up at a bridge. We generously assume (# 9 above) debris will pile up every other 1-in-5 flood (e.g., a 50% chance during every flood). In fact, the further upstream the S&C project is located, the lower the chance it will reduce damage to a bridge. Further refinements or adjustments to account for

abundance of riparian trees or S&C of more reaches would reduce the level of estimated benefits. For this reason, river reach length of a S&C project is not included in the algorithm.

16. Watercourse size, as measured by 1-in-5 peak flow characteristics, can affect the above assumptions. Analysts enter name of watercourse and the estimated 1-in-5 flood event peak flow at S&C project location. EA model will adjust benefit values: 1x for flows to 500 cfs, 1.5x for flows 500 to 1000 csf, and 2x for flows above 1000 csf.

NOTE: Every effort was made to acquire numbers for the above 16 assumptions, yet we were only able to provide reasonable estimates based on our review, experience, and professional guidelines. The alternative to this analysis is extensive and expensive H&H and economic modeling for each S&C project, which is cost prohibitive and why little data exist. If such modeling is accomplished, results applicable to the EA S&C benefits can be modified accordingly.

Dollar Values

Dollar values for each of the S&C benefit types were estimated based on information from the literature and personal contacts. Some might argue that it is not possible to assign dollar values to things like human life or environmental quality. To the contrary, without dollar values (or a similar metric) society (i.e., government) is unable to make wise choices for the use of scarce resources now and into the future. Sunstein (2018) makes a convincing argument that estimates should be made of the dollar values of the outcomes of government choices whenever possible. The values we use represent average or typical numbers and not minimal or extreme values. EA users can modify these values if they have sufficient, statistical justification in a case-by-case situation.

Probabilities - Every S&C benefit has an associated probability of happening (or not). On the other hand, most costs are fairly certain. For example, there may or may not be a 1-in-5-year flood next year; and, if there is a flood, there may or may not be any woody debris lodged against a bridge; and, if debris is lodged against a bridge, there may or may not be any damage; and, the damage may range from minor to catastrophic; and, a motorist may or may not suffer damage or personal injury at a damaged bridge. Likewise, urban/built-up areas and cropland areas may or may not be affected by debris-related peak flows during a high-water event. Herein lies a major difference between the views of economists and engineers. Economists assign value according to the probability an event will happen. Engineers may assume the event will occur without considering when or how often.

Bridges - All bridges are not created equal. Use the ARTBA Bridge Report (www.bridgereports.com) for data on each of North Dakota's 4,285 bridges. About 11% of the bridges in North Dakota are structurally deficient. For example, the Sheyenne River, the longest in North Dakota, is crossed by about 120 bridges, some built as early as 1907. Construction design ranges from culverts to multi-span steel trusses. The bridge inventory 'sufficiency rating' for Sheyenne River bridges ranges from 24.4 (poor) to 100 (good). Information (year built, condition, dimensions) about bridges can be found at the National Bridge Inventory Data website (https://bridgereports.com/STATE/COUNTY).

S&C Project Characteristics - S&C projects can vary from quick-and-easy clean-up on short stretches of low-flow watercourses, to extensive projects on longer stretches on high-flow and inaccessible watercourses. Snags upstream and nearer built-up areas have a higher potential for affecting high frequency flood levels, thereby increasing localized flooding damages. Snags upstream of low-lying cropland have a higher potential for contributing to flood damages. The upstream proximity of snags to bridges is an indicator of potential infrastructure damage during high frequency flooding.

S&C EA Project Example #1

5-year project life, bridge in good condition, bridge width 100' to 500', only 1-in-5 floods, peak 1-in-5 flow <500cfs, and useful life of 5 years. At 3% discount rate, the 5-year project benefit is $5715; with 5% annual maintenance the benefit is $21,733. Higher discount rates will lower the benefit.

S&C EA Project Example #2

5-year project life, bridge in good condition, bridge width >500', include all floods, peak 1-in-5 flow >1000cfs, and useful life of 5 years. At 3% the 5-year project benefit is $13,001.

Additional examples would further illustrate the modest (at best) benefits of pre-flood S&C. The assumptions are considerably skewed to show greater benefits than maybe the case.

External Review

As a precaution against missing something important or making an unreasonable assumption, we asked three economists and three civil engineers to review a draft of this document. They were offered $200 for their prompt review. Our email to them read:

> *IWI (International Water Institute) was asked by the ND Department of Water Resources to develop estimates of the value of benefits of snagging and clearing in North Dakota. The attached draft manuscript documents our efforts. As someone with experience in water resources management, please review the draft for substance and plausibility. Don't bother with minor edits, wordsmithing, or format suggestions. We'll send you a check for $200 for your prompt (by 5 pm Tuesday August 23) edit if you include a 2-page or fewer resume that we can include in the appendices to confirm your expertise! It shouldn't take you more than 30 minutes to read and comment.*

Civil engineers who provided reviews included certified engineers from three local engineering firms. A third engineer from a local firm did not respond to our request for a review. Two other engineers provided a courtesy review. Economists who provided a review included Dr. Steve Shultz, University of Nebraska at Omaha; Dr. John Bitzan, North Dakota State University; and, Dr. Ryan Yonk, American Institute for Economic Research. Review comments from external reviewers are found in Appendix D.

The three economists are all familiar with water issues in the region as well as the ins and outs of benefit-cost analysis. They were also truly arms-length reviewers with no personal or organizational bias regarding NDDWR cost-share or watershed spending. The economists were uniform in their acceptance of the concepts, assumptions, and routine.

Dr. Yonk concluded: “Overall I find the report well-constructed and consistent with establishing a reliable and valid measure that can be used in the policy process. I have no substantial concerns about the method or approach used in the report.” He also commented that the report would be improved with additional structure and organization (which we have attempted to do).

Dr. Shultz concluded: “It is a very thorough and detailed review of the costs and benefits of S&C.... The assumptions and framework suggested for a Plausible Routine for S&C Benefits appear reasonable.” He suggested we include more information on S&C projects in North Dakota over the past 5 years (we reviewed such information and did not find anything helpful to establish benefit values.).

Dr. Bitzan concluded: “...the proposed method for modeling snagging and clearing benefits is very reasonable, providing plausible estimates of benefits. The authors use sound techniques by implementing probability theory, using best estimates of economic costs and values, and taking time value into account.” He pointed out a math error and made a couple of suggestions that we incorporated.

Unlike the economists, the three engineers all had ties to engineering firms that have a direct interest in NDDWR cost-share and local spending on water management. We asked for their reviews because of

these connections which may have dampened their responses when commenting on specifics in the draft (and led to one engineer not responding). The engineers' review comments were largely subjective with some specific suggestions.

- "I can't dispute the economics or estimates..."
- "I'd recommend including photos..." (reviewer provided several log jam and bridge damage photos)
- "...downstream channel reaches are geologically younger and have less channel capacity than upstream reaches."
- "Didn't see any glaring holes and can see where a wide range of opinions exist."
- "Regarding the overall paper—very well written."
- "...use a 'prove it' metric....If and only if the problem exacerbates or diminishes reach flow by, for example, 25%. In that instance the benefits would be deemed reasonable....and eligible for S&C cost share."

Two engineers that were not employed by local firms, and were not asked for a formal review, generally agreed with the 90+ percent that we contacted who asserted routine, pre-flood S&C is largely unnecessary. Neither the economists nor the engines offered any challenges to our 16 underlying assumptions about values or probabilities. We appreciate their attention to detail and suggestions for improving the narrative.

Summary and Conclusions

In search of valid dollar values for snagging and clearing projects, we did an extensive literature review and contacted over 50 water resources professionals in the region. Although there were opinions expressed, neither the literature review nor visits with water resources professionals supplied any specific information or data about the economic benefits of snagging and clearing from the State's perspective. Based on what we did learn and on our own extensive experience, we developed 16 assumptions about dollar values and probabilities of events and outcomes related to pre-flood S&C in North Dakota. A small number of anecdotal instances helped to book-end dollar values, although we tended to err on the side of finding more generous benefits for S&C. Our estimates of event probabilities were also skewed toward finding more generous benefits for S&C.

S&C in North Dakota is atypical in that it is performed during the winter months when only materials above the frozen waterline are removed. This reduces the potential for negative, in-stream, environmental effects.

A review of our methods and suggested values and probabilities by economists and engineers resulted in minor changes to the draft document. We expected more critical input about our 16 assumptions, but none was provided.

Two simple examples of estimating the economic benefits of S&C showed that, given the 16 assumptions, the present value of benefits may not exceed the costs.

Overall S&C, as a routine channel improvement process, is not widely practiced in North Dakota or on the Minnesota side of the Red River. The negative effects of not doing routine S&C are not widely experienced. Other conclusions include:

- Costs of S&C have gone up with increasing environmental concerns.
- Nationwide, pre-flood S&C has been replaced by re-snagging.
- Location, design, and condition of bridges are important variables in estimating the benefits of S&C.
- Urban areas are mostly protected from nuisance flooding, such as that caused by woody debris.
- S&C benefits are highly site specific.
- Expenditure on H&H studies, extensive snag inventories, or economic modeling is not feasible for each project, given the expected low project benefits.
- The economic benefits of routine, pre-flood S&C are low to modest.

Our assumptions leaned toward more favorable values for the benefits of S&C. It would be difficult to make them more favorable and still remain objective. The greatest obstacle to higher benefits is the probability of events, especially the joint (or triple) probability of two (or three) events all occurring. The claim that "bridge damage will occur" needs to be tempered by the chances (probability) of, first a flood, second woody debris pileup, and third damage.

> You will win $500 million in the lottery! But only if you win the lottery, and the chance of that is about 1 in 300 million. Probabilities are crucial to estimating future values.

Changing some of the probabilities will affect the outcome. For example, if the probability of high frequency flooding were increased from 1-in-5 to 1-in-3, the value of benefits would increase by approximately 65%. These types of adjustments can be made over time as empirical evidence becomes available to support changing the probabilities.

Recommendations

We recommend incorporating the 16 assumptions into an algorithm within the existing, on-line EA fillable platform. Refinement of the values and probabilities can be made as sufficient, statistically sound evidence is provided. Adjustments to the multipliers (e.g., bridge condition, stream flow) should also be made over time with evidence and experience.

Since the most interest in pre-flood S&C is to protect bridges, NDDWR should encourage woody debris resistant bridge structure research and development followed by a review of ND Department of Transportation design regulations.

Since our conclusions are based on experience and anecdotes, NDDWR should support a statistically sound, empirical study of the implications of not doing pre-flood S&C as a routine procedure. A possible study design would be to randomly select 100 bridges and monitor them for ten years keeping track of the variables identified in this report.

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[2] While there are hundreds, if not thousands, of published sources that reference S&C, we have only listed a handful of representative reports. The bulk of recent literature is about the benefits of snags and restoring streams, but it still lacks economic evidence.

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Appendices

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Conservation Practice Effects

Clearing & Snagging (Ft) 326

Definition: **Removal of vegetation along the bank (clearing) and/or selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams.**

Major Resource Concerns Addressed: **Risk to life and property, stream access.**

Benchmark Condition: **Woody debris from previous flood event creates hazards and access to stream.**

Date: **October, 2016** **Location:** **Oregon**

Positive Effects	Negative Effects
Soil • **Removal of undesirable obstructions will prevent streambank erosion by eddies or redirection of flow.** **Water** • **Removal of obstructions will reduce flooding.** **Air** • **None** **Plants** • **None.** **Animals** • **None** **Energy** • **None.** **Human** • **Increased water access and management opportunities.** • **Less time and labor managing debris in waterways.** • **Increase the property value (real estate) of your property.** • **Prevent off-site negative impacts.** • **Comply with environmental regulations.** • **Save time, money and labor.** • **Promote family health and safety.** • **Make land more attractive and promote good stewardship.** • **May be eligible for cost share.** • **Increased profitability in the long run.**	**Land** • **Cultural resources may be damaged with mechanical treatment.** • **Land may be utilized more intensely.** • **Land in production may increase.** **Capital** • **No additional field equipment required.** • **Heavy equipment during installation.** • **Annual operation and maintenance costs to clean-out debris, maintain vegetation, reshape slope.** **Labor** • **None.** **Management** • **None.** **Risk** • **Removal of snags or large wood may re-suspend sediments into the stream.** • **Removal of shade-producing canopy will increase in surface water temperature, especially during low flows.** • **Increase in noxious or invasive plants with soil disturbance.** • **Depending on wildlife species, availability of food sources, cover/shelter and habitat may be lost with removal of in-stream materials.** • **Clearing of bank vegetation and in-stream wood generally increases flow velocities and decreases slow-water**

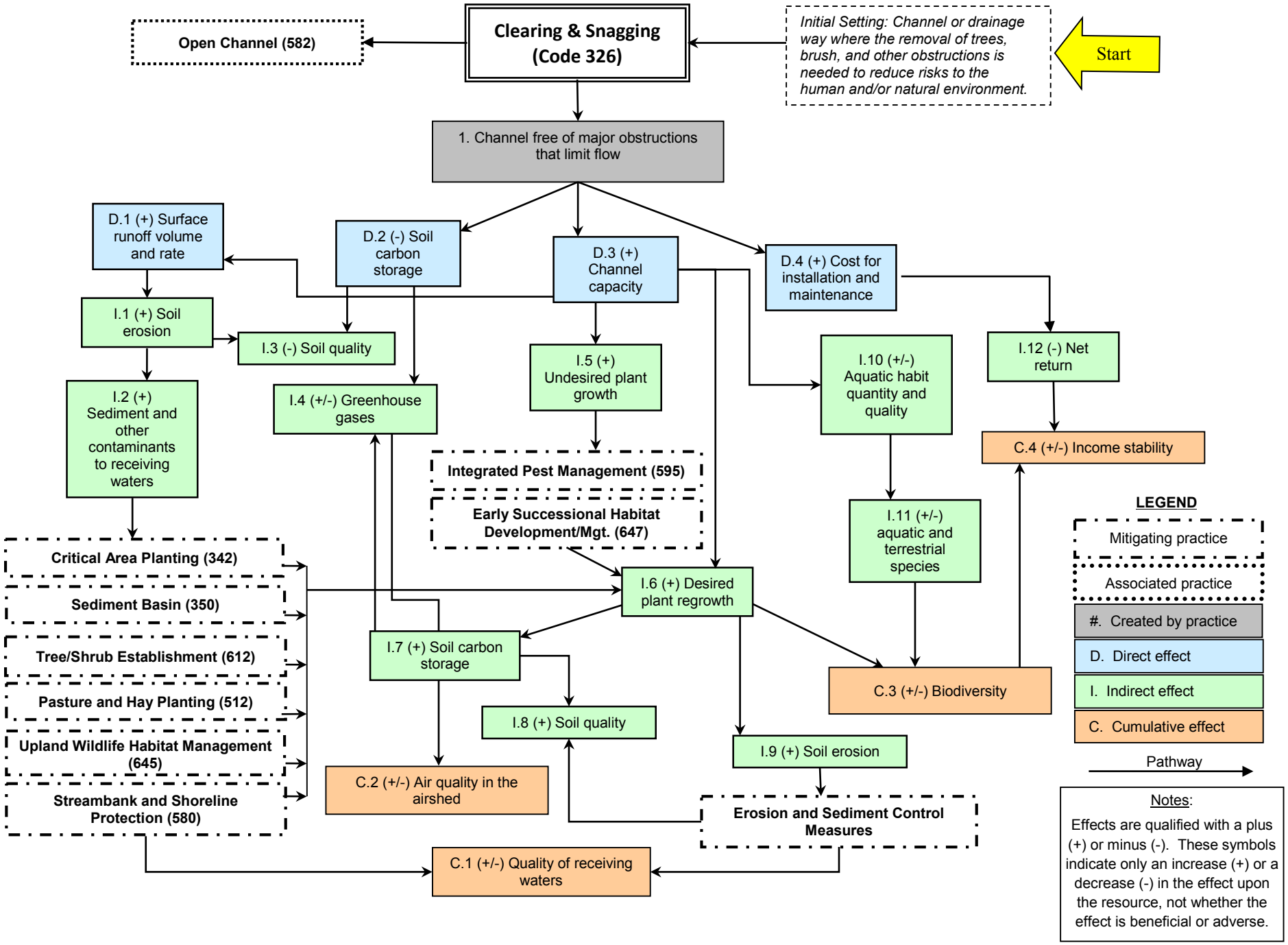
	habitat for some fish and wildlife. • **Removing woody debris from stream reduces aquatic habitat.**
<u>Net Effect:</u> Improved water conveyance and access at a moderate cost.	

Commonly Associated Practices: Access Control, Critical Area Planting, Obstruction Removal, Spoil Spreading, Stream Habitat Improvement and Management, Streambank and Shoreline Protection.

Note: This worksheet contains general talking points for the conservation planner to discuss with the land user. It is the first step towards an economic or financial analysis. The second step would include identifying a specific site for analysis at the farm or field level, editing the template for local conditions, adding units and quantities of farm inputs and outputs. The third step in the economic analysis is to place a dollar value on as many variables as possible, put all units in the same time frame, using amortization ($/Acres/Year) or net present value ($/Acre), so benefits and costs can be compared. The fourth and final step would be to combine several conservation practices into a conservation system, which is how most conservation practices are applied at the field level. Data for the worksheet comes from the land user, conservation planner, technical specialist and local agricultural supply vendors and contractors. See Economics Technical Note: TN 200-ECN-1, Basic Economic Analysis Using T-Charts (August 2013) for more information.

NRCS CONSERVATION PRACTICE EFFECTS - NETWORK DIAGRAM

May 2016



Effects of NRCS Conservation Practices - National

Clearing & Snagging

Code: 326
Units: ft.

Removal of vegetation along the bank (clearing) and/or selective removal of snags, drifts, or other obstructions (snagging) from natural or improved channels and streams

Typical Landuse:	C-Crop	F-Forest	R-Range	P-Pasture	Pr-Protected	FS-Farmstead	D-Developed	W-Water	O-Other	AL-Aso Land
	C	F	R	P	Pr	FS	D	W	O	AL

Soil Erosion	*Effect*	*Rationale*
Soil Erosion - Sheet and Rill Erosion	0	Not Applicable
Soil Erosion - Wind Erosion	0	Not Applicable
Soil Erosion - Ephemeral Gully Erosion	0	Not Applicable
Soil Erosion - Classic Gully Erosion	0	Not Applicable
Soil Erosion - Streambank, Shoreline, Water Conveyance C	2	Removal of undesirable obstructions will prevent bank erosion by eddies or redirection of flow.
Soil Quality Degradation		
Organic Matter Depletion	0	Not Applicable
Compaction	0	Not Applicable
Subsidence	0	Not Applicable
Concentration of Salts or Other Chemicals	0	Not Applicable
Excess Water		
Excess Water - Seeps	0	Not Applicable
Excess Water - Runoff, Flooding, or Ponding	2	Removal of obstructions will reduce flooding.
Excess Water - Seasonal High Water Table	0	Not Applicable
Excess Water - Drifted Snow	0	Not Applicable
Insufficient Water		
Insufficient Water - Inefficient Use of Irrigation Water	0	Not Applicable
Insufficient Water - Inefficient Moisture Management	0	Not Applicable
Water Quality Degradation		
Pesticides in Surface Water	0	Not Applicable
Pesticides in Groundwater	0	Not Applicable
Nutrients in Surface water	0	Not Applicable
Nutrients in Groundwater	0	Not Applicable
Salts in Surface Water	0	Not Applicable
Salts in Groundwater	0	Not Applicable
Excess Pathogens and Chemicals from Manure, Bio-solic	0	Not Applicable
Excess Pathogens and Chemicals from Manure, Bio-solic	0	Not Applicable

Excessive Sediment in Surface Water	-2	Removal of snags or large wood may re-suspend sediments into the stream.
Elevated Water Temperature	-1	Removal of shade-producing canopy will lead to an increase in surface water temperature, especially during low flows.
Petroleum, Heavy Metals and Other Pollutants Transporte	0	Not Applicable
Petroleum, Heavy Metals and Other Pollutants Transporte	0	Not Applicable
Air Quality Impacts		
Emissions of Particulate Matter (PM) and PM Precursors	0	Not Applicable
Emissions of Ozone Precursors	0	Not Applicable
Emissions of Greenhouse Gases (GHGs)	0	Not Applicable
Objectionable Odors	0	Not Applicable
Degraded Plant Condition		
Undesirable Plant Productivity and Health	0	Not Applicable
Inadequate Structure and Composition	0	Not Applicable
Excessive Plant Pest Pressure	1	Noxious or invasive plants can be removed and the area replanted with appropriate species.
Wildfire Hazard, Excessive Biomass Accumulation	0	Not Applicable
Fish and Wildlife - Inadequate Habitat		
Inadequate Habitat - Food	-2	Depending on species, availability of food sources may be lost with removal of in-stream materials.
Inadequate Habitat - Cover/Shelter	-2	Depending on species, availability of cover will be lost with removal of in-stream materials.
Inadequate Habitat - Water	0	Clearing of bank vegetation and in-stream wood generally increases flow velocities and decreases slow-water habitat complexity.
Inadequate Habitat - Habitat Continuity (Space)	-2	Removing woody debris from stream reduces aquatic habitat.
Livestock Production Limitation		
Inadequate Feed and Forage	0	Not Applicable
Inadequate Shelter	0	Not Applicable
Inadequate Water	0	Not Applicable
Inefficient Energy Use		
Equipment and Facilities	0	Not Applicable
Farming/Ranching Practices and Field Operations	0	Not Applicable

CPPE Practice Effects:	
5 Substantial Improvement	*0 No Effect*
4 Moderate to Substantial Improvement	*-1 Slight Worsening*
3 Moderate Improvement	*-2 Slight to Moderate Worsening*
2 Slight to Moderate Improvement	*-3 Moderate Worsening*
1 Slight Improvement	*-4 Moderate to Substantial Worsening*
	-5 Substantial Worsening

TO: RRV ND Water Resource Districts

FROM: Chuck Fritz, International Water Institute

1. Approximately how many miles of S&C projects has your District done over the past 5 years, by river?

   _____ None

   River_____ River_____

   Miles of S&C _____ Miles of S&C_____

   Years of S&C_____ Years of S&C_____

   River_____ River_____

   Miles of S&C_____ Miles of S&C_____

   Years of S&C_____ Years of S&C_____

2. Have you had any instances of waterborne debris causing damage to bridges or other infrastructure in the past 5 years? If yes, please provide a brief description.

3. Have you had any instances of waterborne debris causing increased water levels that caused damage to cropland in the past 5 years? If yes, please provide a brief description.

4. Have you had any instances of waterborne debris causing increased water levels that caused damage in urban areas? If yes, please provide a brief description.

5. Have you had any instances of waterborne debris that resulted in personal injury to people traveling on flood-prone roads? If yes, please provide a brief description.

6. Approximately how much do you spend on S&C/year?

7. Do you have any comments about snagging & clearing you think might help us estimate the benefits?

8. Respondent's name_____ Phone #_____

Please don't spend a lot of time responding to these questions—approximations are fine. If I need more context or information, I'll give you a call to discuss. THANK YOU!

Review Report

To: Jay A. Leitch & Charles Fritz
From: Ryan M Yonk PhD, American Institute for Economic Research
Date 8/23/2022
Title: Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool…

Review:

Per our Discussion, I was asked to review the document identified above primarily for substance and plausibility. My main point of evaluation focuses on whether the presented approach to incorporating cost-benefit analysis into the Economic Assessment for water resources project cost sharing.

As such my comments are primarily focused around three primary issues that would need to be satisfied for such an approach to be useful. First is the proposed approach rooted in the larger literature and does that literature suggests that such measurement is appropriate for the policy decision being made? The second set of issues deal with questions of reliability and validity. First, is the measure reliable? Does the measure produce similar results using similar data? Second, is the measure valid? Does the method of evaluation proposed actually measure what it claims to be measuring?

Issue 1: Appropriateness of the measure presented and connection to a broader literature:

The authors provide a substantial review of the current state of both the policy issue at stake, Snagging and Clearing (S&C) as well the academic and policy literature about the implementation of Snagging and Clearing.

They provide a clear review of the current state of S&C in North Dakota and highlight both the stated purposes of the activity and highlight the controversy that surrounds its use in the wider literature. Additional information on the necessity of including an Economic Assessment in the decision to cost share these projects might be useful to make clear the purpose of the report and draw out why the findings are of substantial importance.

Despite this suggestion for some expansion, I find both the review of the wider literature and the description of the motivation for the report well executed and sufficient for the purposes of the report as I understand it.

Issue 2: Reliability

Given the seeming desire of the granting agency to increase the use of Economic Analysis of S&C projects prior to cost share funds being expended, a reliable measure is paramount. The Method described on pages 13-16 convinces me that the application of the approach would

yield reliable measures so long as the root data were considered reliable. I found no evidence of undo discretion that might allow for unreliability.

As such the proposed approach meets the standards for a reliable measure.

Issue 3: Validity

At the core of this report is the question of the validity of the measure proposed. The authors starting on page 3 and running to page 11 provide a detailed approach for how they identified what they believe are valid measures of the economic impacts. They provide a multipronged approach to identifying what should be measured and why they believe those measures are good markers of the benefit of the S&C.

Their approach which is focused both on using pre-existing literature as well as practitioner information and interviews provides a substantial amount of evidence about the impacts of S&C activities.

The presentation of the literature is well executed, and the included studies appear to make it clear that the overall impact of the S&C on economic indicators can both be estimated and that their proposed approach yields results consistent with the overall literature. Their practitioner data collection yields less conclusive although illuminating evidence that suggests decisions about S&C are not primarily about economic risk but instead are driven by funds availability and local preference.

I find the evidence presented compelling and believe that the proposed measure is likely to produce estimates about the economic impacts of the policy. My only quibble is in the presentation, where additional structure to the literature used could better establish the connection. I would further suggest that a summary synthesis of the literature covered be included to draw all the disparate studies together more clearly.

Conclusion:

Overall I find the report well-constructed and consistent with establishing a reliable and valid measure that can be used in the policy process. I have no substantial concerns about the method or approach used in this report.

Ryan M Yonk PhD
Senior Research Faculty
American Institute for Economic Research

August 19, 2022.

I have reviewed the draft report by Leitch and Fritz (Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool for Water Resources Cost-Sharing

I provide both overall comments and more detailed suggestion of the report below. This is followed by a CV describing my background and expertise regarding economic analyses of water resources and natural resource management projects.

Sincerely

Steven Shultz, PhD.
Professor of Real Estate and Land Use Economics.
Finance Banking and Law Dept.
College of Business Administration
University of Nebraska at Omaha
Mail address: 6708 Pine Street, Omaha, NE, 68132
Phone: 402-554-2810
Email: sshultz@unomaha.edu

My Overall Comments on the Leitch/Fritz Report:

It a very thorough and detailed review of the costs and benefits of S&C activities. It clearly documents that the cost effectiveness of S&C is doubtful and the likely reason why S&C is not promoted and/or funded by the Federal water resources/natural resource management agencies nor by the adjacent State of Minnesota.

The assumptions and framework suggested for a Plausible Routine for S&C Benefits appear reasonable.

The main recommendation I have to improve the report is for the authors to analyze/review/report on the details of all S&C projects in North Dakota that have occurred over the last 5 years with a particular emphasis on the economic analyses of those projects that cost over $200,000 and required an economic analysis.

Finally, it is my opinion that the authors should include in their conclusions section a more clear and forceful recommendation that the North Dakota discontinue the policy of cost-sharing S&C activities.

Some more detailed/specific suggestions about the report are contained

More Specific Comments and Suggestions:

The acronym EA for Economic Assessment appears on page 3 (background section) before it is defined below in the methods section. Probably better to replace EA process with economic assessments

In the literature review page 4 the term "re-snagging" is not defined/explained to the reader (promoting re-snagging for environmental purposes

Page 10. Elaborate briefly on the statement that North Dakota S&C activity is atypical

Comment box on page 11 stops abruptly mid-sentence

Page 14 point 5 (S&C in many locations is used to enhance stream navigation for both commercial and recreational uses. Given the nature of S&C in North Dakota (i.e., above the water line), it likely has little to no benefit to navigation in the state.

But doesn't S&C take place in winter when water levels are a their low for the year so that the effect of the S&C on higher flow summer months will have an impact on improving navigation and recreation?

Incidences and details of North Dakota S&C projects.

I think the report would benefit greatly if you could summarize th S&C projects in North Dakota that have been funded in the last 5 years. Locations (types of rivers) and costs. Do S*C projects focus on the main flood prone waterways in the State or are they just as common on small streams in rural parts of the State without a lot of flood damage?

Similarly, I did not see anywhere in the report a summary of how much money North Dakota actually spends on the S&C cost shares.

This issue is raised on page 16 (S&C Project Characteristics)…."snags upstream near built up areas have a higher potential of effecting high frequency floods: which justifies you characterizing the location recent S&C projects in the State"

And, it would be interesting to se the EA (verbatim or summarizes) of recent S&C projects in North Dakota that cost over $200,000. What the approaches and economic benefit values they put on these projects

Review of "Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool for Water Resources Cost-Sharing" – John Bitzan

This study uses (1) an extensive review of literature, (2) interviews of individuals in water resource management positions at the Federal, state, and local levels, and (3) economic/statistical theory to develop a method for estimating the benefits of snagging and clearing of North Dakota waterways.

Their literature review of studies at the Federal and state levels provides a lot of useful information on the types of benefits that snagging and clearing may have. Potential benefits mentioned in studies reviewed by the authors included reduced flood damage to cropland and urban areas, reduced transportation infrastructure (road and bridge) damage, reduced debris at bridges, reduced damage to livestock fences and utility lines, and reduced safety hazards. But, as the authors note, there is very little information available that quantifies these potential benefits. In addition, as the authors note, there has been a shift in the literature toward examining the benefits of re-snagging, as an awareness of environmental aspects of snags has developed.

Moreover, personal interviews conducted by the authors highlight the infrequency and disagreement about the extent to which such benefits are realized. The authors note that personal contacts from places that perform snagging and clearing on a routine basis often note the benefits, while those from places that don't perform snagging and clearing say they haven't experienced major problems from not doing it.

Given the lack of information available that quantifies benefits, and the large costs that would be realized from a detailed modeling effort, the proposed method for modeling snagging and clearing benefits is very reasonable, providing plausible estimates of benefits. The authors use sound techniques by implementing probability theory, using best estimates of economic costs and values, and taking time value into account.

Minor comments:

- Under assumptions, in #9, I think the value to multiply the total benefit value by for 1-in-25 floods should be 1.04 (not 1.025). That would make the number 1.17 for all floods.
- Under assumptions, in #10, I'm not sure where the probability of bridge damage given wood debris pile at the bridge is from (I assume that the probability of bridge damage given woody debris pile at the bridge is 0.1). This would give prob damage = prob of 1-in-5 flood of (0.2) * prob of woody debris pile given flood (0.5) * prob damage given woody debris pile (0.1) = 0.01 (or 1 in 100)
- Under assumptions, # 13, earlier in the study you note the seasonality of flooding and how that might mean it doesn't have a big effect on cropland. Could the cropland flood damage number be smaller if probability that a flood occurs during a time crucial to crops is taken into account?
- In the example table, for Urban, I would explicitly show that the $50,000 estimate is multiplied by probability of a flood and debris (10%) and by the 10% reduction in damages.
- In the example table, for Crop, I would show how you got from $8,000/acre for 100 acres to a damage of $10,000. Then explain that this is multiplied by .2 (reduced damage from s&c) and by .1 (flood and debris probability) to get $200 per year.

APPENDIX C

REPORT SUMMARY:

Incorporating Snagging and Clearing into North Dakota's Economic Assessment Tool for Water Resources Cost-Share Program Administration

November 2022

Dr. Jay Leitch

Charles Fritz

International Water Institute

GOAL

Identify existing or develop a process, including metrics, to incorporate the economic benefits of snagging and clearing (S&C) into ND's Economic Assessment Worksheet for water resources projects.

METHODS

1. Literature Review
2. Personal Contacts
3. Trial Development
4. External Review

COMMON LITERATURE CHARACTERISTICS

- ✓ Benefits are difficult to isolate (S&C is often combined with other measures)
- ✓ Mostly "boiler plate"
- ✓ Aggravate localized flooding conditions (high freq. floods)
- ✓ Fences may exacerbate snagging problems
- ✓ Reduces Manning's "n" when done below the waterline
- ✓ Reduces flood damages up to about the 5-year return frequency
- ✓ Mostly subjective/generalization about S&C benefits
- ✓ Snags/re-snagging = environmentally beneficial

PERSONAL CONTACT OBSERVATIONS

- ✓ No useful information to add to the economic analysis of benefits
- ✓ Difficult to isolate the damage amount caused by woody/floating debris
- ✓ ANECDOTAL damages to bridges and roads, cropland, livestock fences, and utilities

- Concern that these damages would be a problem in the absence of S&C (no frequency or probability specifics)
- Frequency of S&C activity ranged from "routine" to "never in recent memory" (Red River Basin ND vs MN)
- ~$30 - $90/cubic yard of material removed
- No recognition of prior bridge condition
- Absence of S&C imposes a safety hazard to travel

TRIAL DEVELOPMENT - 16 S&C BENEFIT ASSUMPTIONS

- Dollar Values – Based on literature, personal contacts, and experience
- Probabilities – Every S&C benefit has an associated probability of occurring (or not)
- Bridges – Of ND's 4,200 bridges, all are NOT created equal (about 11% of ND bridges are "structurally deficient")
- S&C projects - Vary from quick-and-easy clean-up to extensive projects on high-flow, inaccessible watercourses.
- Extremely generous in favor of higher S&C benefits

PROJECT EXAMPLES

"S&C benefits are nearly as elusive as winning the lottery. Could be BIG when it happens, but its extremely rare."

Example #1

- 5-year project life
- Bridge in good condition
  - Width 100'-500'
- 5-year life @ 3% discount = $5,715

Example #2

- 5-year project life
- Bridge in good condition
  - Width >500'
- Include ALL floods (peak 1-in-5 flow. >1,000cfs)
- 5-year life @ 3% discount - $13,001

EXTERNAL REVIEW

- ✓ **3 Civil Engineers (local engineering firms)**
- ✓ **3 Resource Economists**

PRE-COMMISSION PRESENTATION QUESTIONS

What data were used to estimate benefits?

BRIDGE REPAIR

Year	Project/# of Bridges	Amount	Details
2010	MS1003	$26,000	None
2011	FL1103	$58,200	None
2019	15-22	$100,000 ($10K) for S&C)	$100K + $10K for S&C
2020	2	$8,700	Twp Bridges on Wild Rice
2020	?	$6,900	Bridges on Wild Rice

Unadjusted Average = $32,240

Used $38,000/Bridge Repair in Assumption #3

APPENDIX D

NORTH Dakota | Water Resources
Be Legendary.

MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Andrea Travnicek, Ph.D., Secretary
SUBJECT: SWPP – Capital Repayment, REM rates, and SWA Budget for 2023
DATE: November 18, 2022

Under the agreement for the Transfer of Management, Operations, and Maintenance Responsibilities for the Southwest Pipeline Project (SWPP), (Transfer Agreement) the Southwest Water Authority (SWA) must prepare a budget by December 15 of each year and submit it to the Secretary of the State Water Commission (Commission). This budget is deemed approved unless the SWA is notified of the Commission's disapproval by February 15. The budget for 2023 was received on November 9, 2022.

Water rates are a primary component of the SWA's budgeting process. The Commission approves the Capital Repayment rate and the reserve fund for Replacement and Extraordinary Maintenance (REM) rate explicitly by Commission action.

Capital Repayment Rate:
Capital Repayment portion of the water rate collected is currently returned to the Resources Trust Fund (RTF) on a monthly basis. An amendment to the Transfer Agreement that transferred the operations and maintenance of the SWPP to the SWA established the Consumer Price Index (CPI) in effect on September 1 (August CPI) as the basis for determining the Capital Repayment rate. The September 1, 2022, CPI adjustment results in a 8.25 percent increase in the Capital Repayment rate for 2023. Based on that adjustment, the Capital Repayment rate for contract customers increases from $1.32 per 1,000 gallons to $1.42 per 1,000 gallons, rural customer's Capital Repayment rate increases from $40.12 per month to $43.43 per month, and the Capital Repayment rate for SWPP customers that tie into the Missouri West Water Sytem increases from $31.78 per month to $34.40 per month. The SWA Board of Directors approved the 2023 water rates along with the above Capital Repayment rates on November 7, 2022. The 2023 budget estimates depositing $6.2 million in Capital Repayment from all SWPP customers into the RTF.

The SWA's 2023 budget proposes that the oil industry contracts remain $12.00 per 1,000 gallons, unchanged from the 2022 rate. The Capital Repayment for general oil industry rate is $4.00 per 1,000 gallons. For SWA's water depot east of Dickinson, the Capital Repayment rate is $3.00 per 1,000 gallons.

REM Rate:

The REM rate adjustment and guidance for using REM funds is not spelled out explicitly in the Transfer Agreement. The Transfer Agreement states that the REM reserve fund shall be accumulated with interest and maintained in an amount to be determined by the Commission and also the Commission shall determine whether or not a proposed project is replacement or extraordinary maintenance.

Action was taken by the Commission in relation to the SWPP REM fund at the August 2022 Commission meeting to provide guidance on the definition of "Replacement" and "Extraordinary Maintenance" in SWPP's REM and the level to which the SWPP's REM fund provides for Extraordinary Maintenance expenses and replacement expenses for Capital Projects. Based on the sustainability analysis completed by Department of Water Resources staff in consultation with SWA, annual REM rate increases are needed to provide for 100 percent of the Extraordinary Maintenance expenses and a portion of the replacement expenses for Capital Projects.

In the Transfer Agreement, the base rate for REM was set at $0.30 per 1,000 gallons for contract customers and $.10 per 1,000 gallons for rural customers. The REM rate for rural customers has remained at $.10 per 1,000 gallons to date since the Transfer Agreement was signed on December 21, 1995. However, rural customer's water rate includes the contract REM rate in addition to the rural REM rate. REM rate for contract customers was increased to $0.35 per 1,000 gallons in 1999. Since then, the REM rate has increased a number of times, ultimately to the rate of $0.70 per 1,000 gallons where it had remained since 2018. At the SWA Board meeting on November 7, 2022, water rate with REM rate increases as follows was approved for 2023.

Rate	2022 Rate	2023 Rate
Contract - Transmission REM	$0.70	$0.76 (+ 8.60%)
Rural – Transmission +Distribution REM	$0.80	$0.87 (+ 8.75%)

DWR staff has consulted with SWA during the 2023 budgetting process and agree with the rate increases approved by the SWA Board. The rate adjustment is in accordance with

the REM rate adjustments necessary to meet the REM guidance the Commission approved in August 2022 based on the sustainability analysis completed by DWR staff. The REM rate will need to be evaluated annually to determine if the proposed rate increases are on track to provide for 100 percent of the Extraordinary Maintenance expenses and a portion of the replacement expenses for Capital Projects.

Included in the SWA's budget is the budget for the REM funds. The estimated beginning balance in REM funds for 2023 is $24.0 million; estimated income for 2022 is $2.25 million; estimated expenses is $7.9 million, with an estimated year end balance of $22.8 million taking into account the $4.5 million State Fiscal Recovery Fund grant amount.

The budgeted expenses for 2023 from the REM fund include:

- Pump, and motor replacements;
- Pipe relocation in road rights-of-way;
- Reservoir repairs;
- Recoating of Davis Buttes reservoir;
- Metallic line assessment;
- Repairs and replacement of Contract 2-3A raw water line near City of Taylor;
- Replacement of press plate cloth covers, and a pump at the Residuals Handling Facility;
- Replacement of turbidity meters, ozone generation system, ultra filtration modules, second stage reverse osmosis membranes, and roof repairs at the Oliver Mercer North Dunn water treatment plant

The REM rate for general oil industry rate is $4.00 per 1,000 gallons. For SWA's water depot east of Dickinson, the REM rate is $3.00 per 1,000 gallons. Both rates are unchanged from 2022.

Overall Water Rate:

The SWA's water rate for the contract customers in 2023 increases from $5.71 per 1,000 gallons to $5.87 per 1,000 gallons. The increase of $0.16 per 1,000 gallons is comprised of a $0.10 per 1,000 gallons increase in Capital Repayment rate, and a $0.06 per 1,000 gallons in REM rate.

The minimum monthly rate for rural customers in 2023 is increasing from $52.01 to $55.32. The breakdown of the monthly minimum is $43.43 towards Capital Repayment and $11.89 towards the operations and maintenance fee. The usage rate for the rural customers increased from $6.40 per 1,000 gallons to $6.47 per 1,000 gallons. The increase of $0.07 is for the increase in REM rate.

Tables below show the summary of the Capital Repayment and REM rates.

Capital Repayment Rates

Customer	2022 Rate	2023 Rate	Change	Percentage Change
Contract Customer	$ 1.32	$ 1.42	$ 0.10	8.25%
SWA Rural Customer	$ 40.12	$ 43.43	$ 3.31	8.25%
Morton County Customer	$ 31.78	$ 34.40	$ 2.62	8.25%
Oil Industry Rate - SWA Depot	$ 3.00	$ 3.00	$ -	0%
Oil Industry Rate - Others	$ 4.00	$ 4.00	$ -	0%

REM Rates

Customer	2022 Rate	2023 Rate	Change	Percentage Change
Contract Customer	$ 0.70	$ 0.76	$ 0.06	8.60%
SWA Rural Customer	$ 0.80	$ 0.87	$ 0.07	8.75%
Morton County Customer	$ 0.80	$ 0.87	$ 0.07	8.75%
Oil Industry Rate - SWA Depot	$ 3.00	$ 3.00	$ -	0%
Oil Industry Rate - Others	$ 4.00	$ 4.00	$ -	0%

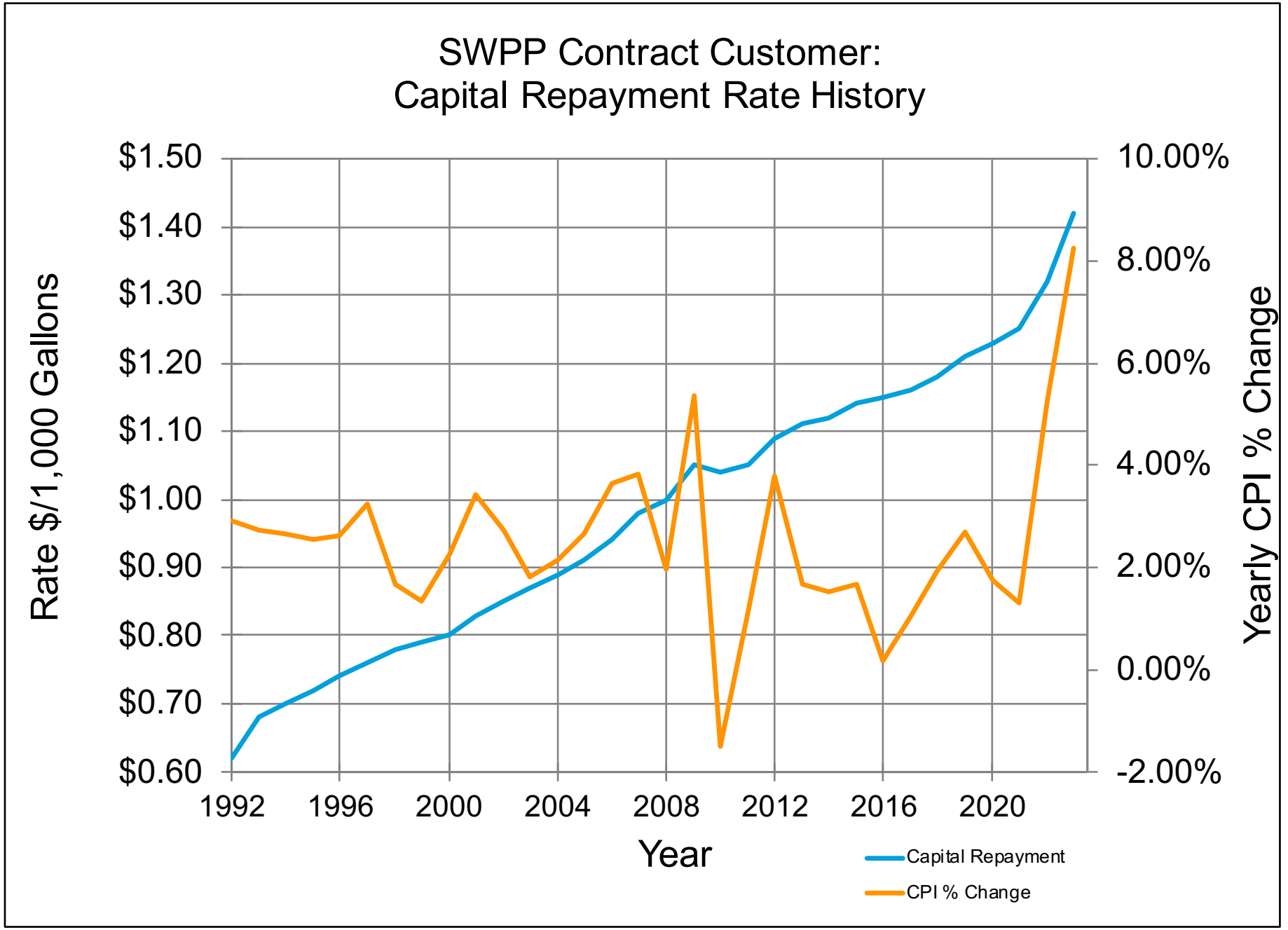
Budget projections indicate the SWA will end 2023 with a cash balance that would be sufficient to cover 8.2 months of expenses in their operations and maintenance reserve.

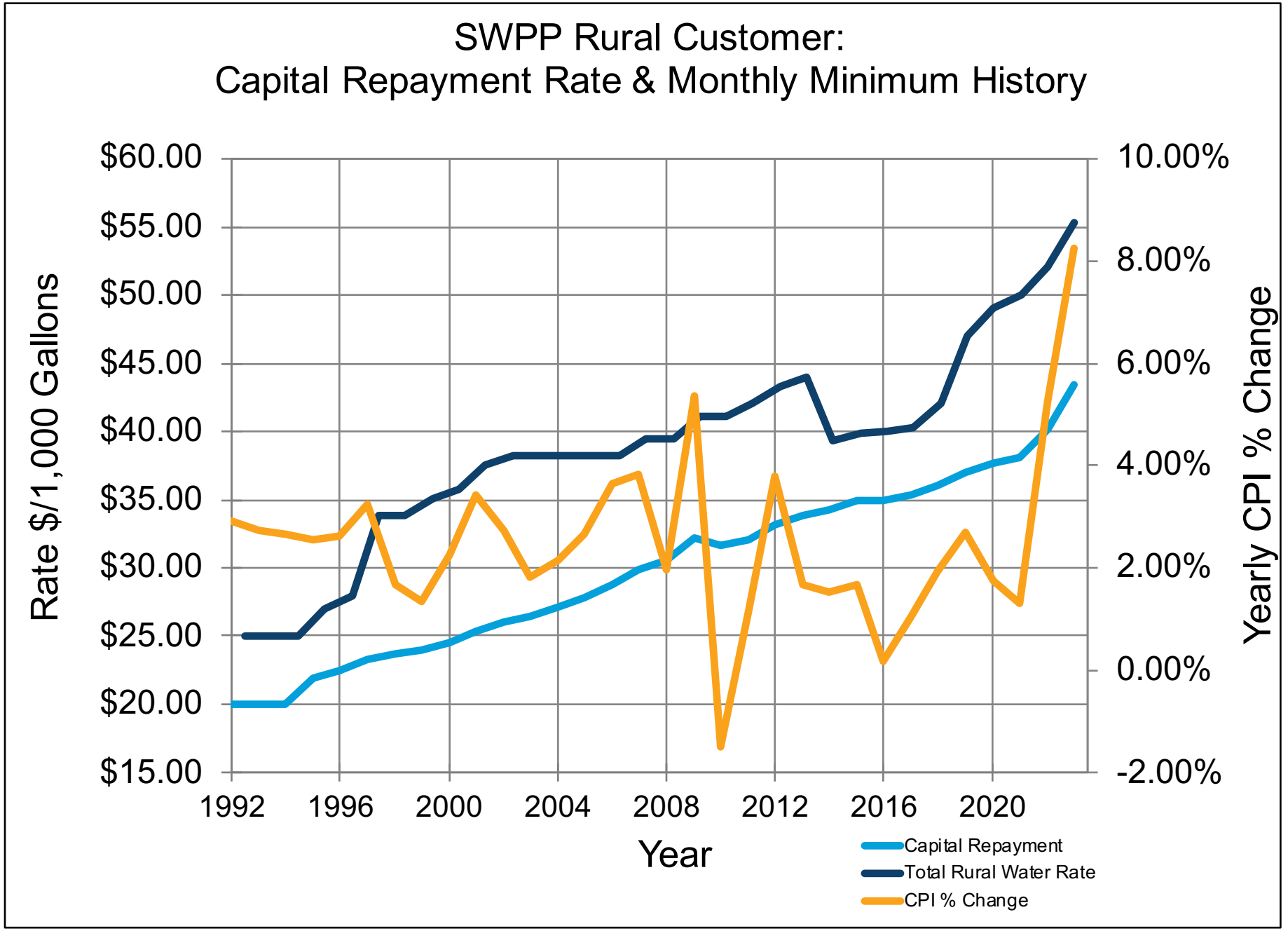
I recommend that the State Water Commission establish 2023 Capital Repayment and REM rates as follows:

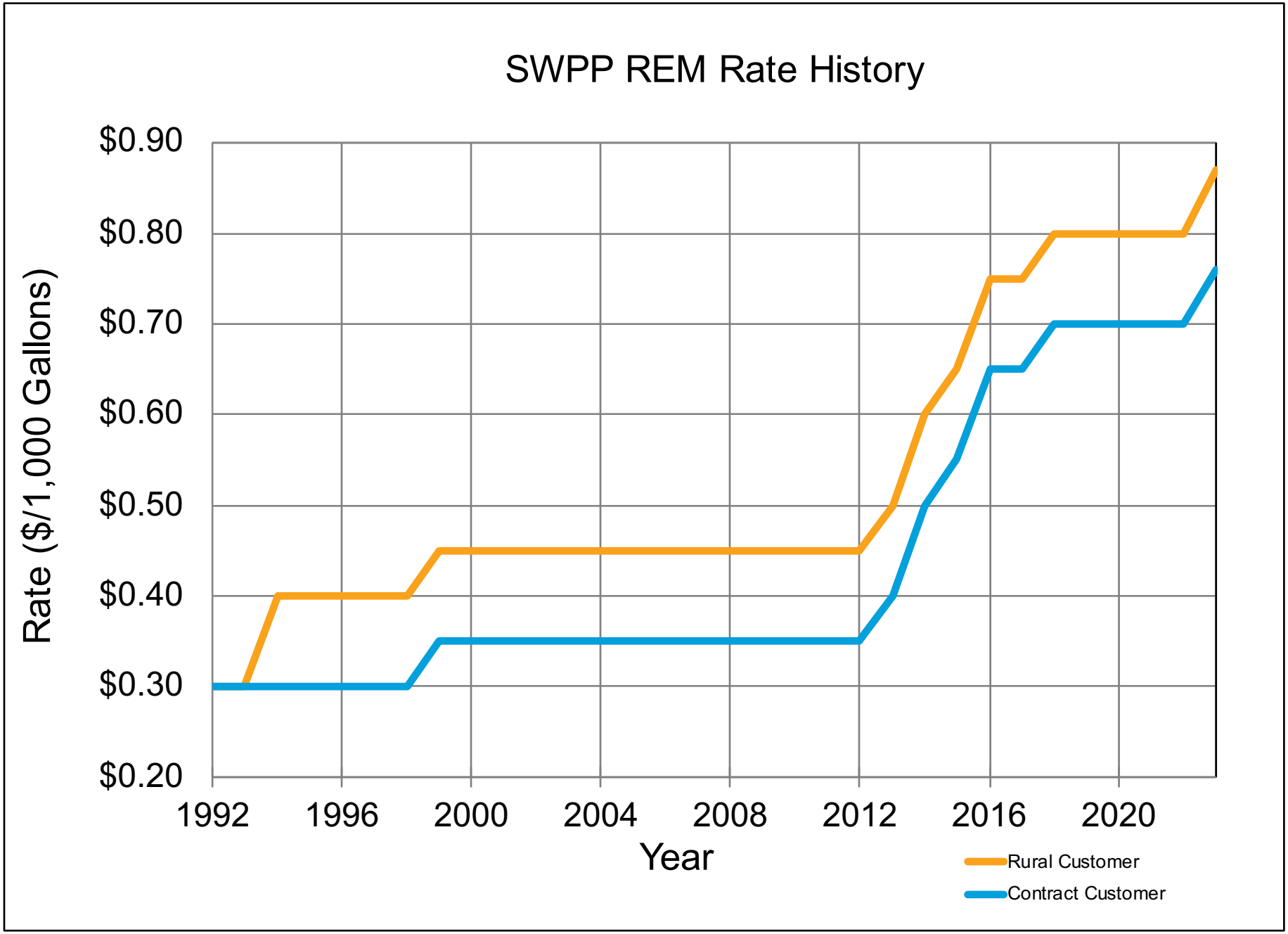
Capital Repayment for contract and rural customers: $1.42 per thousand gallons for contract users, $34.40 for rural users in Morton County with water service from Missouri West Water System, $43.43 per month for other rural users. Capital Repayment for oil industry contracts: $3.00 per thousand gallons for Dickinson Water Depot and $4.00 per thousand gallons for other oil industry contracts.

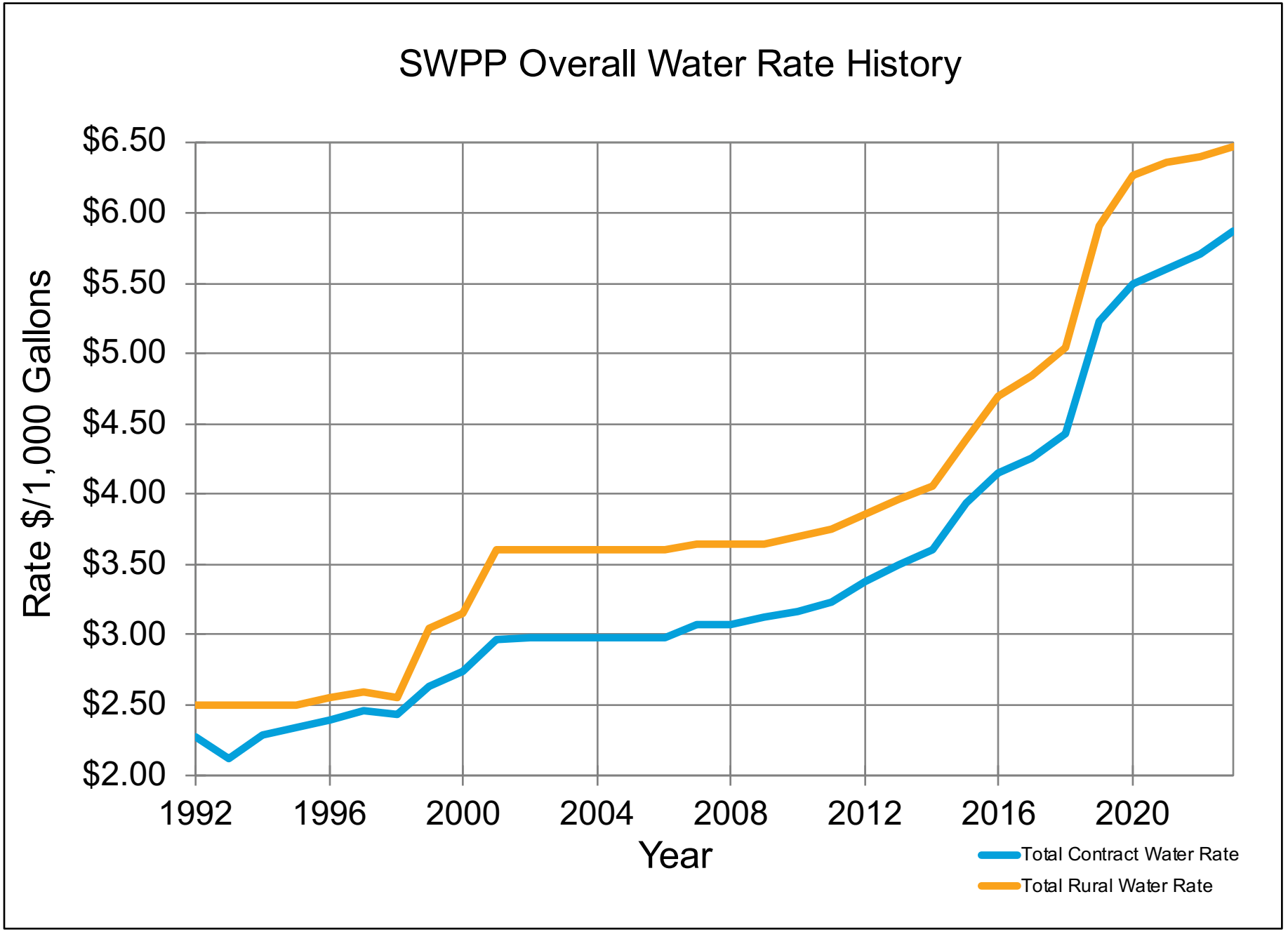
REM Rate: $0.76 per thousand gallons for the contract users, $0.87 per thousand gallons for SWA rural users, $0.87 per thousand gallons for Morton County rural users $3.00 per thousand gallons for the SWA's Dickinson Water Depot and $4.00 per thousand gallons for other oil industry contracts.

AT:SSP:JJH:pdp/1736-99


SWPP Contract Customer:
Capital Repayment Rate History
Rate $/1,000 Gallons
$1.50
$1.40
$1.30
$1.20
$1.10
$1.00
$0.90
$0.80
$0.70
$0.60
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
Yearly CPI % Change
1992
1996
2000
2004
2008
2012
2016
2020
Year
Capital Repayment
CPI % Change


SWPP Rural Customer:
Capital Repayment Rate & Monthly Minimum History
Rate $/1,000 Gallons
$60.00
$55.00
$50.00
$45.00
$40.00
$35.00
$30.00
$25.00
$20.00
$15.00
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
-2.00%
Yearly CPI % Change
1992
1996
2000
2004
2008
2012
2016
2020
Year
Capital Repayment
Total Rural Water Rate
CPI % Change


SWPP REM Rate History
Rate ($/1,000 Gallons)
$0.90
$0.80
$0.70
$0.60
$0.50
$0.40
$0.30
$0.20
1992
1996
2000
2004
2008
2012
2016
2020
Year
Rural Customer
Contract Customer


SWPP Overall Water Rate History
Rate $/1,000 Gallons
$6.50
$6.00
$5.50
$5.00
$4.50
$4.00
$3.50
$3.00
$2.50
$2.00
1992
1996
2000
2004
2008
2012
2016
2020
Year
Total Contract Water Rate
Total Rural Water Rate

APPENDIX E

NORTH Dakota | Water Resources
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MEMORANDUM

TO: Governor Doug Burgum
Members of the State Water Commission
FROM: Andrea Travnicek, Ph.D., Secretary
SUBJECT: SWPP Contract HI 2021 Hydraulic Improvements - Award
DATE: November 18, 2022

Bid Results:
Bids for Southwest Pipeline Project (SWPP) Contract HI-2021, Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service areas were opened on November 17, 2022.

The readvertised project included the design changes to previously bid project areas to accommodate additional signups and two bid alternatives to provide additional capacity for potential users. The scope of the contract includes four Bid Schedules to accommodate strategic improvements in the four service areas noted. The project consists of hydraulic improvements totaling approximately 18 miles of PVC pipe ranging from 3-inch to 6-inch as well as five new booster pump stations. The improvements will provide capacity for the waiting list users to become Subsequent Customers. Subsequent Customers are responsible for the construction cost from the nearest SWPP infrastructure to their property. Bid Alternates were included to allow for bid comparison of changing a portion of 4-inch parallel to a 6-inch parallel to increase the capacity for potentials in two strategic areas, the Killdeer Mountain and Twin Buttes areas. A 6-inch pipeline provides a 125 percent cross sectional area increase compared to a 4-inch. In the Killdeer Mountain Service Area the alternate upsizing allows for an estimated 16.5 potential services to connect in the future. In the Twin Buttes Service Area previous hydraulic analysis supported a future tank to serve users around Amidon. The upsized pipeline when coupled with the additional tank will provide the capacity for an estimated 43 additional users. Specific number of users able to connect is location dependent.

Two bids were received for Contract HI-2021 at the November 17, 2022 bid opening. Both bids were responsive and were opened.

Tables below show the bid results.

Table 1: Bid Schedule No. 1 New Hradec Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$1,990,427.50	$76,647.50
Abbott, Arne, Schwindt Moorhead, MN	$1,913,780.00	-
Engineer's Estimate	$1,513,310.00	($400,470.00)

Table 2: Bid Schedule No. 2 Killdeer Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$1,412,907.50	-
Abbott, Arne, Schwindt Moorhead, MN	$1,439,280.00	$26,372.50
Engineer's Estimate	$965,835.00	($447,072.50)

Table 3: Bid Schedule No. 2 Alternate- Killdeer Service Area Improvements

Bidder	Bid Alternate
Carstensen Contracting, Dell Rapids, SD	$156,107.50
Abbott, Arne, Schwindt Moorhead, MN	$301,750.00
Engineer's Estimate	$207,135.00

Table 4: Bid Schedule No. 2 Total Bid with Alternate - Killdeer Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$1,569,015.00	-
Abbott, Arne, Schwindt Moorhead, MN	$1,741,030.00	$172,015.00
Engineer's Estimate	$1,172,970.00	($396,045.00)

Table 5: Bid Schedule No. 3 Twin Buttes Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$738,212.50	-
Abbott, Arne, Schwindt Moorhead, MN	$767,780.00	$29,568.00
Engineer's Estimate	$574,030.00	($164,182.00)

Table 6: Bid Schedule No. 3 Alternate – Twin Buttes Service Area Improvements

Bidder	Bid Alternate
Carstensen Contracting, Dell Rapids, SD	$62,162.50
Abbott, Arne, Schwindt Moorhead, MN	$139,440.00
Engineer's Estimate	$76,150.00

Table 7: Bid Schedule No. 3 Total Bid with Alternate – Twin Buttes Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$800,374.50	-
Abbott, Arne, Schwindt Moorhead, MN	$907,220.00	$106,845.50
Engineer's Estimate	$650,180.00	($150,194.50)

Table 8: Bid Schedule No. 4 Total Bid – Fairfield Service Area Improvements

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$744,693.50	-
Abbott, Arne, Schwindt Moorhead, MN	$985,390.00	$240,696.50
Engineer's Estimate	$592,760.00	($151,933.50)

Table 9: Total Base Bid – Bid Schedule 1-4

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$4,886,240.50	-
Abbott, Arne, Schwindt Moorhead, MN	$5,106,230.00	$219,989.50
Engineer's Estimate	$3,645,935.00	($1,240,305.50)

Table 10: Total Base Bid with Alternates – Bid Schedule 1-4

Bidder	Base Bid Amount	Comparison to Low Bid
Carstensen Contracting, Dell Rapids, SD	$5,104,510.50	-
Abbott, Arne, Schwindt Moorhead, MN	$5,547,420.00	$442,909.50
Engineer's Estimate	$3,929,220.00	($1,175,290.50)

The bids received were higher than the Engineer's Estimate. Review of the different bid items indicate that the major source of difference is the pipeline installation cost. During bidding BW/AECOM received a number of questions and concerns related to rock excavation, possible delays in manufacturing and delivery of the prefabricated pump stations, but no concerns over the ability to receive and install the PVC pipe. All of the concerns brought to the attention of the engineering team were addressed via bid document addendums and therefore, it is difficult to predict that rebidding would result in a lower price. The current workforce challenges being experienced also likely play a role in the increased pipeline installation costs received.

Feasibility Criteria Discussion:

It was noted in previous State Water Commission (Commission) updates that since there are no established criteria for strategic hydraulic improvement projects on the SWPP, Department of Water Resource (DWR) staff proposed using SWPP's established rural water feasibility criteria which includes a maximum cost per hookup when the pipeline is constructed to the rural customer's yard to select strategic hydraulic improvement projects to proceed for design. This proposal was accepted by the Commission. The Commission also agreed to use existing Subsequent Users in addition to the future Subsequent Users who have signed the intent to become Subsequent User form in the feasibility criteria calculation. These four strategic improvement projects proceeded for design because they met the established rural water feasibility criteria based on the cost estimate for these projects.

The maximum cost for single standard hookup (1 Equivalent Service Unit – 1 ESU) was set at $25,000 in 1992 and was adjusted for each rural water contract on SWPP using the Consumer Price Index (CPI). Based on the October 1 CPI, the maximum cost when constructing the pipeline to a rural customer's yard is $52,730. The cost per ESU based on the low bid received for the different Bid Schedules is shown in Table 11. The cost per ESU ranges from approximately $29,000 to $90,000.

Table 11: Cost per ESU for the Bid Schedules based on low bid received.

Bid Schedule-Service Area	**Description**	**ESUs**	Construction **Cost/ESU**	Construction + Engineering & Observation **Cost/ESU**
1 - New Hradec	Approximately 7 miles of 6"-3" parallel piping with 2 booster pump stations	43	$46,289.01	$53,232.36
2 - Killdeer Mountain	Approximately 5 miles of 6"-3" parallel piping with 1 booster pump station	20	$70,645.38	$81,242.28
2 – Killdeer Mountain - Alternate	Upgrade Base Schedule 2 4" to 6"	20	$78,450.75	$90,218.36
3 - Twin Buttes	Approximately 2 miles of 4" parallel piping with 1 booster pump station	12.5	$59,056.96	$67,915.50
3 – Twin Buttes - Alternate	Upgrade Base Schedule 2 4" to 6"	12.5	$64,029.96	$73,634.45
4 - Fairfield	Approximately 3 miles of 3" parallel piping with 1 booster pump station	29.25	$25,459.61	$29,278.55
Total Base Bid – Schedules 1-4		104.75	$46,646.69	$53,643.69
Total Bid – Schedules 1-4, With Alternates for 2 & 3		104.75 (+ additional 59.5 Potentials)	$48,730.41	$56,039.97

Though used for shortlisting the strategic hydraulic improvement projects to proceed to design, the cost/ESU feasibility criterion **is not** applicable to the HI-2021 project since this project is different from SWPP rural distribution contract for which the feasibility criteria was established. The differences between SWPP strategic hydraulic improvement projects and rural distribution projects are listed below:

- Rural distribution projects extend the pipeline to the new customer's yard or residence
- Hydraulic improvement projects do not extend the pipeline to new customer's yard; new Subsequent Users are required to pay for the construction of their connection to the SWPP distribution system
- Hydraulic improvements increase capacity to allow Subsequent User connections
- Hydraulic improvements generally consist of secondary transmission parallel pipelines and pocket area booster pump stations. These types of improvements have previously not been included in rural distribution project feasibility criteria analysis

Bid Review:

BW/AECOM has reviewed both the bids received. The bid received from Carstensen Contracting is in accordance with the invitation for Construction Bids and the Bid Documents and so considered to be a responsive bid. The low bidder Carstensen Contracting has built many miles of rural distribution pipeline designed and administered by BW/AECOM and the experience with them is generally positive. So, Carstensen Contracting is considered a responsible bidder. Attached is the bid review and recommendation letter from BW/AECOM.

The capital assets funding needed for the award of Contract HI – 2021 is estimated at $5.66 million, which includes total bid cost with alternates at $5,104,510.50, contingency at 5 percent for $255,225, electrical service connection to booster pump stations estimated at $100,000, potential telemetry work at the booster pump stations estimated at $150,000, and estimated crop damages payment at $50,000.

I recommend the State Water Commission authorize the Secretary to award SWPP Contract HI-2021 Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service areas to Carstensen Contracting in the amount of $5,104,510.50 based on Bid Schedules 1-4

with the Bid Alternates. The award of the SWPP Contract HI-2021 contract will be dependent upon legal review of the contract documents.

I recommend the State Water Commission approve $5.66 million dollars to the Southwest Pipeline Project from the capital assets funds appropriated for the 2021-2023 biennium.

AT:SSP:JJH:pdp/1736-99
Attachment

Bartlett&West | AECOM

November 21, 2022

North Dakota State Water Commission
Attn: Mr. Jarrett Hillius, P.E., Project Manger
1200 Missouri Ave
Bismarck, ND 58504

SUBJECT: SWPP Contract HI-2021, Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service Areas
Review of Bids Received
W.O. 3033.A24

Jarrett:

On Thursday, November 17, 2022, bids were opened for Southwest Pipeline Project (SWPP) Contract HI-2021, Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service Areas. The scope of work generally consists of four (4) Bid Schedules. Bid Schedule No. 1 generally consists of furnishing and installing approximately 7 miles of 6"-3" ASTM D2241 gasketed joint PVC pipe; two (2) below grade prefabricated booster stations; and other related appurtenances in the New Hradec Service Area. Bid Schedule No. 2 generally consists of furnishing and installing approximately 5.3 miles of 6"-3" ASTM D2241 gasketed joint PVC pipe; one (1) below grade prefabricated booster station; and other related appurtenances in the Killdeer Mountain Service Area. A Bid Alternate is included for this bid schedule to install 3.6 miles of 6" PVC pipe and associated appurtenances in lieu of 3.6 miles of 4" PVC pipe as shown in the base bid. Bid Schedule No. 3 generally consists of furnishing and installing approximately 2.9 miles of 3"-4" ASTM D2241 gasketed joint PVC pipe; one (1) below grade prefabricated booster station; and other related appurtenances in the Twin Buttes Service Area. A Bid Alternate is included for this bid schedule to install 2.1 miles of 6" PVC pipe and associated appurtenances in lieu of 2.1 miles of 4" PVC pipe as shown in the base bid. Bid Schedule No. 4 generally consists of furnishing and installing approximately 2.7 miles of 3" ASTM D2241 gasketed joint PVC pipe; one (1) below grade prefabricated booster station; connections to existing pipelines; and other related appurtenances in the Fairfield Service Area. The date for Substantial Completion for Contract HI-2021 is June 15, 2024 with a milestone completion date of November 3, 2023 for the pipeline installation. The Owner reserves the right to award the Contract to one Contractor, if awarded, as any combination of one (1) or more Bid Schedules with or without alternates that is the most advantageous and in the best interest of the Owner.

Two bid packages were received for SWPP Contract HI-2021. A tabulation of the bid results is attached. A copy of the bid tab has been provided to all bidders and other interested parties. Both bids were considered responsive and read aloud at the bid opening. A summary of the bids received is shown in the table below.

SOUTHWEST PIPELINE PROJECT
HYBRID MTL UPGRADES
CONTRACT 2-3I/2-5C/2-7D2-5C/2-7D

Bidder	Bid Amount Base Bid (Bid Sch 1-4)	Amount Higher Than Low Bid	Base Bid Plus Alternates
Carstensen Contracting, Inc. Dell Rapids, SD	$4,886,240.50	-	$5,104,510.50
Abbott, Arne, Schwindt, Inc. Moorhead, MN	$5,106,230.00	+ $219,989.50 4.5%	$5,547,420.00
Engineer's Estimate	$3,645,935.00	- $1,240,305.50 -25.4%	$3,929,220.00

Based on our review of the apparent low bid received from Carstensen Contracting, Inc., the bid appears to be in accordance with the Invitation for Construction Bids and the Bid Documents. It is thus considered to be a responsive bid. Carstensen Contracting, Inc. has completed three previous projects for SWPP. These projects consist of two hybrid main transmission line projects, SWPP 2-8E and SWPP 2-8F, and an RO Concentrate Discharge pipeline, SWPP 3-1E. All three of these projects were completed as part of the Oliver, Mercer, North Dunn Regional Expansion. These projects generally consisted of installation of 6"-16" gasketed joint PVC pipe along with two (2) underground booster stations, two (2) master meter vaults, and one (1) control vault. The previous work completed by Carstensen Contracting, Inc. on SWPP is generally similar to the work associated with this Contract. Carstensen Contracting, Inc. is considered a qualified contractor for the work associated with this Contract.

The bid prices reflect substantial increases in pricing that are 25-30% above the Engineer's Estimate and in general are 200-300% above bid pricing from SWPP 7-9G, the last rural contract on SWPP that was bid in March 2015. The Engineering News Record Construction Cost Index from March 2015 to October 2022 indicates a 32% increase over that duration. The increase in prices is due in part to material and equipment shortages that have led to abnormally high material price increases since the onset of the Covid 19 pandemic. In addition, these bid prices also indicate the effects of high inflation rates on the installation prices for this work. While both bids are higher than the engineer's estimate, the difference between the low bid and the next low bid was 4.5%. This indicates the received bids were competitive and is a better indicator of the current market installation pricing than the engineers estimate. In addition, the mobilization costs for this contract are inherently higher due to the four bid schedules being in four different area and separate line item for mobilization was not provided as this has been common practice for SWPP rural contracts. The pricing variability between the two received bids is likely due to bidder preference in where mobilization costs were included in each bid.

No bids were received for the prior advertisement of this contract in March 2022 due to PVC material shortages and unstable pricing at that time. PVC pricing has since stabilized but continues to rise with inflation which has increased 10% since May 2022. Based on the current market, it is unlikely that a significant decrease in pricing will be realized given that any downward market pressure will likely be offset with water infrastructure funding available. Based on recent conversations, industry suppliers and installers do not expect any downward pressure on prices for the foreseeable future. In our opinion, we do not believe waiting will result in a decrease in the pricing and it is more likely these prices will continue to inflate.

These improvements are intended to increase the system capacity to allow for subsequent users to sign-up. Bid Schedule 1 is intended to provide capacity for 43 Equivalent Service Units (ESU'S), Bid Schedule 2 is intended to add capacity for 16 ESU's, Bid Schedule 3 will add capacity for 12.5 ESU's, and Bid Schedule 4 will add capacity for 29.25 ESU's. These four bid schedules collectively provide capacity to 100.8 ESU's to sign-up as subsequent users. Bid Schedule 2 Alternate provides additional capacity for future subsequent users in this area. 29 unserved potential users were identified within 2 miles of the existing infrastructure in this area this improvement would increase the future potential capacity from 2 ESU's to 18.5 ESU's. This is in addition to the capacity planned for the subsequent users that are planned to be added following this project. Bid Schedule 3 Alternate increases the capacity to allow for a future strategic improvement that consists of a storage reservoir. The future strategic improvement would be to provide capacity for the current 26 potential users and 17 waitlist users that are located downstream of this improvement area.

Subject to approval by your legal counsel that the bid documents are in order from a legal standpoint, we recommend that the North Dakota State Water Commission award SWPP Contract HI-2021, Hydraulic Improvements in the Fairfield, Killdeer Mountain, New Hradec, and Twin Buttes Service Areas, to Carstensen Contracting, Inc. We recommend that SWPP Contract HI-2021, if awarded, should be awarded to Carstensen Contracting, Inc., including bid alternates 2 and 3, in the amount of $5,104,510.50.

Sincerely,

BARTLETT & WEST/AECOM

Tyson Decker, P.E.
Project Manager

Copy: SWA – Jen Murray
File: SWPP Contract HI-2021: 9.0

Bartlett&West | AECOM

CCI: 13175

PROJECT: SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTRACT HI-2021

3456 East Century Avenue
BISMARCK, ND 58503
(701) 258-1110

BID TABULATION

DATE: 11/17/2022 W.O. 3033.A24
LOCATION: ND DEPARTMENT OF WATER RESOURCES

Item No.	Description	Quantity	Unit	Engineer's Estimate		CARSTENSEN CONTRACTING DELL RAPIDS, SD		ABBOTT, ARNE, SCHWINDT MOORHEAD, MN			
	Bid Schedule No. 1 – New Hradec SA Improvements			**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**
1	6” Class 250 PVC Pipe, G.J.	9,960	L.F.	$ 29.00	$ 288,840.00	$ 38.00	$ 378,480.00	$ 33.00	$ 328,680.00		
2	6” Class 200 PVC Pipe, G.J.	710	L.F.	$ 25.00	$ 17,750.00	$ 35.00	$ 24,850.00	$ 30.00	$ 21,300.00		
3	6” Class 160 PVC Pipe, G.J.	8,810	L.F.	$ 23.00	$ 202,630.00	$ 32.50	$ 286,325.00	$ 25.00	$ 220,250.00		
4	4” Class 250 PVC Pipe, G.J.	5,740	L.F.	$ 19.50	$ 111,930.00	$ 26.00	$ 149,240.00	$ 19.00	$ 109,060.00		
5	4” Class 200 PVC Pipe, G.J.	7,420	L.F.	$ 18.00	$ 133,560.00	$ 24.50	$ 181,790.00	$ 18.00	$ 133,560.00		
6	4” Class 160 PVC Pipe, G.J.	1,670	L.F.	$ 17.00	$ 28,390.00	$ 23.00	$ 38,410.00	$ 17.00	$ 28,390.00		
7	3” Class 250 PVC Pipe, G.J.	10	L.F.	$ 16.00	$ 160.00	$ 37.75	$ 377.50	$ 30.00	$ 300.00		
8	3” Class 200 PVC Pipe, G.J.	1,430	L.F.	$ 15.00	$ 21,450.00	$ 20.50	$ 29,315.00	$ 14.00	$ 20,020.00		
9	6” Restrained Joint Area	240	L.F.	$ 80.00	$ 19,200.00	$ 81.00	$ 19,440.00	$ 72.00	$ 17,280.00		
10	4” Restrained Joint Area	120	L.F.	$ 60.00	$ 7,200.00	$ 65.00	$ 7,800.00	$ 52.00	$ 6,240.00		
11	6" Type 3 Road Crossing	3	EA	$ 5,300.00	$ 15,900.00	$ 8,800.00	$ 26,400.00	$ 9,000.00	$ 27,000.00		
12	4" Type 3 Road Crossing	2	EA	$ 3,300.00	$ 6,600.00	$ 6,700.00	$ 13,400.00	$ 6,000.00	$ 12,000.00		
13	3" Type 3 Road Crossing	1	EA	$ 3,000.00	$ 3,000.00	$ 5,600.00	$ 5,600.00	$ 5,400.00	$ 5,400.00		
14	6" Valve & Box	2	EA	$ 2,800.00	$ 5,600.00	$ 2,500.00	$ 5,000.00	$ 5,400.00	$ 10,800.00		
15	4" Valve & Box	3	EA	$ 2,300.00	$ 6,900.00	$ 2,000.00	$ 6,000.00	$ 5,000.00	$ 15,000.00		
16	3" Valve & Box	3	EA	$ 2,200.00	$ 6,600.00	$ 3,300.00	$ 9,900.00	$ 4,200.00	$ 12,600.00		
17	1½" Cleanout	8	EA	$ 1,300.00	$ 10,400.00	$ 3,400.00	$ 27,200.00	$ 4,300.00	$ 34,400.00		
18	6” Tie-In	2	EA	$ 6,700.00	$ 13,400.00	$ 5,000.00	$ 10,000.00	$ 11,000.00	$ 22,000.00		
19	4” Tie-In	3	EA	$ 5,400.00	$ 16,200.00	$ 3,700.00	$ 11,100.00	$ 10,500.00	$ 31,500.00		
20	3" Tie-In	1	EA	$ 3,100.00	$ 3,100.00	$ 3,700.00	$ 3,700.00	$ 10,500.00	$ 10,500.00		
21	Tie-In NH-06-01	1	EA	$ 2,000.00	$ 2,000.00	$ 3,000.00	$ 3,000.00	$ 10,500.00	$ 10,500.00		
22	Tie-In NH-06-02	1	EA	$ 3,000.00	$ 3,000.00	$ 4,300.00	$ 4,300.00	$ 11,000.00	$ 11,000.00		
23	1" CAV	1	EA	$ 8,200.00	$ 8,200.00	$ 30,800.00	$ 30,800.00	$ 40,000.00	$ 40,000.00		
24	Crooked Creek VFD Booster Station	1	EA	$ 240,000.00	$ 240,000.00	$ 305,000.00	$ 305,000.00	$ 350,000.00	$ 350,000.00		
25	North New Hradec VFD Booster Station	1	EA	$ 320,000.00	$ 320,000.00	$ 350,000.00	$ 350,000.00	$ 400,000.00	$ 400,000.00		
26	6” Gas/Oil Line Crossing	3	EA	$ 7,100.00	$ 21,300.00	$ 21,000.00	$ 63,000.00	$ 12,000.00	$ 36,000.00		
	Subtotal Bid Schedule 1 (Items 1-26)				**$ 1,513,310.00**		**$ 1,990,427.50**		**$ 1,913,780.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 1				**$ 1,513,310.00**		**$ 1,990,427.50**		**$ 1,913,780.00**		

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CCI: 13175

PROJECT: SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTRACT HI-2021

3456 East Century Avenue
BISMARCK, ND 58503
(701) 258-1110

BID TABULATION

DATE: 11/17/2022 W.O. 3033.A24
LOCATION: ND DEPARTMENT OF WATER RESOURCES

Item No.	Description	Quantity	Unit	Engineer's Estimate		CARSTENSEN CONTRACTING DELL RAPIDS, SD		ABBOTT, ARNE, SCHWINDT MOORHEAD, MN			
	Bid Schedule No. 2 – Killdeer Mountain SA Improvements			Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
1	6” Class 250 PVC Pipe, G.J.	600	L.F.	$ 29.00	$ 17,400.00	$ 39.25	$ 23,550.00	$ 38.00	$ 22,800.00		
2	4” C900/DR14 PVC Pipe, G.J.	3,590	L.F.	$ 21.50	$ 77,185.00	$ 29.25	$ 105,007.50	$ 28.00	$ 100,520.00		
3	4” Class 250 PVC Pipe, G.J.	15,340	L.F.	$ 19.50	$ 299,130.00	$ 26.50	$ 406,510.00	$ 25.00	$ 383,500.00		
4	4” Class 200 PVC Pipe, G.J.	4,240	L.F.	$ 18.00	$ 76,320.00	$ 24.50	$ 103,880.00	$ 21.00	$ 89,040.00		
5	3” Class 160 PVC Pipe, G.J.	4,000	L.F.	$ 14.50	$ 58,000.00	$ 20.00	$ 80,000.00	$ 18.00	$ 72,000.00		
6	6” Restrained Joint Area	80	L.F.	$ 80.00	$ 6,400.00	$ 82.00	$ 6,560.00	$ 84.00	$ 6,720.00		
7	4” Restrained Joint Area	200	L.F.	$ 59.00	$ 11,800.00	$ 66.00	$ 13,200.00	$ 64.00	$ 12,800.00		
8	4" Type 3 Road Crossing	1	EA	$ 3,300.00	$ 3,300.00	$ 6,900.00	$ 6,900.00	$ 5,000.00	$ 5,000.00		
9	4" Type 4 Road Crossing	1	EA	$ 2,500.00	$ 2,500.00	$ 6,800.00	$ 6,800.00	$ 3,800.00	$ 3,800.00		
10	6" Valve & Box	1	EA	$ 2,800.00	$ 2,800.00	$ 2,500.00	$ 2,500.00	$ 5,200.00	$ 5,200.00		
11	4" Valve & Box	3	EA	$ 2,300.00	$ 6,900.00	$ 2,000.00	$ 6,000.00	$ 4,400.00	$ 13,200.00		
12	3" Valve & Box	1	EA	$ 2,200.00	$ 2,200.00	$ 2,100.00	$ 2,100.00	$ 4,200.00	$ 4,200.00		
13	1½" Cleanout	5	EA	$ 1,300.00	$ 6,500.00	$ 3,400.00	$ 17,000.00	$ 4,000.00	$ 20,000.00		
14	6” Tie-In	1	EA	$ 6,700.00	$ 6,700.00	$ 4,800.00	$ 4,800.00	$ 11,000.00	$ 11,000.00		
15	4” Tie-In	1	EA	$ 5,400.00	$ 5,400.00	$ 3,800.00	$ 3,800.00	$ 11,000.00	$ 11,000.00		
16	3" Tie-In	1	EA	$ 3,100.00	$ 3,100.00	$ 3,600.00	$ 3,600.00	$ 11,000.00	$ 11,000.00		
17	Tie-In KM-08-01	1	EA	$ 4,000.00	$ 4,000.00	$ 4,800.00	$ 4,800.00	$ 18,000.00	$ 18,000.00		
18	Tie-In KM-08-02	1	EA	$ 5,000.00	$ 5,000.00	$ 6,600.00	$ 6,600.00	$ 16,000.00	$ 16,000.00		
19	Tie-In KM-08C-01	1	EA	$ 4,000.00	$ 4,000.00	$ 3,200.00	$ 3,200.00	$ 13,000.00	$ 13,000.00		
20	Tie-In KM-08C-02	1	EA	$ 3,000.00	$ 3,000.00	$ 2,700.00	$ 2,700.00	$ 13,000.00	$ 13,000.00		
21	Type 2 PRV	1	EA	$ 19,100.00	$ 19,100.00	$ 39,000.00	$ 39,000.00	$ 50,000.00	$ 50,000.00		
22	Type 3 PRV	1	EA	$ 3,100.00	$ 3,100.00	$ 5,500.00	$ 5,500.00	$ 14,500.00	$ 14,500.00		
23	Northeast Killdeer Mountain VFD Booster Station	1	EA	$ 275,000.00	$ 275,000.00	$ 360,000.00	$ 360,000.00	$ 380,000.00	$ 380,000.00		
24	4" Gas/Oil Line Crossing	13	EA	$ 4,600.00	$ 59,800.00	$ 13,500.00	$ 175,500.00	$ 11,000.00	$ 143,000.00		
25	3” Gas/Oil Line Crossing	2	EA	$ 3,600.00	$ 7,200.00	$ 11,700.00	$ 23,400.00	$ 10,000.00	$ 20,000.00		
	Subtotal Bid Schedule 2 (Items 1-25)				**$ 965,835.00**		**$ 1,412,907.50**		**$ 1,439,280.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 2				**$ 965,835.00**		**$ 1,412,907.50**		**$ 1,439,280.00**		

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CCI: 13175

PROJECT: SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTRACT HI-2021

3456 East Century Avenue
BISMARCK, ND 58503
(701) 258-1110

BID TABULATION

DATE: 11/17/2022 W.O. 3033.A24
LOCATION: ND DEPARTMENT OF WATER RESOURCES

Item No.	Description	Quantity	Unit	Engineer's Estimate		CARSTENSEN CONTRACTING DELL RAPIDS, SD		ABBOTT, ARNE, SCHWINDT MOORHEAD, MN			
	Bid Schedule No. 2 Alternate – Killdeer Mountain SA Improvements			Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
2A	Upgrade 4” C900/DR14 PVC Pipe, G.J. to 6”	3,590	L.F.	$ 10.00	$ 35,900.00	$ 8.50	$ 30,515.00	$ 17.00	$ 61,030.00		
3A	Upgrade 4” Class 250 PVC Pipe, G.J. to 6”	15,330	L.F.	$ 9.50	$ 145,635.00	$ 6.75	$ 103,477.50	$ 14.00	$ 214,620.00		
7A	Upgrade 4” Restrained Joint Area to 6”	200	L.F.	$ 20.00	$ 4,000.00	$ 7.00	$ 1,400.00	$ 45.00	$ 9,000.00		
8A	Upgrade 4" Type 3 Road Crossing to 6”	1	EA	$ 2,000.00	$ 2,000.00	$ 840.00	$ 840.00	$ 2,500.00	$ 2,500.00		
9A	Upgrade 4" Type 4 Road Crossing to 6”	1	EA	$ 1,600.00	$ 1,600.00	$ 1,050.00	$ 1,050.00	$ 3,200.00	$ 3,200.00		
11A	Upgrade 4” Valve & Box to 6”	1	EA	$ 500.00	$ 500.00	$ 275.00	$ 275.00	$ 900.00	$ 900.00		
24A	Upgrade 4” Gas/Oil Line Crossing to 6”	7	EA	$ 2,500.00	$ 17,500.00	$ 2,650.00	$ 18,550.00	$ 1,500.00	$ 10,500.00		
	Subtotal Bid Schedule 2 Alternate				**$ 207,135.00**		**$ 156,107.50**		**$ 301,750.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 2 ALTERNATE				**$ 207,135.00**		**$ 156,107.50**		**$ 301,750.00**		
	Bid Schedule No. 3 – Twin Buttes SA Improvements			Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
1	4” Class 200 PVC Pipe, G.J.	6,840	L.F.	$ 18.00	$ 123,120.00	$ 24.30	$ 166,212.00	$ 20.00	$ 136,800.00		
2	4” Class 160 PVC Pipe, G.J.	4,200	L.F.	$ 17.00	$ 71,400.00	$ 23.20	$ 97,440.00	$ 17.00	$ 71,400.00		
3	3” Class 160 PVC Pipe, G.J.	4,380	L.F.	$ 14.50	$ 63,510.00	$ 19.75	$ 86,505.00	$ 15.00	$ 65,700.00		
4	2½” Class 160 PVC Pipe, G.J.	20	L.F.	$ 15.00	$ 300.00	$ 29.75	$ 595.00	$ 14.00	$ 280.00		
5	4” Restrained Joint Area	160	L.F.	$ 60.00	$ 9,600.00	$ 56.00	$ 8,960.00	$ 70.00	$ 11,200.00		
6	4" Valve & Box	2	EA	$ 2,300.00	$ 4,600.00	$ 2,000.00	$ 4,000.00	$ 5,000.00	$ 10,000.00		
7	2½" Valve & Box	2	EA	$ 1,900.00	$ 3,800.00	$ 1,700.00	$ 3,400.00	$ 4,200.00	$ 8,400.00		
8	1½" Cleanout	5	EA	$ 1,300.00	$ 6,500.00	$ 3,300.00	$ 16,500.00	$ 4,000.00	$ 20,000.00		
9	4” Tie-In	2	EA	$ 5,400.00	$ 10,800.00	$ 3,700.00	$ 7,400.00	$ 11,000.00	$ 22,000.00		
10	2½" Tie-in	2	EA	$ 2,700.00	$ 5,400.00	$ 3,600.00	$ 7,200.00	$ 11,000.00	$ 22,000.00		
11	Amidon VFD Booster Station	1	EA	$ 275,000.00	$ 275,000.00	$ 340,000.00	$ 340,000.00	$ 400,000.00	$ 400,000.00		
	Subtotal Bid Schedule 3 (Items 1-11)				**$ 574,030.00**		**$ 738,212.00**		**$ 767,780.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 3				**$ 574,030.00**		**$ 738,212.00**		**$ 767,780.00**		

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CCI: 13175

PROJECT: SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTRACT HI-2021

BID TABULATION

DATE: 11/17/2022 W.O. 3033.A24
LOCATION: ND DEPARTMENT OF WATER RESOURCES

Item No.	Description	Quantity	Unit	Engineer's Estimate		CARSTENSEN CONTRACTING DELL RAPIDS, SD		ABBOTT, ARNE, SCHWINDT MOORHEAD, MN			
	Bid Schedule No. 3 Alternate – Twin Buttes SA Improvements			**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**
1A	Upgrade 4" Class 200 PVC Pipe, G.J. to 6"	6,830	L.F.	$ 7.00	$ 47,810.00	$ 6.00	$ 40,980.00	$ 12.00	$ 81,960.00		
2A	Upgrade 4" Class 160 PVC Pipe, G.J. to 6"	4,190	L.F.	$ 6.00	$ 25,140.00	$ 4.75	$ 19,902.50	$ 12.00	$ 50,280.00		
5A	Upgrade 4" Restrained Joint Area to 6"	160	L.F.	$ 20.00	$ 3,200.00	$ 8.00	$ 1,280.00	$ 45.00	$ 7,200.00		
	Subtotal Bid Schedule 3 Alternate				**$ 76,150.00**		**$ 62,162.50**		**$ 139,440.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 3 ALTERNATE				**$ 76,150.00**		**$ 62,162.50**		**$ 139,440.00**		
	Bid Schedule No. 4 – Fairfield SA Improvements			**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**	**Unit Price**	**Extension**
1	3" Class 200 PVC Pipe, G.J.	4,170	L.F.	$ 15.00	$ 62,550.00	$ 20.75	$ 86,527.50	$ 29.00	$ 120,930.00		
2	3" Class 160 PVC Pipe, G.J.	9,780	L.F.	$ 14.50	$ 141,810.00	$ 19.70	$ 192,666.00	$ 27.00	$ 264,060.00		
3	3" Restrained Joint Area	500	L.F.	$ 50.00	$ 25,000.00	$ 47.40	$ 23,700.00	$ 140.00	$ 70,000.00		
4	3" Type 4 Road Crossing	4	EA	$ 2,250.00	$ 9,000.00	$ 5,500.00	$ 22,000.00	$ 6,000.00	$ 24,000.00		
5	3" Valve & Box	4	EA	$ 2,200.00	$ 8,800.00	$ 2,000.00	$ 8,000.00	$ 5,000.00	$ 20,000.00		
6	1½" Cleanout	3	EA	$ 1,300.00	$ 3,900.00	$ 3,400.00	$ 10,200.00	$ 4,800.00	$ 14,400.00		
7	3" Tie-In	2	EA	$ 3,100.00	$ 6,200.00	$ 3,600.00	$ 7,200.00	$ 11,000.00	$ 22,000.00		
8	Test Tap Box	1	EA	$ 3,300.00	$ 3,300.00	$ 6,200.00	$ 6,200.00	$ 6,000.00	$ 6,000.00		
9	North Grassy Buttes VFD Booster Station	1	EA	$ 325,000.00	$ 325,000.00	$ 365,000.00	$ 365,000.00	$ 425,000.00	$ 425,000.00		
10	3" Gas/Oil Line Crossing	2	EA	$ 3,600.00	$ 7,200.00	$ 11,600.00	$ 23,200.00	$ 9,500.00	$ 19,000.00		
	Subtotal Bid Schedule 4 (Items 1-10)				**$ 592,760.00**		**$ 744,693.50**		**$ 985,390.00**		
	Bid Adjustment (Addition) or (Deduction)										
	TOTAL BID SCHEDULE 4				**$ 592,760.00**		**$ 744,693.50**		**$ 985,390.00**		
	TOTAL OF BID SCHEDULES 1-4				**$ 3,645,935.00**		**$ 4,886,240.50**		**$ 5,106,230.00**		
	TOTAL OF BID SCHEDULES 1-4 WITH ALTERNATES				**$ 3,929,220.00**		**$ 5,104,510.50**		**$ 5,547,420.00**		

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CCI: 13175 PROJECT: SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTRACT HI-2021

3456 East Century Avenue
BISMARCK, ND 58503
(701) 258-1110

BID TABULATION

DATE: 11/17/2022 W.O. 3033.A24
LOCATION: ND DEPARTMENT OF WATER RESOURCES

Item No.	Description	Quantity	Unit	Engineer's Estimate		CARSTENSEN CONTRACTING DELL RAPIDS, SD		ABBOTT, ARNE, SCHWINDT MOORHEAD, MN			
	SUBCONTRACTORS										
	HDD										
	SEEDING										
	ELECTRICAL					BURLINGTON ELECTRIC BURLINGTON, ND		EDLING ELECTRIC BISMARCK, ND			
	CONCRETE										
	SUPPLIERS										
	PIPE					NORTHERN PIPE FARGO, ND		NORTHERN PIPE FARGO, ND			
	VALVES					DSG/FERGUSON BISMARCK, ND		FERGUSON BISMARCK, ND			
	VAULTS					EFI CENTRALIA, IL		EFI CENTRALIA, IL			
	MANHOLES					FORTERRA MANDAN, ND		EFI CENTRALIA, IL			

BID ANOMALIES
NORTH DAKOTA STATE WATER COMMISSION
SOUTHWEST PIPELINE PROJECT
HYDRAULIC IMPROVEMENTS IN THE FAIRFIELD, KILLDEER MOUNTAIN, NEW HRADEC, AND TWIN BUTTES SERVICE AREAS
CONTACT HI-2021

The Bidder's Proposals for the contractor bidding on the North Dakota State Water Commission Contract HI-2021 were checked electronically, and the following were noted:

CARSTENSEN CONTRACTING – DELL RAPIDS, SD

Bid Schedule 4

Extension of Bid Item No. 1 was incorrect. The amount shown was $86,527.00, and the correct amount should have been $86,527.50. The amount was corrected in the Bid Tab. The Total of Bid Schedules 1 through 4 and the Total of Bid Schedules 1 through 4 with Alternates reflected the correct amount.

The subtotal and total of Bid Schedule 4 was shown as $721,493.50 on the bid form. The summation of the line items 1-10 should have been $744,693.50. The subtotal and total for Bid Schedule 4 was corrected to $744,693.50 on the Bid Tab. The Total of Bid Schedules 1 through 4 and the Total of Bid Schedules 1 through 4 with Alternates were correctly show on the bid form.

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor:	North State Water Commission	**New Connections**	43
Project:	SWPP - Contract HI-2021 (Bid Schedule No. 1)	**Future Connections**	23
		Connections Currently Served by Project	7450

1- Inputs

This is the primary data entry worksheet where users provide brief descriptions of the alternative being considered (up to 4) as well as information on annual O&M and length of construction.

	Minimum or Base Monthly Water Rate	$55.32
Orange cells are for entering project specific data	**Current Water Montly Bill ($) for a 5,000 Gallon User**	$87.67
Yellow cells reference data from other worksheets		

Input	Units	Input Value	Definition of Term	Reference
Base Year for LCCA Model Period of Analysis	Year	2022	Beginning of analysis period	
Analysis Duration	Years	50		
End Year for LCCA Model Period of Analysis	Year	2072	Ending year of analysis period	Assumes 50 years of operations
Discount Factor	%	2.250%	Discount factor used for present value calculations	Discounting is the process of determining the present value of a payment or a stream of payments that is to be received in the future. Given the time value of money, a dollar is worth more today than it would be worth tomorrow. - Source USACE
Total Volume of Water Provided by the Project	TGAL/Day	11.00	Thousands of Gallons Per Day	

Name of Alternative		**Bid Schedule 1 - New Hradec SA Improvements**		
Description of Alternative		**New Hradec Distribution System Improvements; 3-6" Pipeline and 2 New Booster Pump Stations**		
Capital Investment		**Units**	**Alternative 1**	**Notes**
Construction	Total Construction	$	$1,990,427	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$20,000	

Name of Alternative		**NA**		
Description of Alternative				
Capital Investment		**Units**	**Alternative 2**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative		**NA**		
Description of Alternative				
Capital Investment		**Units**	**Alternative 3**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative		**NA**		
Description of Alternative				
Capital Investment		**Units**	**Alternative 4**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$		

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor: North State Water Commission
Project: SWPP - Contract HI-2021 (Bid Schedule No. 1)

3 - Results Summary

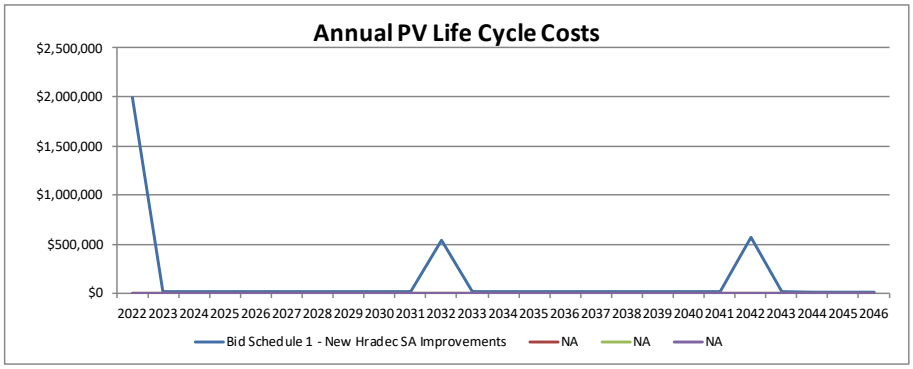
Life Cycle Cost Analysis

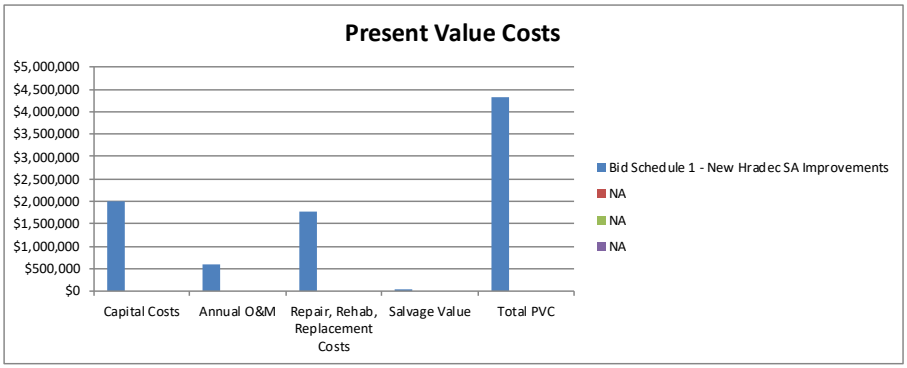
This worksheet serves as the summary for all outputs created in the model. For the given inputs, the Results Summary provides an overview of capital costs; annual O&M; repair, rehab, replacement costs; and salvage value. Under the Results Summary, the user will find a breakdown of the cost for each category and alternative.

Scenario Analysis - Present Value Life Cycle Cost Summary

Cost Summary

Present Value	Bid Schedule 1 - New Hradec SA Improvements	NA	NA	NA
Capital Costs	$1,990,000	$0	$0	$0
Annual O&M	$591,000	$0	$0	$0
Repair, Rehab, Replacement Costs	$1,779,000	$0	$0	$0
Salvage Value	$33,000	$0	$0	$0
Total PVC	**$4,327,000**	**$0**	**$0**	**$0**





Life Cycle Cost Analysis Review

Sponsor: North State Water Commission
Project Title: SWPP - Contract HI-2021 (Bid Schedule No. 1) **Date:** December 8, 2022

Explanation of Alternatives:

Bid Schedule 1 - New Hradec SA Improvements - New Hradec Distribution System Improvements; 3-6" Pipeline and 2 New Booster Pump Stations

Inputs:

New Connections Served	43
Future Connections Served	23
Current Connections Served	7450
Net Connections (New + Current)	7493

	Bid Schedule 1 - New Hradec SA Improvements	NA	NA	NA
Construction Cost	$1,990,427			
Annual O & M	$20,000			

Details:

See Memo

LCCA Model Results:

Scenario Analysis - Present Value Life Cycle Cost Summary

Present Value	Bid Schedule 1 - New Hradec SA Improvements	NA	NA	NA
Capital Costs	$1,990,000			
O&M	$591,000			
Repair, Rehab, Replacement	$1,779,000			
Salvage Value	$33,000			
Total PVC	**$4,327,000**			
PV Cost Per User	**$577**			

Net Connections (New + Current)		7,493			
Cost-Share Percent		75%			
	Local Share	$497,500			
	Other Funding	$0			
	Total Local	$497,500			
Payment Per User With Cost-Share		**$0.34**			
	Local Share	$1,990,000			
	Other Funding	$0			
	Total Local	$1,990,000			
Payment Per User Without Cost-Share		**$1.34**			

Explanation of Results:

The SWPP project is "Bid Schedule 1 - New Hradec SA Improvements". The present value cost of the project is $4,327,000. The present value cost per user is $577.

The economic model appears to have functioned properly. The results are deemed to be reliable and repeatable with the inputs provided by the project sponsor.

LCCA Version Version 1.2022.07.08

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor:	North State Water Commission	**New Connections**	20
Project:	SWPP - Contract HI-2021(Bid Schedule No. 2)	**Future Connections**	2 Base/ 18.5 Alternate
		Connections Currently Served by Project	7450

1- Inputs

This is the primary data entry worksheet where users provide brief descriptions of the alternative being considered (up to 4) as well as information on annual O&M and length of construction.

Minimum or Base Monthly Water Rate	$55.32
Current Water Montly Bill ($) for a 5,000 Gallon User	$87.67

Orange cells are for entering project specific data

Yellow cells reference data from other worksheets

Input	Units	Input Value	Definition of Term	Reference
Base Year for LCCA Model Period of Analysis	Year	2022	Beginning of analysis period	
Analysis Duration	Years	50		
End Year for LCCA Model Period of Analysis	Year	2072	Ending year of analysis period	Assumes 50 years of operations
Discount Factor	%	2.250%	Discount factor used for present value calculations	Discounting is the process of determining the present value of a payment or a stream of payments that is to be received in the future. Given the time value of money, a dollar is worth more today than it would be worth tomorrow. - Source USACE
Total Volume of Water Provided by the Project	TGAL/Day	6.42	Thousands of Gallons Per Day	

Name of Alternative	**Bid Schedule 2 - Killdeer Mountain SA Improvements**			
Description of Alternative	**Killdeer Distribution System Improvements; 3-6" Pipeline and 1 New Booster Pump Stations.**			
Capital Investment		**Units**	**Alternative 1**	**Notes**
Construction	Total Construction	$	$1,412,908	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$15,000	

Name of Alternative	**Bid Schedule 2 Alternate - Killdeer Mountain SA Improvements**			
Description of Alternative	**Killdeer Distribution System Improvements; Schedule 2 Alternate upgrades 4"-6" to increase potential connections able to be served.**			
Capital Investment		**Units**	**Alternative 2**	**Notes**
Construction	Total Construction	$	$1,569,015	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$15,000	

Name of Alternative	**NA**			
Description of Alternative				
Capital Investment		**Units**	**Alternative 3**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative	**NA**			
Description of Alternative				
Capital Investment		**Units**	**Alternative 4**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$		

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor: North State Water Commission
Project: SWPP - Contract HI-2021(Bid Schedule No. 2)

3 - Results Summary

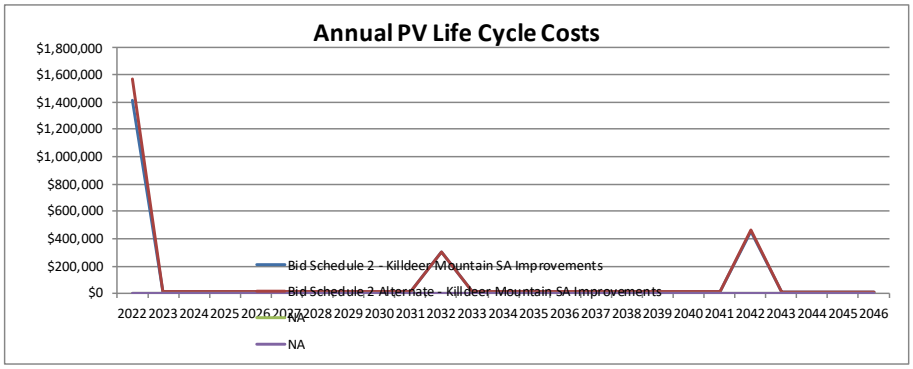
Life Cycle Cost Analysis

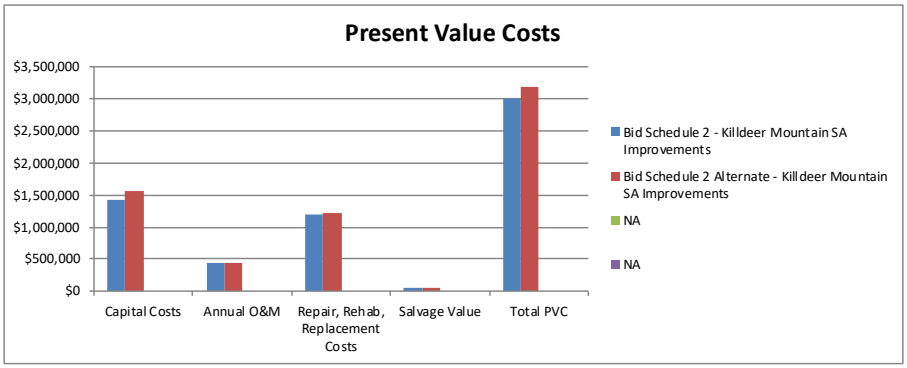
This worksheet serves as the summary for all outputs created in the model. For the given inputs, the Results Summary provides an overview of capital costs; annual O&M; repair, rehab, replacement costs; and salvage value. Under the Results Summary, the user will find a breakdown of the cost for each category and alternative.

Scenario Analysis - Present Value Life Cycle Cost Summary

Cost Summary

Present Value	Bid Schedule 2 - Killdeer Mountain SA Improvements	Bid Schedule 2 Alternate - Killdeer Mountain SA Improvements	NA	NA
Capital Costs	$1,413,000	$1,569,000	$0	$0
Annual O&M	$443,000	$443,000	$0	$0
Repair, Rehab, Replacement Costs	$1,203,000	$1,226,000	$0	$0
Salvage Value	$51,000	$54,000	$0	$0
Total PVC	**$3,008,000**	**$3,184,000**	**$0**	**$0**





Life Cycle Cost Analysis Review

Sponsor: North State Water Commission
Project Title: SWPP - Contract HI-2021(Bid Schedule No. 2) **Date:** December 8, 2022

Explanation of Alternatives:

Bid Schedule 2 - Killdeer Mountain SA Improvements - Killdeer Distribution System Improvements; 3-6" Pipeline and 1 New Booster Pump Stations

Bid Schedule 2 Alternate - Killdeer Mountain SA Improvements - Killdeer Distribution System Improvements; 4"-6" to increase potential connections able to be served.

Inputs:

New Connections Served	20
Future Connections Served	2 Base/ 18.5 Alternate
Current Connections Served	7450
Net Connections (New + Current)	7470

	Bid Schedule 2 - Killdeer Mountain SA Improvements	Bid Schedule 2 Alternate - Killdeer Mountain SA Improvements	NA	NA
Construction Cost	$1,412,908	$1,569,015		
Annual O & M	$15,000	$15,000		

Details:

LCCA Model Results:

Scenario Analysis - Present Value Life Cycle Cost Summary

Present Value	Bid Schedule 2 - Killdeer Mountain SA Improvements	Bid Schedule 2 Alternate - Killdeer Mountain SA Improvements	NA	NA
Capital Costs	$1,413,000	$1,569,000		
O&M	$443,000	$443,000		
Repair, Rehab, Replacement	$1,203,000	$1,226,000		
Salvage Value	$51,000	$54,000		
Total PVC	**$3,008,000**	**$3,184,000**		
PV Cost Per User	**$403**	**$426**		

Net Connections (New + Current)		7,470	7,470		
Cost-Share Percent		75%	75%		
	Local Share	$353,250	$392,250		
	Other Funding	$0	$0		
	Total Local	$353,250	$392,250		
Payment Per User With Cost-Share		**$0.24**	**$0.27**		
	Local Share	$1,413,000	$1,569,000		
	Other Funding	$0	$0		
	Total Local	$1,413,000	$1,569,000		
Payment Per User Without Cost-Share		**$0.96**	**$1.06**		

Explanation of Results:

The SWPP presents two projects “Bid Schedule 2” and “Bid Schedule 2 Alternative” options. The present value cost of each alternative is $3.008,000 and $3,184,000 respectively. The present value cost per user for each is $403 and $426 for the alternative.

The economic model appears to have functioned properly. The results are deemed to be reliable and repeatable with the inputs provided by the project sponsor.

LCCA Version Version 1.2022.07.08

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor:	North State Water Commission	**New Connections**	15
Project:	SWPP - Contract HI-2021 (Schedule No. 3)	**Future Connections**	10 base / 43 alternate
		Connections Currently Served by Project	7450

1- Inputs

This is the primary data entry worksheet where users provide brief descriptions of the alternative being considered (up to 4) as well as information on annual O&M and length of construction.

Minimum or Base Monthly Water Rate	$55.32
Current Water Montly Bill ($) for a 5,000 Gallon User	$87.67

Orange cells are for entering project specific data
Yellow cells reference data from other worksheets

Input	Units	Input Value	Definition of Term	Reference
Base Year for LCCA Model Period of Analysis	Year	2023	Beginning of analysis period	
Analysis Duration	Years	50		
End Year for LCCA Model Period of Analysis	Year	2073	Ending year of analysis period	Assumes 50 years of operations
Discount Factor	%	2.250%	Discount factor used for present value calculations	Discounting is the process of determining the present value of a payment or a stream of payments that is to be received in the future. Given the time value of money, a dollar is worth more today than it would be worth tomorrow. - Source USACE
Total Volume of Water Provided by the Project	TGAL/Day	9.67	Thousands of Gallons Per Day	

Name of Alternative	**Bid Schedule 3 - Twin Buttes SA Improvements**			
Description of Alternative	**Twin Buttes Service Area Improvements; 2.5-6" pipeline, 1 new booster pump station**			
Capital Investment		**Units**	**Alternative 1**	**Notes**
Construction	Total Construction	$	$738,212	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$15,000	

Name of Alternative	**Bid Schedule 3 Alternate - Twin Buttes SA Improvements**			
Description of Alternative	**Twin Buttes Service Area Improvements; Schedule 3 Alternate upgrades 4" to 6" to increase potential connections able to be served**			
Capital Investment		**Units**	**Alternative 2**	**Notes**
Construction	Total Construction	$	$800,375	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$15,000	

Name of Alternative				
Description of Alternative				
Capital Investment		**Units**	**Alternative 3**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative				
Description of Alternative				
Capital Investment		**Units**	**Alternative 4**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$		

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor: North State Water Commission
Project: SWPP - Contract HI-2021 (Schedule No. 3)

3 - Results Summary

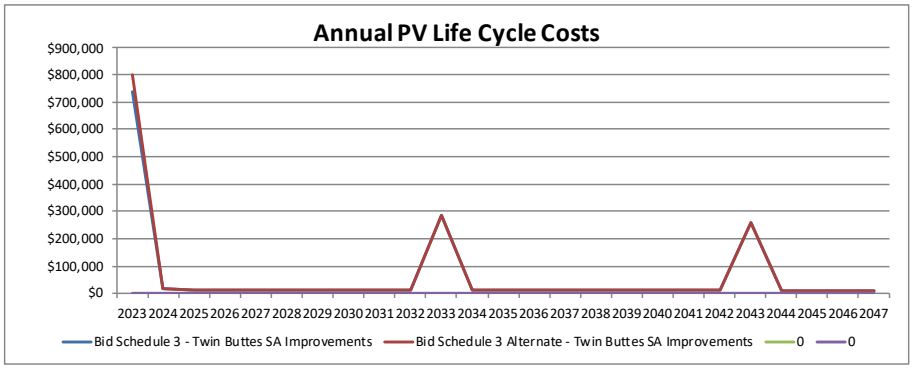
Life Cycle Cost Analysis

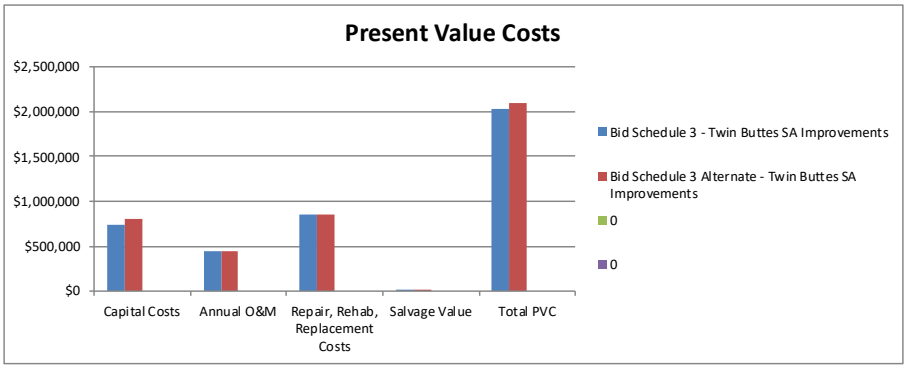
This worksheet serves as the summary for all outputs created in the model. For the given inputs, the Results Summary provides an overview of capital costs; annual O&M; repair, rehab, replacement costs; and salvage value. Under the Results Summary, the user will find a breakdown of the cost for each category and alternative.

Scenario Analysis - Present Value Life Cycle Cost Summary

Cost Summary

Present Value	Bid Schedule 3 - Twin Buttes SA Improvements	Bid Schedule 3 Alternate - Twin Buttes SA Improvements	0	0
Capital Costs	$738,000	$800,000	$0	$0
Annual O&M	$443,000	$443,000	$0	$0
Repair, Rehab, Replacement Costs	$853,000	$855,000	$0	$0
Salvage Value	$7,000	$7,000	$0	$0
Total PVC	**$2,027,000**	**$2,091,000**	**$0**	**$0**





Life Cycle Cost Analysis Review

Sponsor: North State Water Commission
Project Title: SWPP - Contract HI-2021 (Schedule No. 3) **Date:** December 8, 2022

Explanation of Alternatives:

Bid Schedule 3 - Twin Buttes SA Improvements - 2.5-6" pipeline, 1 new booster pump station

Bid Schedule 3 Alternate - Twin Buttes SA Improvements - Schedule 3 Alternate upgrades 4" to 6" to increase potential connections able to be served

Inputs:

New Connections Served	15
Future Connections Served	10 base / 43 alternate
Current Connections Served	7450
Net Connections (New + Current)	7465

	Bid Schedule 3 - Twin Buttes SA Improvements	Bid Schedule 3 Alternate - Twin Buttes SA Improvements		
Construction Cost	$738,212	$800,375		
Annual O & M	$15,000	$15,000		

Details:

See memo.

LCCA Model Results:

Scenario Analysis - Present Value Life Cycle Cost Summary

Present Value	Bid Schedule 3 - Twin Buttes SA Improvements	Bid Schedule 3 Alternate - Twin Buttes SA Improvements		
Capital Costs	$738,000	$800,000		
O&M	$443,000	$443,000		
Repair, Rehab, Replacement	$853,000	$855,000		
Salvage Value	$7,000	$7,000		
Total PVC	**$2,027,000**	**$2,091,000**		
PV Cost Per User	**$272**	**$280**		

Net Connections (New + Current)		7,465	7,465		
Cost-Share Percent		75%	75%		
	Local Share	$184,500	$200,000		
	Other Funding	$0	$0		
	Total Local	$184,500	$200,000		
Payment Per User With Cost-Share		**$0.13**	**$0.14**		
	Local Share	$738,000	$800,000		
	Other Funding	$0	$0		
	Total Local	$738,000	$800,000		
Payment Per User Without Cost-Share		**$0.50**	**$0.54**		

Explanation of Results:

The SWPP presents two alternative projects “Bid Schedule 3” and “Bid Schedule 3 Alternative” options. The present value cost of each alternative is $2,027,000 and $2,091,000 respectively. The present value cost per user for each alternative is $272 and $280 for the alternative.

The economic model appears to have functioned properly. The results are deemed to be reliable and repeatable with the inputs provided by the project sponsor.

LCCA Version Version 1.2022.07.08

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor:	North State Water Commission	**New Connections**	29
Project:	SWPP - Contract HI-2021 (Schedule 4)	**Future Connections**	42
		Connections Currently Served by Project	7450

1- Inputs

This is the primary data entry worksheet where users provide brief descriptions of the alternative being considered (up to 4) as well as information on annual O&M and length of construction.

	Minimum or Base Monthly Water Rate	$55.32
Orange cells are for entering project specific data	**Current Water Montly Bill ($) for a 5,000 Gallon User**	$87.67
Yellow cells reference data from other worksheets		

Input	Units	Input Value	Definition of Term	Reference
Base Year for LCCA Model Period of Analysis	Year	2023	Beginning of analysis period	
Analysis Duration	Years	50		
End Year for LCCA Model Period of Analysis	Year	2073	Ending year of analysis period	Assumes 50 years of operations
Discount Factor	%	2.250%	Discount factor used for present value calculations	Discounting is the process of determining the present value of a payment or a stream of payments that is to be received in the future. Given the time value of money, a dollar is worth more today than it would be worth tomorrow. - Source USACE
Total Volume of Water Provided by the Project	TGAL/Day	11.83	Thousands of Gallons Per Day	

Name of Alternative	**Bid Schedule 4 - Fairfield SA Improvements**			
Description of Alternative	**Fairfield SA Improvements, 3" pipeline, 1 new booster pump station**			
Capital Investment		**Units**	**Alternative 1**	**Notes**
Construction	Total Construction	$	$744,694	
	Years of Construction	Years	1	
Annual O&M	Annual O&M	$	$15,000	

Name of Alternative	**NA**			
Description of Alternative				
Capital Investment		**Units**	**Alternative 2**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative	**NA**			
Description of Alternative				
Capital Investment		**Units**	**Alternative 3**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$	$0	

Name of Alternative	**NA**			
Description of Alternative				
Capital Investment		**Units**	**Alternative 4**	**Notes**
Construction	Total Construction	$	$0	
	Years of Construction	Years		
Annual O&M	Annual O&M	$		

Date: 12/8/22

North Dakota State Water Commission - Life Cycle Cost Analysis

Sponsor: North State Water Commission
Project: SWPP - Contract HI-2021 (Schedule 4)

3 - Results Summary

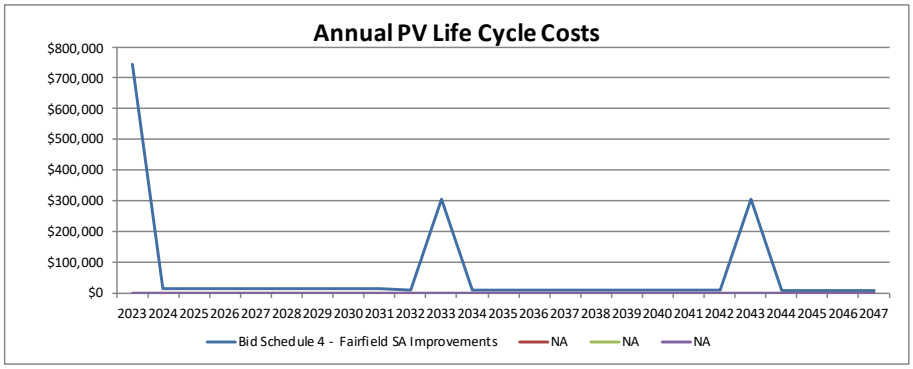
Life Cycle Cost Analysis

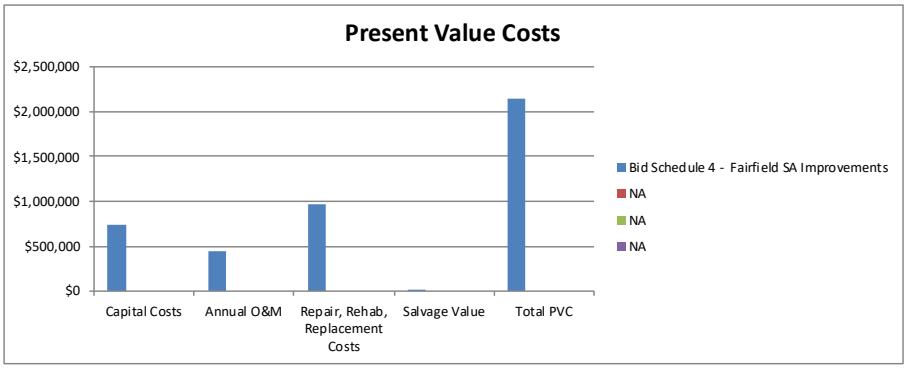
This worksheet serves as the summary for all outputs created in the model. For the given inputs, the Results Summary provides an overview of capital costs; annual O&M; repair, rehab, replacement costs; and salvage value. Under the Results Summary, the user will find a breakdown of the cost for each category and alternative.

Scenario Analysis - Present Value Life Cycle Cost Summary

Cost Summary

Present Value	Bid Schedule 4 - Fairfield SA Improvements	NA	NA	NA
Capital Costs	$745,000	$0	$0	$0
Annual O&M	$443,000	$0	$0	$0
Repair, Rehab, Replacement Costs	$968,000	$0	$0	$0
Salvage Value	$15,000	$0	$0	$0
Total PVC	**$2,141,000**	**$0**	**$0**	**$0**





Life Cycle Cost Analysis Review

Sponsor: North State Water Commission
Project Title: SWPP - Contract HI-2021 (Schedule 4) **Date:** December 8, 2022

Explanation of Alternatives:

Bid Schedule 4 - Fairfield SA Improvements, 3" pipeilne, 1 new booster pump station

Inputs:

New Connections Served	29			
Future Connections Served	42			
Current Connections Served	7450			
Net Connections (New + Current)	7479			
	Bid Schedule 4 - Fairfield SA	NA	NA	NA
Construction Cost	$744,694			
Annual O & M	$15,000			

Details:

See memo.

LCCA Model Results:

Scenario Analysis - Present Value Life Cycle Cost Summary

Present Value	Bid Schedule 4 - Fairfield SA	NA	NA	NA
Capital Costs	$745,000			
O&M	$443,000			
Repair, Rehab, Replacement	$968,000			
Salvage Value	$15,000			
Total PVC	**$2,141,000**			
PV Cost Per User	**$286**			

Net Connections (New + Current)		7,479			
Cost-Share Percent		75%			
	Local Share	$186,250			
	Other Funding	$0			
	Total Local	$186,250			
Payment Per User With Cost-Share		**$0.13**			
	Local Share	$745,000			
	Other Funding	$0			
	Total Local	$745,000			
Payment Per User Without Cost-Share		**$0.50**			

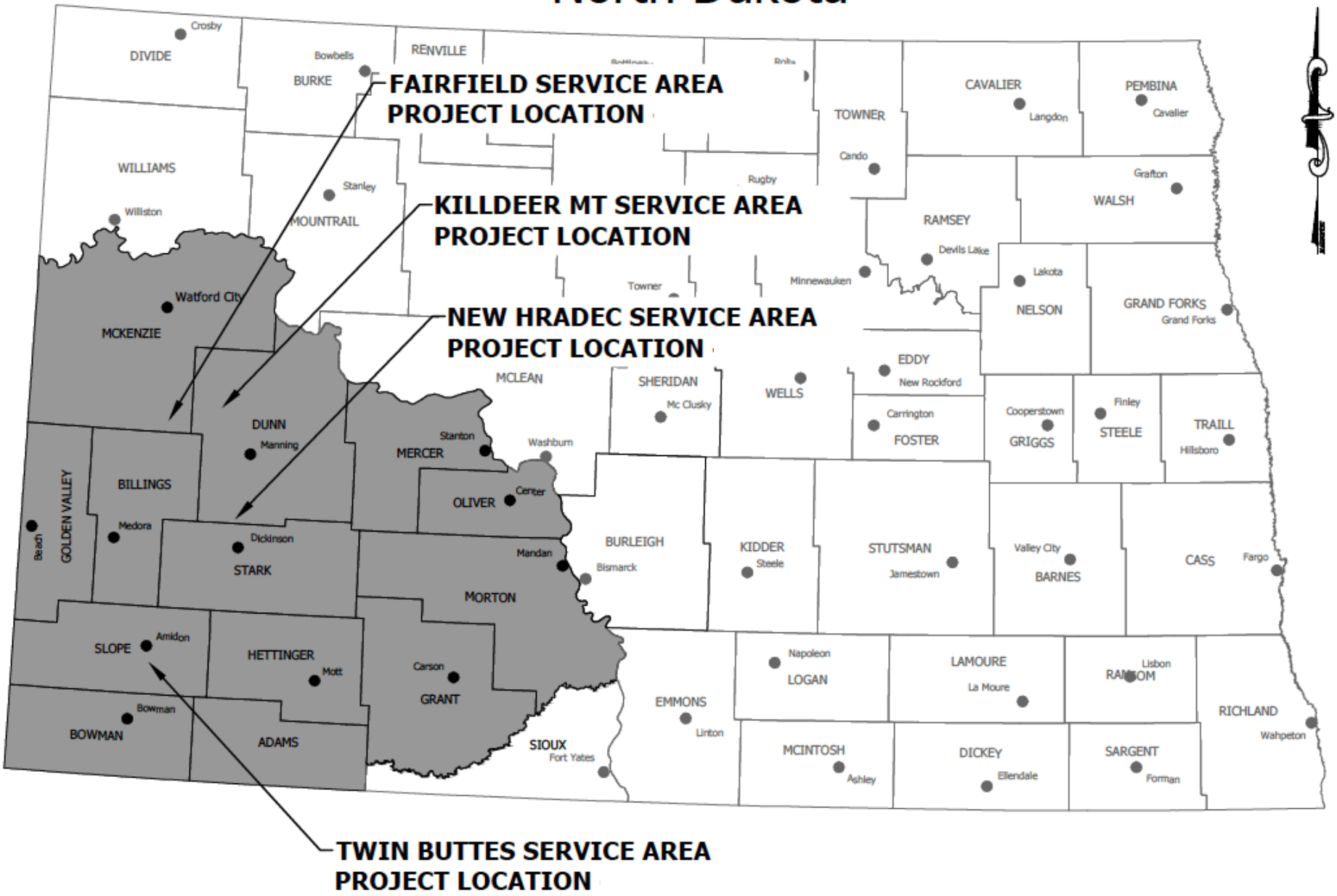
Explanation of Results:

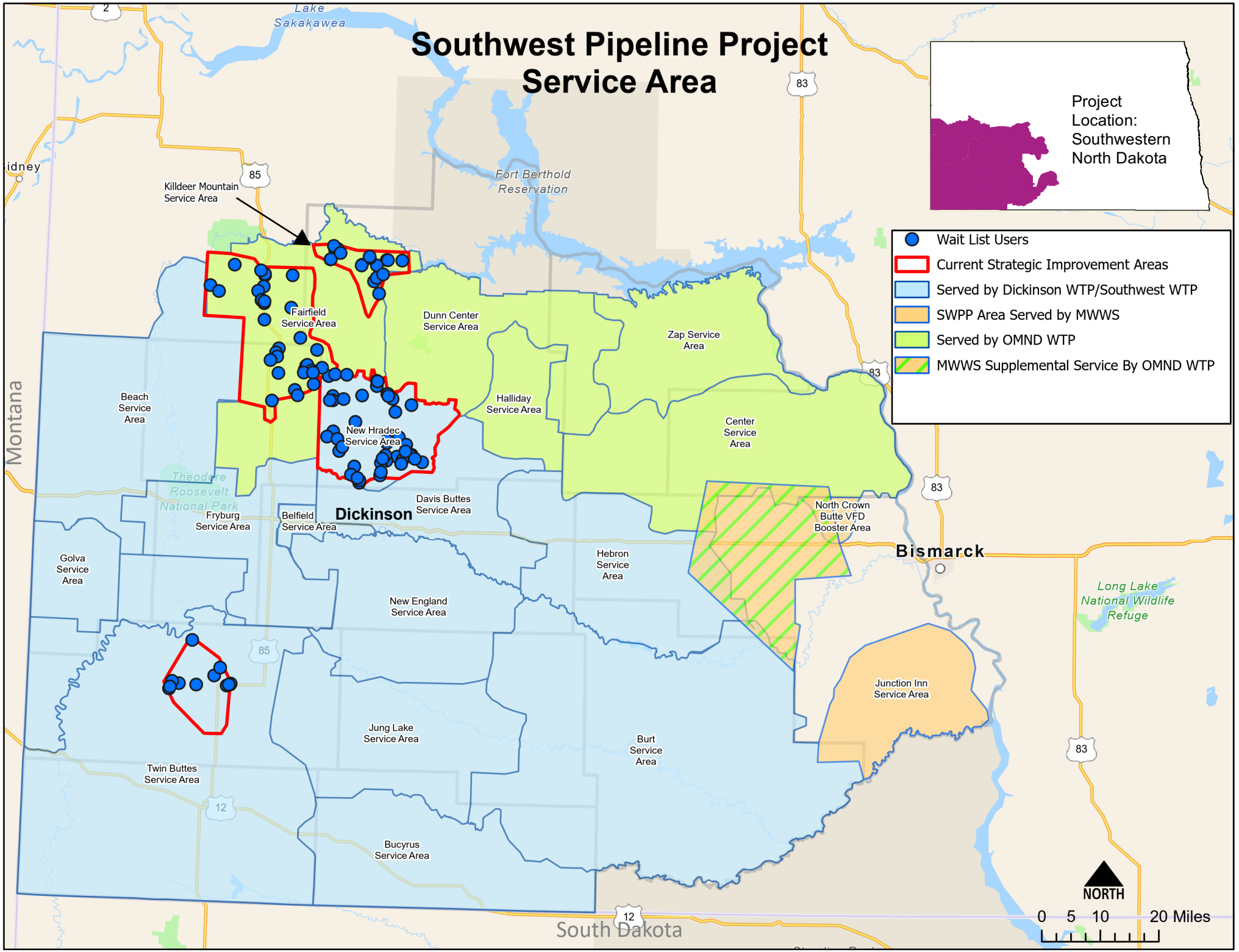
SWPP Bid Schedule 4 - Fairfield SA has a total PVC of $2,141,000 and a per user PVC of $286.

The economic model appears to have functioned properly. The results are deemed to be reliable and repeatable with the inputs provided by the project sponsor.

LCCA Version Version 1.2022.07.08

PROJECT LOCATION MAP




Southwest Pipeline Project
Service Area
Project Location: Southwestern North Dakota
Wait List Users
Current Strategic Improvement Areas
Served by Dickinson WTP/Southwest WTP
SWPP Area Served by MWWS
Served by OMND WTP
MWWS Supplemental Service By OMND WTP
Killdeer Mountain Service Area
Fairfield Service Area
Dunn Center Service Area
Zap Service Area
Halliday Service Area
Center Service Area
Beach Service Area
New Hradec Service Area
Theodore Roosevelt National Park
Fryburg Service Area
Belfield Service Area
Dickinson
Davis Buttes Service Area
North Crown Butte VFD Booster Area
Bismarck
Golva Service Area
Hebron Service Area
New England Service Area
Long Lake National Wildlife Refuge
Junction Inn Service Area
Jung Lake Service Area
Burt Service Area
Twin Buttes Service Area
Bucyrus Service Area
Fort Berthold Reservation
Lake Sakakawea
Montana
South Dakota
NORTH
0 5 10 20 Miles

HOUSTON engineering, inc.

Memorandum

To: Tim Freije, PE
NAWS Project Manager

From: Alan J. Kemmet, PE
Houston Engineering, Inc.

Subject: NAWS Intake and Snake Creek Pumping Plant Modifications Equipment Procurement Bid Review and Award Recommendation

Date: December 2, 2022

Project: NDSWC Project 237-4, Contract 6-1A | HEI Project 3553-0079

INTRODUCTION

The NAWS Intake and Snake Creek Pumping Plant (SCPP) Modifications Equipment Procurement Project was separated from the overall SCPP project construction after the unsuccessful bidding of the interior work to move forward with acquisition of long lead-time critical equipment while construction documents are revised. The completion dates for the project were set based on the estimated lead times for equipment ascertained from the original bid opening. Major equipment items were listed in multiple bid schedules to allow Suppliers to bid single or multiple schedules. The project was advertised for bids on October 20th, 2022, in accordance with state bidding requirements with 11 contracts let for bids. The Bid Schedules are listed in the table below. An optional Pre-Bid Conference was held virtually on October 27th, 2022. The Bid Opening was held on November 17, 2022.

The final Opinion of Probable Construction Cost (OPCC) prepared by the design team was $11,785,000 with an expected accuracy range of -15% to +20% assuming multiple Bidders. Two addenda were issued during bidding to formally approve or-equal requests, resolve Bidder questions or issues, and revise documents.

Four bids were received for Bid Schedule 1 – Vertical Turbine Pumps with one of them unable to be opened; two bids were received for Bid Schedule 2; Bid Schedule 4 was removed from the Documents, and Bid Schedules 3, 5-12 all received a single bid. Bid prices were in-line with expectations, with several items seeing significant increases in lead times and somewhat higher cost from estimates just a few months ago.

BID REVIEW

Bid Schedule 1 – Vertical Turbine Pumps

General Repair/Flowserve: $1,883,611.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder did not initially provide supplemental technical information with the bid but has subsequently provided this information for consideration.

- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

General Repair did not take exceptions to the technical requirements or commercial terms of the contract, was the overall low Bidder, and has a total lead time of approximately 58-62 weeks from Notice to Proceed (NTP).

Ebara: $2,173,869.32
The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided comprehensive supplemental technical information with the bid along with several requested changes for consideration.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Ebara took several exceptions to the technical requirements that are all acceptable to the Engineer. The requested changes to commercial terms of the contract included one major request – to limit assessed liquidated damages to 5% of the contract instead of the 50% currently in the agreement. Changes to the commercial terms does not seem compatible with the bidding language and although not technically an exception to the bid, granting this request would in effect grant an exception to the commercial terms. This bid was $290,258.32 higher than the low bid but has a total lead time of approximately 44-48 weeks from Notice to Proceed (NTP) which is 14 weeks faster than the low bid.

Vessco/Xylem: $2,915,000.00
The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- Bidder has a current, valid Class A Contractor's License and is in good standing with the Secretary of State.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided comprehensive supplemental technical information with the bid along with follow up information regarding the motor type.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Vessco took several exceptions to the technical requirements that are all acceptable to the Engineer, except for the requested change to a TEFC Motor instead of the specified TEWAC. This issue was resolved immediately through communications with Vessco that the motor would be provided as specified. This bid was $1,031,389.00 higher than the low bid but has a total lead time of approximately 48-50 weeks from Notice to Proceed (NTP) which is 10 weeks faster than the low bid.

Bid Schedule 2 – High Pressure Injection and Cooling Water Pumps

Both Bidders for Bid Schedule 2 included both pump systems on a single skid which is acceptable. Both Bids also contained a technical error in the form of oversized cooling water pumps. Both Bidders have been contacted regarding this error and remain comfortable with their bids using the correct pump sizes which are available from both Suppliers.

General Repair/Grundfos: $246,866.00
The Bidder provided the following information:
- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder did not initially provide supplemental technical information with the bid but has subsequently provided this information for consideration.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying.

General Repair did not take exceptions to the commercial terms of the contract but did include several technical exceptions. The overall size of the pump skid is estimated to be nearly twice the size designed for and included standard manufacturer controls that run on a different platform than other NAWS systems. While the overall skid size should reduce with the corrected pump sizing, this skid may still be too large for project constraints. The variance in control platforms is also of concern with this offering, although communications should still be possible. This Bid was $35,866 higher than the low bid and also has a 2-8 week longer lead time.

Vessco/EFI/Grundfos: $211,000.00
The Bidder provided the following information:
- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- Bidder has a current, valid Class A Contractor's License and is in good standing with the Secretary of State.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided comprehensive supplemental technical information with the bid along with follow up information regarding the pump sizing.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Vessco did not take exceptions to the commercial terms or technical requirements, the skid dimensions are in line with design expectations, and the control systems are compatible with other project infrastructure. This bid was low overall at a price of $211,000.00 and a lead time of 26 weeks.

Bid Schedule 3 – Surge Suppression System

Vessco/Pulsco: $1,862,300
The Bidder provided the following information:
- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Vessco did not take exceptions to the commercial terms of the contract but did include several minor exceptions to the technical requirements that are all acceptable to the Engineer. Vessco was the only Bidder for this contract, prices were in line with expectations and the equipment has a total lead time of approximately 38-46 weeks from Notice to Proceed (NTP).

Bid Schedule 4 – Not included in final documents

Bid Schedule 5 – Liquid-Filled Padmount Transformer

Main Electric: $614,722.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 61-62 weeks from Notice to Proceed (NTP).

Bid Schedule 6 – Medium Voltage Metal-Clad Switchgear

Main Electric: $1,352,195.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 39-40 weeks from Notice to Proceed (NTP).

Bid Schedule 7 – Medium Voltage Motor Control Center

Main Electric: $274,995.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 39-40 weeks from Notice to Proceed (NTP).

Bid Schedule 8 – Variable Frequency Drives

Main Electric: $2,374,035.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 27-30 weeks from Notice to Proceed (NTP).

Bid Schedule 9 – Standby Generator System

Main Electric: $1,266,365.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 140-144 weeks from Notice to Proceed (NTP). The lead time of the generator equipment has increased significantly from the original bid, but since this equipment has a separate milestone it should not impact the completion or functionality of the rest of the project.

Bid Schedule 10 – Controls Package

Main Electric: $640,380.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Main Electric did not take exceptions to the commercial terms of the contract or technical requirements. Main Electric was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 62-66 weeks from Notice to Proceed (NTP) plus time for other related submittal reviews. The significant lead time of the controls package has the potential to impact overall completion of the project, in order to minimize impacts, the submittal process for this contract should be expedited.

Bid Schedule 11 – Discharge Pipeline

Core & Main: $1,502,881.34

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Core & Main did not take exceptions to the technical requirements, but included a disclaimer regarding price being subject to pricing at time of shipment that contradicts the commercial terms of the contract. Core & Main was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 12 Months from Notice to Proceed (NTP). This lead time is significantly longer than what was estimated from another Ductile Iron Pipe supplier. The long lead time has the potential to impact the completion of the overall project as pipe could not be installed until sometime in 2024, while a lead time under 6 months would allow for this construction to be completed in 2023.

Bid Schedule 12 – High Pressure Check Valves

Vessco: $298,464.00

The Bidder provided the following information:

- The Bidder acknowledged receipt of both addenda.
- No errors were found in the Bidder's bid form after the bid was tabulated.
- The listed equipment/material manufacturers for the work are all approved manufacturers.
- Bidder provided detailed supplemental information.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying

Vessco did not take exceptions to the commercial terms of the contract or technical requirements. Vessco was the only Bidder for this contract, prices were in line with expectations, and the equipment has a total lead time of approximately 10-15 weeks from Notice to Proceed (NTP).

BID TABULATION

All bids that were opened were verified for accuracy. The following table shows the total value bid for each contract. The attached bid tab contains the OPCC and each Bidder's bid broken down by line item that matches the bid forms.

Contract	Bidder	Total Bid Amount
Procurement Contract No. 1 – Vertical Turbine Pumps	General Repair/Flowserve	$1,883,611.00
	Ebara	$2,173,869.32
	Vessco/Xylem	$2,915,000.00
Procurement Contract No. 2 – Cooling Water and High-Pressure Injection Pumps	General Repair/Grundfos	$246,866.00
	Vessco/EFI	$211,000.00

Procurement Contract No. 3 – Surge Suppression System	Vessco/Pulsco		$1,862,300.00
Procurement Contract No. 4 – Removed From Documents	N/A		N/A
Procurement Contract No. 5 – Liquid-Filled Padmount Transformer	Main Electric		$614,722.00
Procurement Contract No. 6 – Medium Voltage Metal-Clad Switchgear	Main Electric		$1,352,195.00
Procurement Contract No. 7 – Medium Voltage Motor Control Center	Main Electric		$274,995.00
Procurement Contract No. 8 – Variable Frequency Drives	Main Electric		$2,374,035.00
Procurement Contract No. 9 – Standby Generator System	Main Electric		$1,266,365.00
Procurement Contract No. 10 – Controls Package	Main Electric		$640,380.00
Procurement Contract No. 11 – Discharge Pipeline	Core & Main		$1,502,881.34
Procurement Contract No. 12 – High Pressure Check Valves	Vessco		$298,464.00
Engineer's Combined OPCC	$11,784,527.00	Total	$12,280,948.34

AWARD RECOMMENDATION

HEI believes the bidding process for this project was fair and provided competitive pricing even though there was only one Bid received for several the Bid Schedules. Many of these items only had a single offeror on the original Bid due to specialized nature of the products and the timelines involved and the prices received during procurement bidding were very similar to the separate equipment prices provided with the original Bid.

Bid Schedule 1 – Vertical Turbine Pumps

Recommendation of award to: General Repair/Flowserve for $1,883,611.00

While there appears to be a fairly significant lead time advantage for the second low Bidder (Ebara) of up to 3 months, the additional cost of $290,258.32 is also significant. The pumps are major pieces of but can be installed independently of other equipment and structural work while the pump cans are necessary to complete the intake header and would arrive much sooner than the pump assembly itself. Considering the lead time on the controls package, awarding this Contract to the Low Bidder should still allow the project to be completed on time.

Bid Schedule 2 – High Pressure Injection and Cooling Water Pumps

Recommendation of award to: Vessco/EFI/Grundfos for $211,000.00

Both Bids used the same pump manufacturer with the low bidder having both a shorter lead time and better skid layout.

Bid Schedule 3 – Surge Suppression System
Recommendation of award to: Vessco/Pulsco for $1,862,300.00

Bid Schedule 4 – N/A

Bid Schedule 5 – Liquid-Filled Padmount Transformer
Recommendation of award to: Main Electric for $614,722.00

Bid Schedule 6 – Medium Voltage Metal-Clad Switchgear
Recommendation of award to: Main Electric for $1,352,195.00

Bid Schedule 7 – Medium Voltage Motor Control Center
Recommendation of award to: Main Electric for $274,995.00

Bid Schedule 8 – Variable Frequency Drives
Recommendation of award to: Main Electric for $2,374,035.00

Bid Schedule 9 – Standby Generator System
Recommendation of award to: Main Electric for $1,266,365.00

Bid Schedule 10 – Controls Package
Recommendation of award to: Main Electric for $640,380.00

Bid Schedule 11 – Discharge Pipeline
Recommendation of No Award
While the prices received for this bid schedule are reasonable, the lead time is nearly 3 times longer than expected based on conversations with another pipe manufacturer. There were also terms included with the Bid that are stated to supersede the Contract Documents and constitute an exception to the commercial terms of the Contract. Two bids were expected for this schedule, but it is unknown why only a single bid was received as the manufacturer was not aware that their distributor did not bid. It is likely that USACE approval will be given to proceed with this pipeline before the 2023 construction season begins and the installation of this pipeline could be completed in 2023 if product is available. With the combination of lead time and commercial exceptions, the recommendation for this Contract is to re-bid as a single procurement contract or include the material in the Construction Contract Bid.

Bid Schedule 12 – High Pressure Check Valves
Recommendation of award to: Vessco for $298,464.00

Award Recommendation Summary

Contract	Bidder		Total Bid Amount
Procurement Contract No. 1 – Vertical Turbine Pumps	General Repair/Flowserve		$1,883,611.00
	Ebara		$2,173,869.32
	Vessco/Xylem		$2,915,000.00
Procurement Contract No. 2 – Cooling Water and High-Pressure Injection Pumps	General Repair/Grundfos		$246,866.00
	Vessco/EFI		$211,000.00
Procurement Contract No. 3 – Surge Suppression System	Vessco/Pulsco		$1,862,300.00
Procurement Contract No. 4 – Removed From Documents	N/A		N/A
Procurement Contract No. 5 – Liquid-Filled Padmount Transformer	Main Electric		$614,722.00
Procurement Contract No. 6 – Medium Voltage Metal-Clad Switchgear	Main Electric		$1,352,195.00
Procurement Contract No. 7 – Medium Voltage Motor Control Center	Main Electric		$274,995.00
Procurement Contract No. 8 – Variable Frequency Drives	Main Electric		$2,374,035.00
Procurement Contract No. 9 – Standby Generator System	Main Electric		$1,266,365.00
Procurement Contract No. 10 – Controls Package	Main Electric		$640,380.00
Procurement Contract No. 11 – Discharge Pipeline	N/A		N/A
Procurement Contract No. 12 – High Pressure Check Valves	Vessco		$298,464.00
Engineer's Combined OPCC	$11,034,527.00	Total	$10,778,067

HEI recommends the Procurement Contracts for the NAWS Intake and Snake Creek Pumping Plant Modifications project – Equipment Procurement be awarded to multiple Suppliers according to the summary table above consisting of:

Burand, Inc. DBA as General Repair Services as the Vertical Turbine Pump Supplier (Procurement Contract 1);

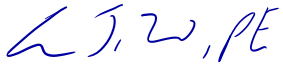
Vessco, Inc. as the Inline Booster Pump Supplier, Surge Suppression System Supplier, and Pump Check Valve Supplier (Procurement Contracts 2,3, and 12);

Main Electric Construction, Inc. as the Transformer Supplier, Switchgear Supplier, Motor Control Center Supplier, Variable Frequency Drive Supplier, Generator Supplier, and Controls Supplier (Procurement Contracts 5-10).

As previously described, the recommendation for Procurement Contract No. 11 – Discharge Pipeline is to not award and re-bid this equipment due to lead times and exceptions.

Please contact us if you have any questions.

In service,



Alan J. Kemmet, PE, Houston Engineering, Inc.
Cc: Kevin Martin, PE

Attachment (1)

NAWS Intake and Snake Creek Pumping Plant Modifications
Equipment Procurement Bid Summary

Bid Schedule	Description	OPCC	Low Bid Price	Supplier
1	Vertical Turbine Pumps	$ 2,005,452.00	$ 1,883,611.00	General Repair/Flowserve
2	High Pressure Injection and Cooling Water Pumps	$ 250,000.00	$ 211,000.00	Vessco/Xylem
3	Surge Supression System	$ 1,816,425.00	$ 1,862,300.00	Vessco/Pulsco
5	Liquid-Filled Padmount Transformer	$ 970,695.00	$ 614,722.00	Main Electric/Schneider
6	Medium Voltage Metal-Clad Switcgear	$ 1,758,972.00	$ 1,352,195.00	Main Electric/Schneider
7	Medium Voltage Motor Control Center	$ 500,000.00	$ 274,995.00	Main Electric/Schneider
8	Variable Frequency Drives	$ 1,705,263.00	$ 2,374,035.00	Main Electric/ABB
9	Standby Generator System	$ 1,107,720.00	$ 1,266,365.00	Main Electric/Caterpillar
10	Controls Package	$ 600,000.00	$ 640,380.00	Main Electric/IPS
11	Discharge Pipeline			
12	High Pressure Check Valves	$ 320,000.00	$ 298,464.00	Vessco/Dezurik
Total Combined		**$ 11,034,527.00**	**$ 10,778,067.00**	

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 1: Vertical Turbine Pumps					
			General Repair/Flowserve	Ebara	Vessco/Xylem
Item	**Description**	**OPCC**	**Bid Price**	**Bid Price**	**Bid Price**
1	Submittals/Shop Drawings		196,000.00	$ 130,432.16	$ 300,000.00
2	VTP Equipment		1,657,611.00	$ 1,962,727.16	$ 2,380,000.00
3	Special Services		30,000.00	$ 80,710.00	$ 235,000.00
	Add BABAA		N/A	N/A	N/A
	Lead Time		58-62 weeks	44-48 weeks	48-50 weeks
	Lead Time Add BABAA		N/A	N/A	N/A
Total Price - Bid Schedule 1		**$ 2,005,452.00**	**$ 1,883,611.00**	**$ 2,173,869.32**	**$ 2,915,000.00**
Difference from Low Bid		**$ -**	**$ -**	**$ 290,258.32**	**$ 1,031,389.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 2: High Pressure Injection and Cooling Water Pumps				
			General Repair/Grunfos	Vessco/Xylem
Item	**Description**	**OPCC**	**Bid Price**	**Bid Price**
1	Submittals/Shop Drawings		$ 35,000.00	$ 11,000.00
2	High Pressure Injection Pump Equipment Package		$ 201,866.00	$ 100,000.00
3	Cooling Water Pump Equipment Package		N/A	$ 100,000.00
4	Special Services		$ 10,000.00	$ -
	Add BABAA		N/A	N/A
	Lead Time		28-34 weeks	26 weeks
	Lead Time Add BABAA		N/A	N/A
Total Price - Bid Schedule 2		**$ 250,000.00**	**$ 246,866.00**	**$ 211,000.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 3: Surge Supression System			
			Vessco
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 120,000.00
2	Surge Supression System Equipment		$ 1,682,300.00
3	Special Services		$ 60,000.00
	Add BABAA		$ -
	Lead Time		38-46 weeks
	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 3		**$ 1,816,425.00**	**$ 1,862,300.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 5: Liquid-Filled Padmount Transformer			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 700.00
2	Transformer Equipment		$ 589,072.00
3	Special Services		$ 24,950.00
4	Add BABAA		$ -
5	Lead Time		61-62 weeks
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 5		**$ 970,695.00**	**$ 614,722.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 6: Medium Voltage Metal-Clad Switcgear			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 1,750.00
2	Switchgear Equipment		$ 1,293,135.00
3	Special Services		$ 57,310.00
4	Add BABAA		$ -
5	Lead Time		39-40 weeks
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 6		**$ 1,758,972.00**	**$ 1,352,195.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 7: Medium Voltage Motor Control Center			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 2,100.00
2	MCC Equipment		$ 227,130.00
3	Special Services		$ 45,765.00
4	Add BABAA		$ -
5	Lead Time		39-40 weeks
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 7		**$ 500,000.00**	**$ 274,995.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 8: Variable Frequency Drives			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 2,100.00
2	VFD Equipment		$ 2,137,560.00
3	Special Services		$ 234,375.00
4	Add BABAA		$ -
5	Lead Time		27-30 weeks
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 8		**$ 1,705,263.00**	**$ 2,374,035.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 9: Standby Generator System			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 700.00
2	Standby Generator System Equipment		$ 1,230,300.00
3	Special Services		$ 35,365.00
4	Add BABAA		$ -
5	Lead Time		140-144 weeks
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 9		**$ 1,107,720.00**	**$ 1,266,365.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 10: Controls Package			
			Main Electric
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 3,500.00
2	Controls Equipment		$ 571,130.00
3	Special Services		$ 65,750.00
4	Add BABAA		$ -
5	Lead Time		62-66 weeks plus time for other submittals to be approved first
6	Lead Time Add BABAA		0 weeks
Total Price - Bid Schedule 10		**$ 600,000.00**	**$ 640,380.00**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 11: Discharge Pipeline			
			Core and Main
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ -
2	Pipeline Equipment		$ 1,502,881.34
3	Special Services		$ -
4	Add BABAA		TBD
5	Lead Time		54 weeks
6	Lead Time Add BABAA		TBD
Total Price - Bid Schedule 11		**$ 750,000.00**	**$ 1,502,881.34**

NAWS Intake and Snake Creek Pumping Plant Modifications Bid Schedule 12: High Pressure Check Valves			
			Vessco
Item	**Description**	**OPCC**	**Bid Price**
1	Submittals/Shop Drawings		$ 20,000.00
2	Check Valve Equipment		$ 266,464.00
3	Special Services		$ 12,000.00
4	Add BABAA		$ 143,264.00
5	Lead Time		32-38 weeks
6	Lead Time Add BABAA		10-15 weeks
Total Price - Bid Schedule 12		**$ 320,000.00**	**$ 298,464.00**

HOUSTON engineering, inc.

Memorandum

To: Tim Freije, PE
NAWS Project Manager

From: Alan J. Kemmet, PE
Houston Engineering, Inc.

Subject: NAWS Intake and Snake Creek Pumping Plant Modifications Demolition Contract Bid Review and Award Recommendation

Date: December 5, 2022

Project: NDSWC Project 237-4, Contract 6-1A | HEI Project 3553-0079

INTRODUCTION

The NAWS Intake and Snake Creek Pumping Plant (SCPP) Modifications Demolition Contract was separated from the overall SCPP project construction after the unsuccessful bidding of the interior work to move forward with demolition of SCPP Unit #1 and associated structural and electrical removals while the temporary intake is re-designed and construction documents are revised. The completion dates for the project were set based on the estimated time necessary to complete the removals with a milestone for completion of the discharge tunnel bulkhead ahead of the spring pumping season. The project was advertised for bids on November 3rd, 2022, in accordance with state bidding requirements with 3 contracts let for bids: Contract No. 1 – Combined General and Mechanical Construction; Contract No. 2 – Electrical Construction; and Contract No. 3 – Combined General, Mechanical, & Electrical Construction. A Mandatory Pre-Bid Conference was held at the project site on November 22nd, 2022. The Bid Opening was held on December 1, 2022.

The final Opinion of Probable Construction Cost (OPCC) prepared by the design team was $4,710,000, however this estimate included several demolition items that were ultimately removed from the demolition contract due to the need to remain in service until late in the construction contract. There is also overlap with the construction contract on hazardous material abatement and confined space entry. Two addenda were issued during bidding to revise dates and documents.

Two Bids were received for the project from PKG Contracting, Inc. (Fargo) and Swanberg Construction, Inc. (Valley City). The Bids were checked to ensure they contained the required Bid Bond and Acknowledgements of Surety and Principal prior to opening. Both bids were successfully opened with PKG indicating a Base Bid of $3,646,900 for Contract No. 1 and $3,836,900 for Contract No. 3 and Swanberg indicated a Base Bid of $4,295,000 for Contract No. 1 and $4,565,000 for Contract No. 3. No bids were received for Contract No. 2, therefore only Contract No. 3 Bids were considered. Both Bidders indicated “N/A” or “No Bid” for Alternate 1 to include BABAA compliance for the project so this Alternate cannot be considered.

BID REVIEW

PKG Contracting

The bidder provided the following information:

- The bidder acknowledged receipt of both addenda.
- One error was found in the bidder's bid form after the bid prices were tabulated, this resulted in an error of $600. The Corrected Bid Price for Contract No. 3 is $3,836,300.
- Bidder has a current, valid Class A Contractor's License and is in good standing with the Secretary of State.
- The listed equipment/material manufacturers and subcontractors for the work of are all known reputable entities.
- Bidder's bid is well within their bonding capacity.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying
- Bidder was contacted regarding the error discovered in their bid and overall comfort with the project. The bidder indicated that the discrepancy was not an issue and they are confident in their ability to complete the project according to the documents.

Swanberg Construction

The bidder provided the following information:

- The bidder acknowledged receipt of both addenda.
- One error was found in the bidder's bid form after the bid prices were tabulated, this resulted in an error of $100,000. The Corrected Bid Price for Contract No. 3 is $4,465,000.
- Bidder has a current, valid Class A Contractor's License and is in good standing with the Secretary of State.
- The listed equipment/material manufacturers and subcontractors for the work of are all known reputable entities.
- Bidder's bid is well within their bonding capacity.
- Bidder provided the EEO Compliance Certificates and the Certification Regarding Debarment, Drug Free Workplace, and Lobbying
- Bidder was contacted regarding the error discovered in their bid and overall comfort with the project. The bidder indicated that the discrepancy was not an issue and they are confident in their ability to complete the project according to the documents.

The low bid received for the project is 81% of the OPCC while the second low bid was 95% of the OPCC. As previously noted there are several reasons why the OPCC may have been high for this Contract.

BID TABULATION

All bids that were opened were verified for accuracy. The following table shows the total value bid for each contract and if necessary that total is shown as corrected by HEI. The attached bid tab contains the OPCC and each bidder's bid broken down by line item that matches the bid forms.

Contract	Bidder	Total Bid Amount
Contract No. 1 – Combined General and Mechanical Construction	PKG Contracting, Inc.	$3,646,900.00
	Swanberg Construction, Inc.	$4,295,000.00
Contract No. 3 – Combined General, Mechanical, and Electrical Construction	PKG Contracting, Inc.	$3,836,300.00
	Swanberg Construction, Inc.	$4,465,000.00
Engineer's Combined OPCC		$4,710,000.00

Both Contract No. 3 Bids contained tabulation errors, however these errors did not impact the results of the bid tabulation and the error on the low bid was minor.

AWARD RECOMMENDATION

HEI believes the bidding process for this project was fair and provided competitive pricing. All bids that were opened were provided by bidders who should be considered responsive and responsible. Contract No. 1 bids were not considered as there were no corresponding bids on Contract No. 2 to allow for a combined award. Both Bids for Contract No. 3 should be considered responsive, although no prices were provided for the BABAA Alternate. Both Bids are well within the accuracy range of the OPCC prepared for this project.

Contract	Bidder	Total Bid Amount
Contract No. 3 – Combined General, Mechanical, and Electrical Construction	PKG Contracting, Inc.	$3,836,300.00
Total Construction Cost		**$3,836,300.00**
Engineer's Combined OPCC		$4,710,000.00

HEI recommends the construction contract for the NAWS Intake and Snake Creek Pumping Plant Modifications Demolition Contract be awarded to PKG Contracting, Inc. of Fargo, ND for the corrected Bid Price of $3,836,300.00.

Please contact us if you have any questions.

In service,

AJK, PE

Alan J. Kemmet, PE, Houston Engineering, Inc.
Cc: Kevin Martin, PE

Attachment (1)

NAWS Intake and Snake Creek Pumping Plant Modifications Demolition Contract Bid Results				
			PKG	**Swanberg**
Item	**Description**	**OPCC**	**Bid Price**	**Bid Price**
1	Mobilization, Bonds, Insurance	$ 185,000.00	989,000.00	$ 876,000.00
2	Confined Space Entry	$ 200,000.00	239,400.00	$ 206,000.00
3	Concrete Bulkhead on Discharge Structure	$ 104,000.00	263,900.00	$ 984,000.00
4	Work Inside SCPP			
4.1	Hazardous Materials Abatement	$ 309,000.00	225,000.00	$ 174,000.00
4.2	Structural Demolition	$ 2,370,000.00	974,000.00	$ 968,000.00
4.3	Mechanical Demolition	$ 1,500,000.00	989,000.00	$ 1,077,000.00
4.4	Mechanical HVAC Demolition	$ 6,000.00	5,000.00	$ 10,000.00
5	Electrical Demolition	$ 36,000.00	151,000.00	$ 170,000.00
Total Price		**$ 4,710,000.00**	**$ 3,836,300.00**	**$ 4,465,000.00**
Difference from Low Bid		**$ (873,700.00)**	**$ -**	**$ 628,700.00**

APPENDIX H

NORTHWEST AREA WATER SUPPLY PROJECT
WATER SERVICE CONTRACT

Contract No: 237-4-11
Water User Entity: City of Bottineau

TABLE OF CONTENTS

1. PARTIES

This contract is by and between the North Dakota State Water Commission (Commission) and the City of Bottineau (User).

2. INTRODUCTION

2.1 The 1991 North Dakota Legislative Assembly directed the Commission to develop a pipeline transmission and delivery system to deliver water supplies from the Missouri River and other sources to areas and localities in northwestern North Dakota for multiple purposes, including domestic and municipal users and rural water districts. (1991 N.D. Sess. Laws ch. 704, §1 through §5; codified at N.D.C.C. ch. 61-24.6). This water pipeline and delivery system is known as the Northwest Area Water Supply (NAWS) Project.

2.2 The Commission, pursuant to N.D.C.C. ch. 61-02 and N.D.C.C. ch. 61-24.6, may enter into water service contracts for water delivery and distribution and for the collection of rates, charges, and revenues from such water delivery.

2.3 The User enters into this water service contract, pursuant to the laws of the State of North Dakota, for a water supply from the NAWS Project. The User will pay the Commission at the rates and pursuant to the terms and conditions set forth in this contract for this water service. The User has authority to enter into this agreement pursuant to its home rule charter and implementing ordinance.

3. DEFINITIONS

3.1 "Additional water" means water purchased by the User in addition to its Minimum annual water purchase.

3.2 "Capital costs" means all costs incurred by the Commission that are properly chargeable, in accordance with generally accepted accounting practices, to the construction and furnishing of Project equipment, including the costs of surveys, engineering studies, exploratory work, designs, preparation of construction plans and specifications, acquisitions, acquisition of lands, easements, and rights-of-way, relocation work, costs of issuance and financing in connection with any bonds issued to finance the Project, and essential legal, administrative, and financial work.

3.3 "Capital costs water rate" means the rate per 1,000-gallons of water to be paid by User for Project Capital costs.

3.4 "Estimated OM&R water rate" means the estimated rate per 1,000-gallons of water for the operation and maintenance of the Project and for the accumulation and maintenance of a reserve fund for replacement purposes. This

rate is determined by dividing total costs the Commission estimates it will incur during a Year for operation, maintenance, and replacement by the total number of 1,000-gallon-units of water that the Commission estimates it will sell to all Water user entities during the same Year, plus an amount as determined under section 7.4.2.

3.5 "Maximum flow rate" means the maximum number of gallons of water that may be delivered through the Project by the Commission to the User during any one minute time period.

3.6 "Minimum annual water purchase" means the minimum gallons of water that the User must purchase and pay for during a Year.

3.7 "Operation, maintenance, and replacement costs," (OM&R costs) means all operation costs incurred, including all energy costs incurred by the Commission for pumping water through the Project, for water treatment, for Project maintenance and administration, and for any amounts that the Commission determines are necessary to establish reserve funds to meet anticipated replacement costs and extraordinary maintenance of Project works as determined under section 7.4.2.

3.8 "Project" means the water supply and distribution system shown on the map marked "Exhibit 1" that is attached and incorporated by reference into this contract.

3.9 "Water use" means all water used by User except for: (a) non-potable water, and (b) surface water, well water, or aquifer water that is distributed through a different system as that water purchased under this contract.

3.10 "Water user entities" means those persons, municipalities, rural water cooperatives, corporations, and other entities that have executed water service contracts with the Commission for the water purchase from the Project.

3.11 "Year" means the period from January 1 through December 31, both dates inclusive.

4. CONTRACT TERM

4.1 Effective Date.

This contract will remain in effect for 40 years after the first water delivery to the User.

4.2 Renewal.

Renewals of this contract may be made for successive periods not to exceed 40 years each.

5. TERMINATION

5.1 Termination by not Constructing.

If any Project segment is not constructed for whatever reason, even though authorized, thereby preventing water delivery to the User, the Commission and the User are relieved of all contract obligations.

5.2 Termination by Change of Circumstances.

The Commission may terminate this contract effective upon delivery of written notice to the User, or at such later date as Commission establishes under any of the following conditions:

5.2.1 If Commission funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for water delivery to the User pursuant to this contract. The contract may be modified to accommodate a reduction in funds.

5.2.2 If federal or state regulations or guidelines are modified, changed, or interpreted in such a way that the water delivery is no longer allowable or appropriate for purchase under this contract or is no longer eligible for funding proposed by this contract.

5.2.3 If any license or certificate required by law or regulation to be held by the User to participate in this contract is for any reason denied, revoked, or not renewed.

Any such termination of this contract will be without prejudice to any obligations or liabilities of either party already accrued prior to termination.

5.3 Termination for Default.

The Commission, by written notice of default (including breach of contract) to the User, may terminate the whole or any part of this agreement:

5.3.1 If the User fails to make payment within the time specified or any extension thereof; or

5.3.2 If the User fails to perform any of the other provisions of this contract or so fails to pursue a provision of this contract as to endanger

performance of this contract in accordance with its terms, and after receipt of written notice from the Commission fails to correct such failures within ten days or such longer period as the Commission authorizes.

The Commission's rights and remedies provided in this clause are not exclusive and are in addition to any other rights and remedies provided by law or under this contract.

6. WATER SERVICE: WATER DELIVERY

The Commission and the User agree that water will be delivered to the User in accordance with the following terms and provisions:

6.1 Water Quality.

All water delivered to the User pursuant to this contract must be potable treated water that meets applicable North Dakota Department of Environmental Quality water quality standards.

6.2 Water Quantity and Flow Rate.

6.2.1 Minimum annual water purchase.

The User agrees to a Minimum annual water purchase of 54,750,000 gallons per Year.

Minimum annual water purchase is waived if the User's municipal needs are exclusively met by the Project.

6.2.2 Maximum flow rate.

The Maximum flow rate provided by the Commission to the User will not exceed 400 gallons per minute.

6.2.3 The User's estimated water use is 450,000 gallons per day.

6.3 Delivery Point.

The Commission will furnish water to the User at the metering point of the NAWS-Bottineau turnout, NW1/4 of Section 18, T162N, R75W along Highway 49 north of the City of Bottineau.

6.4 Additional Water.

To the extent allowed by its other contractual obligations, the Commission may, at its sole discretion, deliver to the User any Additional water that the User desires to purchase.

6.5 Water Shortages.

6.5.1 No liability for shortages.

No liability will accrue, and the User agrees to indemnify and hold harmless the Commission and its agents for any damage or inconvenience arising from any water shortages or other interruptions in water deliveries, whether attributable to the Commission's negligence or any other cause. The User's duties under this contract will not be reduced or altered by reason of such shortages or interruptions.

6.5.2 Proportional sharing of water shortage.

The Commission has the right during times of water shortage from any cause to allocate and distribute the available water supply to user entities on the affected water system on a proportionate basis with respect to the proportion that the annual water purchase of each user entity for the prior calendar Year bears to the total annual water purchase of all entities on the affected water system for the prior calendar Year.

User must submit a water conservation plan upon Commission's request to address any water shortages.

6.6 Delivery Curtailment for Maintenance Purposes.

The Commission may temporarily discontinue or reduce the amount of water furnished to the User for the purpose of maintaining, repairing, replacing, investigating, or inspecting any of the facilities and works necessary for the furnishing of water to the User. To the extent possible, the Commission will give the User reasonable notice in advance of temporary discontinuance or reduction. No advance notice will be required in an emergency. In no event will any liability accrue against the Commission or any of its agents for any damage or inconvenience arising from temporary discontinuance or reduction.

6.7 Water Measurement.

The Commission will furnish, install, operate, and maintain, at its own expense, at the delivery point, the necessary metering equipment, including a meter house or pit, and required devices of standard type for properly measuring the water

quantity of delivered to the User. The Commission will calibrate the metering equipment at least every other year unless the User is otherwise notified.

6.7.1 Access.

The Commission and the User will have access to the metering equipment at all reasonable times to verify Project water deliveries and total water usage readings. Access includes all reasonable means of access, including any necessary easement. In addition, the Commission will have access to the delivery point to the User's distribution system.

6.7.2 Dispute over water measurement.

If the User believes the measurement of water delivered to the User to be in error, the Commission will calibrate the meter. The User will pay for the calibration cost. If the meter is found to over-register by more than 2% of the correct volume, the User's payment for the calibration cost will be refunded.

6.7.3 Claim of error after a payment is delinquent.

A claim of error presented after a payment has become delinquent will not prevent discontinuance of service or a civil action. The User agrees to continue to make payments for water service after a claim of error has been presented; however, it may do so under protest, and such payments will not prejudice the User's claim of error.

6.7.4 Correction of meter readings.

If the calibration of any meter establishes that the previous meter readings over-registered by more than 2% the correct water volume delivered to the User, the meter readings for that meter will be corrected to the beginning of the current Year. Any overpayment by the User because the meter over-registered the water amount delivered will be applied first to any delinquent water service payments, and any remaining amounts will, at the User’s option, be refunded to the User or credited upon future payments.

6.7.5 Meter failure.

If any meter fails to register for any period, the water amount delivered during such period will be deemed to be the water amount delivered in the corresponding period immediately prior to the failure, unless the Commission and the User agree upon a different amount.

6.8 Responsibility for Distribution and Water Use.

The User will be responsible for the control, distribution, and use of all water delivered to the User by the Commission under this contract beyond the delivery point, and all services, maintenance, and repair of the User's distribution system.

The User agrees to indemnify and hold harmless the Commission and its agents for all damages to persons or property arising out of or in any manner connected with the control, distribution, and use of water delivered under this contract, and the operation, maintenance, and replacement of the User's distribution system. The User's distribution system includes all works extending from the delivery point of water to the User.

7. WATER SERVICE: WATER RATES AND PAYMENT

The User agrees to make payments for water service in accordance with the following terms and conditions:

7.1 Beginning of Water Service Payments.

User started receiving water from the Project on October 19, 2022.

7.2 Water Service Payment.

The User's water service payment for each month will equal the sum of the following:

7.2.1 The User's proportionate OM&R costs; plus

7.2.2 The User's Capital costs payment.

7.3 Operation, Maintenance, and Replacement Payment.

The User will make monthly payments to the Commission for its share of the Project OM&R costs. The payment will be determined by the Commission and based upon actual and forecasted OM&R costs and may be adjusted annually. The monthly payment amount will be determined as follows:

7.3.1 OM&R budget.

Before December 1 each Year, the Commission will establish and adopt a OM&R Project budget for the next Year. The Commission will then estimate the total annual water sales for the next Year and calculate the Project’s Estimated OM&R water rate. At the end of each Year, the Commission will prepare a statement of the actual OM&R cost for that

Year. If the actual cost exceeds the budget, an appropriate increase in User payments will be made during the ensuing Year. If the actual cost is less than the budget, an appropriate reduction will be made in the ensuing Year's User payments.

7.3.2 Reserve fund.

The Commission will have the authority to include in the Year's OM&R budget an amount per 1,000-gallons to be accumulated and maintained in a reserve fund for replacement and extraordinary maintenance of Project works.

7.3.3 Monthly payment.

The User's monthly OM&R payment will be determined by multiplying the water amount actually delivered to the User for each month by the Estimated OM&R water rate.

7.4 Capital Costs Payment.

The User will pay the Commission a water rate for Project costs.

7.4.1 Base Capital costs water rate.

The base Capital costs water rate will be **$0.00** per 1,000-gallons of water. This rate is based upon the assumption that the City of Minot continues to share in the Project cost.

7.4.2 Water rate adjustment for Capital costs.

The Commission will have the authority to adjust the Capital costs water rate annually in accordance with the increase or decrease in the Project's total Capital costs. The Project's total Capital costs will be those attributable to the Project's present scope at the date of this agreement. Costs for items that are replacements for existing improvements will not be considered Capital costs.

When total Capital cost obligations of the Project are met, payments for Capital costs will cease. All interest earned by sinking fund deposits and all amounts collected for debt reserves will be taken into consideration in determining when Capital cost obligations have been met.

The Commission will have the authority to adjust the water rate if the Project is redesigned. The User and the Commission must mutually agree to any water rate change for Capital costs resulting from a redesign or to

any change of the Capital costs water rate resulting from a change in the percentage of the total cost.

7.5 Billing Procedure.

The Commission will furnish to the User, at the address shown on the signature page of this contract, by the fifteenth day of each month, an itemized statement of the payment due from the User for water service for the preceding month. The metering equipment at the delivery point to the User will be read monthly by the Commission.

7.6 Payment Due Date.

All payments for water service must be made no later than 30 days following receipt of the statement from the Commission. Payments not made by such date will be considered delinquent and in default.

7.7 Delinquent Payments and Default: Water Service Suspension.

The User will cause to be levied and collected all necessary taxes, assessments, and water charges and will use all authority and resources available to it to fulfill this contract by the date payments become due. If the User defaults in making required payments, the Commission may suspend water delivery to the User through the Project during the time when the User is in default and may bring a civil action against the User in a North Dakota state district court.

During any period when the User is in default, the User remains obligated to make all payments required under this contract. Any action of the Commission pursuant to this section does not limit or waive any remedy for the recovery of money due or that may become due under this contract.

7.8 Late Payment Penalty.

Every payment required to be paid by the User to the Commission under this contract that is unpaid after its due date will be penalized 1% per month of the delinquent amount. No penalty will be chargeable against any adjustment made pursuant to section 6.7.

7.9 Water Refusal.

The User's failure or refusal to accept water delivery to which it is entitled in no way relieves the User's obligation to make payments to the Commission.

7.10 Payments Dedicated to the Project.

All payments collected and earnings thereon by the Commission pursuant this contract will be held in a special fund and dedicated to the Project's construction, operation, and maintenance in accordance with the laws of the State of North Dakota.

8. GENERAL PROVISIONS

8.1 Rules and Regulations.

The Commission will have the authority to develop and adopt such rules and regulations as the Commission may deem necessary and proper to carry out this contract and to govern the contract's administration. The User agrees to comply with all rules and regulations promulgated by the Commission.

8.2 Books and Records Access and Inspection.

Each party shall have the right, during normal business hours, to inspect and make copies of the other party's books and official records relating to this contract.

8.3 Remedies not Exclusive.

The use by either party of any remedy specified for the enforcement of this contract is not exclusive and will not deprive the party using such remedy of any other remedy provided by law.

8.4 Waiver.

Any waiver by either party of its rights arising in connection with this contract will not be deemed to be a waiver with respect to any other default or matter.

8.5 Notices.

All notices that are required under this contract must be in writing.

8.6 Assignment.

The provisions of this contract apply to and bind the parties' successors and assigns, but no assignment or transfer of this contract will be valid unless approved by the non-assigning party. The Commission may delegate the Project's operation and maintenance, but will retain the obligation to establish water rates and annual budgets.

9. DESIGN ADJUSTMENT

The Commission reserves the right to redesign the Project.

10. MERGER CLAUSE

This agreement constitutes the entire agreement between the parties. There are no understandings, agreements, or representations, oral or written, not specified within this agreement. This agreement may not be modified, supplemented, or amended in any manner, except by written agreement signed by both parties.

IN WITNESS WHEREOF, the parties execute this contract on the date specified below.

NORTH DAKOTA STATE WATER COMMISSION
1200 East Memorial Highway
Bismarck, ND 58504

By: _____

Title: _____

Date: _____

Approved and entered into by resolution of the State Water Commission this day of _____, 2022

_____
Secretary

USER:

By: _____

Title: _____

Date: _____

APPENDIX I

NORTHWEST AREA WATER SUPPLY PROJECT
WATER SERVICE CONTRACT

Contract No: 237-4-5
Water User Entity: Upper Souris Water District

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1. PARTIES

This contract is by and between the North Dakota State Water Commission (Commission) and the Upper Souris Water District (User).

2. INTRODUCTION

2.1 The 1991 North Dakota Legislative Assembly directed the Commission to develop a pipeline transmission and delivery system to deliver water supplies from the Missouri River and other sources to areas and localities in northwestern North Dakota for multiple purposes, including domestic and municipal users and rural water districts. (1991 N.D. Sess. Laws ch. 704, §1 through §5; codified at N.D.C.C. ch. 61-24.6). This water pipeline and delivery system is known as the Northwest Area Water Supply (NAWS) Project.

2.2 The Commission, pursuant to N.D.C.C. ch. 61-02 and N.D.C.C. ch. 61-24.6, may enter into water service contracts for water delivery and distribution and for the collection of rates, charges, and revenues from such water delivery.

2.3 The User enters into this water service contract, pursuant to the laws of the State of North Dakota, for a water supply from the NAWS Project. The User will pay the Commission at the rates and pursuant to the terms and conditions set forth in this contract for this water service. The User has authority to enter into this agreement pursuant to its home rule charter and implementing ordinance.

3. DEFINITIONS

3.1 "Additional water" means water purchased by the User in addition to its Minimum annual water purchase.

3.2 "Capital costs" means all costs incurred by the Commission that are properly chargeable, in accordance with generally accepted accounting practices, to the construction and furnishing of Project equipment, including the costs of surveys, engineering studies, exploratory work, designs, preparation of construction plans and specifications, acquisitions, acquisition of lands, easements, and rights-of-way, relocation work, costs of issuance and financing in connection with any bonds issued to finance the Project, and essential legal, administrative, and financial work.

3.3 "Capital costs water rate" means the rate per 1,000-gallons of water to be paid by User for Project Capital costs.

3.4 "Estimated OM&R water rate" means the estimated rate per 1,000-gallons of water for the operation and maintenance of the Project and for the accumulation and maintenance of a reserve fund for replacement purposes. This

rate is determined by dividing total costs the Commission estimates it will incur during a Year for operation, maintenance, and replacement by the total number of 1,000-gallon-units of water that the Commission estimates it will sell to all Water user entities during the same Year, plus an amount as determined under section 7.4.2.

3.5 "Maximum flow rate" means the maximum number of gallons of water that may be delivered through the Project by the Commission to the User during any one minute time period.

3.6 "Minimum annual water purchase" means the minimum gallons of water that the User must purchase and pay for during a Year.

3.7 "Operation, maintenance, and replacement costs," (OM&R costs) means all operation costs incurred, including all energy costs incurred by the Commission for pumping water through the Project, for water treatment, for Project maintenance and administration, and for any amounts that the Commission determines are necessary to establish reserve funds to meet anticipated replacement costs and extraordinary maintenance of Project works as determined under section 7.4.2.

3.8 "Project" means the water supply and distribution system shown on the map marked "Exhibit 1" that is attached and incorporated by reference into this contract.

3.9 "Water use" means all water used by User except for: (a) non-potable water, and (b) surface water, well water, or aquifer water that is distributed through a different system as that water purchased under this contract.

3.10 "Water user entities" means those persons, municipalities, rural water cooperatives, corporations, and other entities that have executed water service contracts with the Commission for the water purchase from the Project.

3.11 "Year" means the period from January 1 through December 31, both dates inclusive.

4. CONTRACT TERM

4.1 Effective Date.

This contract will remain in effect for 40 years after the first water delivery to the User.

4.2 Renewal.

Renewals of this contract may be made for successive periods not to exceed 40 years each.

5. TERMINATION

5.1 Termination by not Constructing.

If any Project segment is not constructed for whatever reason, even though authorized, thereby preventing water delivery to the User, the Commission and the User are relieved of all contract obligations.

5.2 Termination by Change of Circumstances.

The Commission may terminate this contract effective upon delivery of written notice to the User, or at such later date as Commission establishes under any of the following conditions:

5.2.1 If Commission funding from federal, state, or other sources is not obtained and continued at levels sufficient to allow for water delivery to the User pursuant to this contract. The contract may be modified to accommodate a reduction in funds.

5.2.2 If federal or state regulations or guidelines are modified, changed, or interpreted in such a way that the water delivery is no longer allowable or appropriate for purchase under this contract or is no longer eligible for funding proposed by this contract.

5.2.3 If any license or certificate required by law or regulation to be held by the User to participate in this contract is for any reason denied, revoked, or not renewed.

Any such termination of this contract will be without prejudice to any obligations or liabilities of either party already accrued prior to termination.

5.3 Termination for Default.

The Commission, by written notice of default (including breach of contract) to the User, may terminate the whole or any part of this agreement:

5.3.1 If the User fails to make payment within the time specified or any extension thereof; or

5.3.2 If the User fails to perform any of the other provisions of this contract or so fails to pursue a provision of this contract as to endanger

performance of this contract in accordance with its terms, and after receipt of written notice from the Commission fails to correct such failures within ten days or such longer period as the Commission authorizes.

The Commission's rights and remedies provided in this clause are not exclusive and are in addition to any other rights and remedies provided by law or under this contract.

6. WATER SERVICE: WATER DELIVERY

The Commission and the User agree that water will be delivered to the User in accordance with the following terms and provisions:

6.1 Water Quality.

All water delivered to the User pursuant to this contract must be potable treated water that meets applicable North Dakota Department of Environmental Quality water quality standards.

6.2 Water Quantity and Flow Rate.

6.2.1 Minimum annual water purchase.

The User agrees to a Minimum annual water purchase of 40,000,000 gallons per Year.

Minimum annual water purchase is waived if the User's municipal and rural water needs are exclusively met by the Project.

6.2.2 Maximum flow rate.

The Maximum flow rate provided by the Commission to the User will not exceed 300 gallons per minute.

6.2.3 The User's estimated water use is 297,000 gallons per day.

6.3 Delivery Points.

The Commission will furnish water to the User at the following metering points:
The User's System II facility in the NW1/4 of Section 35-159-82, the User's System I facility in the SW1/4 of Section 34-162-88, connection to the City of Lansford's distribution system, connection to the City of Glenburn's distribution system, a rural turnout manhole in the NW1/4 of Section 22-161-85, a rural turnout manhole in the NW1/4 of Section 36-159-87, a rural turnout manhole in the SW1/4 of Section 18-161-86, a

rural turnout manhole in the NE1/4 of Section 19-161-87, a rural turnout manhole in the SW1/4 of Section 12-163-85, and a rural turnout manhole in the SW1/4 of Section 1-161-85.

6.4 Additional Water.

To the extent allowed by its other contractual obligations, the Commission may, at its sole discretion, deliver to the User any Additional water that the User desires to purchase.

6.5 Water Shortages.

6.5.1 No liability for shortages.

No liability will accrue, and the User agrees to indemnify and hold harmless the Commission and its agents for any damage or inconvenience arising from any water shortages or other interruptions in water deliveries, whether attributable to the Commission's negligence or any other cause. The User's duties under this contract will not be reduced or altered by reason of such shortages or interruptions.

6.5.2 Proportional sharing of water shortage.

The Commission has the right during times of water shortage from any cause to allocate and distribute the available water supply to user entities on the affected water system on a proportionate basis with respect to the proportion that the annual water purchase of each user entity for the prior calendar Year bears to the total annual water purchase of all entities on the affected water system for the prior calendar Year.

User must submit a water conservation plan upon Commission's request to address any water shortages.

6.6 Delivery Curtailment for Maintenance Purposes.

The Commission may temporarily discontinue or reduce the amount of water furnished to the User for the purpose of maintaining, repairing, replacing, investigating, or inspecting any of the facilities and works necessary for the furnishing of water to the User. To the extent possible, the Commission will give the User reasonable notice in advance of temporary discontinuance or reduction. No advance notice will be required in an emergency. In no event will any liability accrue against the Commission or any of its agents for any damage or inconvenience arising from temporary discontinuance or reduction.

6.7 Water Measurement.

The Commission will furnish, install, operate, and maintain, at its own expense, at the delivery point, the necessary metering equipment, including a meter house or pit, and required devices of standard type for properly measuring the water quantity of delivered to the User. The Commission will calibrate the metering equipment at least every other year unless the User is otherwise notified.

6.7.1 Access.

The Commission and the User will have access to the metering equipment at all reasonable times to verify Project water deliveries and total water usage readings. Access includes all reasonable means of access, including any necessary easement. In addition, the Commission will have access to the delivery point to the User's distribution system.

6.7.2 Dispute over water measurement.

If the User believes the measurement of water delivered to the User to be in error, the Commission will calibrate the meter. The User will pay for the calibration cost. If the meter is found to over-register by more than 2% of the correct volume, the User's payment for the calibration cost will be refunded.

6.7.3 Claim of error after a payment is delinquent.

A claim of error presented after a payment has become delinquent will not prevent discontinuance of service or a civil action. The User agrees to continue to make payments for water service after a claim of error has been presented; however, it may do so under protest, and such payments will not prejudice the User's claim of error.

6.7.4 Correction of meter readings.

If the calibration of any meter establishes that the previous meter readings over-registered by more than 2% the correct water volume delivered to the User, the meter readings for that meter will be corrected to the beginning of the current Year. Any overpayment by the User because the meter over-registered the water amount delivered will be applied first to any delinquent water service payments, and any remaining amounts will, at the User’s option, be refunded to the User or credited upon future payments.

6.7.5 Meter failure.

If any meter fails to register for any period, the water amount delivered during such period will be deemed to be the water amount delivered in the corresponding period immediately prior to the failure, unless the Commission and the User agree upon a different amount.

6.8 Responsibility for Distribution and Water Use.

The User will be responsible for the control, distribution, and use of all water delivered to the User by the Commission under this contract beyond the delivery point, and all services, maintenance, and repair of the User's distribution system.

The User agrees to indemnify and hold harmless the Commission and its agents for all damages to persons or property arising out of or in any manner connected with the control, distribution, and use of water delivered under this contract, and the operation, maintenance, and replacement of the User's distribution system. The User's distribution system includes all works extending from the delivery point of water to the User.

7. WATER SERVICE: WATER RATES AND PAYMENT

The User agrees to make payments for water service in accordance with the following terms and conditions:

7.1 Beginning of Water Service Payments.

User started receiving water from the Project on December 1, 2009.

7.2 Water Service Payment.

The User's water service payment for each month will equal the sum of the following:

7.2.1 The User's proportionate OM&R costs; plus

7.2.2 The User's Capital costs payment.

7.3 Operation, Maintenance, and Replacement Payment.

The User will make monthly payments to the Commission for its share of the Project OM&R costs. The payment will be determined by the Commission and based upon actual and forecasted OM&R costs and may be adjusted annually. The monthly payment amount will be determined as follows:

7.3.1 OM&R budget.

Before December 1 each Year, the Commission will establish and adopt a OM&R Project budget for the next Year. The Commission will then

estimate the total annual water sales for the next Year and calculate the Project's Estimated OM&R water rate. At the end of each Year, the Commission will prepare a statement of the actual OM&R cost for that Year. If the actual cost exceeds the budget, an appropriate increase in User payments will be made during the ensuing Year. If the actual cost is less than the budget, an appropriate reduction will be made in the ensuing Year's User payments.

7.3.2 Reserve fund.

The Commission will have the authority to include in the Year's OM&R budget an amount per 1,000-gallons to be accumulated and maintained in a reserve fund for replacement and extraordinary maintenance of Project works.

7.3.3 Monthly payment.

The User's monthly OM&R payment will be determined by multiplying the water amount actually delivered to the User for each month by the Estimated OM&R water rate.

7.4 Capital Costs Payment.

The User will pay the Commission a water rate for Project costs.

7.4.1 Base Capital costs water rate.

The base Capital costs water rate will be **$0.00** per 1,000-gallons of water. This rate is based upon the assumption that the City of Minot continues to share in the Project cost.

7.4.2 Water rate adjustment for Capital costs.

The Commission will have the authority to adjust the Capital costs water rate annually in accordance with the increase or decrease in the Project's total Capital costs. The Project's total Capital costs will be those attributable to the Project's present scope at the date of this agreement. Costs for items that are replacements for existing improvements will not be considered Capital costs.

When total Capital cost obligations of the Project are met, payments for Capital costs will cease. All interest earned by sinking fund deposits and all amounts collected for debt reserves will be taken into consideration in determining when Capital cost obligations have been met.

The Commission will have the authority to adjust the water rate if the Project is redesigned. The User and the Commission must mutually agree to any water rate change for Capital costs resulting from a redesign or to any change of the Capital costs water rate resulting from a change in the percentage of the total cost.

7.5 Billing Procedure.

The Commission will furnish to the User, at the address shown on the signature page of this contract, by the fifteenth day of each month, an itemized statement of the payment due from the User for water service for the preceding month. The metering equipment at the delivery point to the User will be read monthly by the Commission.

7.6 Payment Due Date.

All payments for water service must be made no later than 30 days following receipt of the statement from the Commission. Payments not made by such date will be considered delinquent and in default.

7.7 Delinquent Payments and Default: Water Service Suspension.

The User will cause to be levied and collected all necessary taxes, assessments, and water charges and will use all authority and resources available to it to fulfill this contract by the date payments become due. If the User defaults in making required payments, the Commission may suspend water delivery to the User through the Project during the time when the User is in default and may bring a civil action against the User in a North Dakota state district court.

During any period when the User is in default, the User remains obligated to make all payments required under this contract. Any action of the Commission pursuant to this section does not limit or waive any remedy for the recovery of money due or that may become due under this contract.

7.8 Late Payment Penalty.

Every payment required to be paid by the User to the Commission under this contract that is unpaid after its due date will be penalized 1% per month of the delinquent amount. No penalty will be chargeable against any adjustment made pursuant to section 6.7.

7.9 Water Refusal.

The User's failure or refusal to accept water delivery to which it is entitled in no way relieves the User's obligation to make payments to the Commission.

7.10 Payments Dedicated to the Project.

All payments collected and earnings thereon by the Commission pursuant this contract will be held in a special fund and dedicated to the Project's construction, operation, and maintenance in accordance with the laws of the State of North Dakota.

8. GENERAL PROVISIONS

8.1 Rules and Regulations.

The Commission will have the authority to develop and adopt such rules and regulations as the Commission may deem necessary and proper to carry out this contract and to govern the contract's administration. The User agrees to comply with all rules and regulations promulgated by the Commission.

8.2 Books and Records Access and Inspection.

Each party shall have the right, during normal business hours, to inspect and make copies of the other party's books and official records relating to this contract.

8.3 Remedies not Exclusive.

The use by either party of any remedy specified for the enforcement of this contract is not exclusive and will not deprive the party using such remedy of any other remedy provided by law.

8.4 Waiver.

Any waiver by either party of its rights arising in connection with this contract will not be deemed to be a waiver with respect to any other default or matter.

8.5 Notices.

All notices that are required under this contract must be in writing.

8.6 Assignment.

The provisions of this contract apply to and bind the parties' successors and assigns, but no assignment or transfer of this contract will be valid unless approved by the non-assigning party. The Commission may delegate the Project's operation and maintenance, but will retain the obligation to establish water rates and annual budgets.

9. DESIGN ADJUSTMENT

The Commission reserves the right to redesign the Project.

10. MERGER CLAUSE

This agreement constitutes the entire agreement between the parties. There are no understandings, agreements, or representations, oral or written, not specified within this agreement. This agreement may not be modified, supplemented, or amended in any manner, except by written agreement signed by both parties.

IN WITNESS WHEREOF, the parties execute this contract on the date specified below.

NORTH DAKOTA STATE WATER COMMISSION
1200 East Memorial Highway
Bismarck, ND 58504

By: _____

Title: _____

Date: _____

Approved and entered into by resolution of the State Water Commission this day of _____, 2022

_____
Secretary

USER:

By: _____

Title: _____

Date: _____

APPENDIX J

2023-2025 PROJECT FINANCIAL NEEDS SUMMARY (ESTIMATED DWR SHARE)

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Project Purposes	WDP INVENTORY PROJECT NEEDS			Description of Financial Need: 2023-2025
	High Priority	Moderate Priority	Low Priority	
Flood Control (Total = $210M)	$120.4	$47.2	$42.4	Heart River Flood Control (Mandan), Mouse River Enhanced Flood Protection, Other Flood Control, Valley City Permanent Flood Protection, and Water Conveyance.
F-M Area Diversion	-	-	-	Total state commitment of $850M addressed during 2021 Legislative session with $435.5M provided through HB 1431.
Mandan Flood Risk Reduction	$11.6	-	-	Floodwall replacement, levee raises, and interior drainage improvements.
Mouse River Enhanced Flood Protection	$76.1	-	-	Funding scenario based on $76.1M over 5 biennia. Includes property acquisitions in Minot and rural areas, additional levee design, and construction on the Maple Diversion and in-town levees.
Other Flood Control	$19.5	$0.7	$0.2	Community flood protection projects, levee certifications, flood reduction studies, and rural ring dikes.
Valley City Permanent Flood Protection	$13.2	-	-	Phase 6 - Permanent concrete flood walls, removable flood walls, clay levees, storm water pump stations, and bioengineered stream bank restorations.
Water Conveyance	$0.0	$46.5	$42.2	New drainage, drainage improvements, bank stabilizations, and snagging and clearing.
General Water Management (Total = $48.1M)	$2.5	$42.4	$3.2	Dam remediations, repurposing, rehabilitations, and repairs; irrigation; watershed plans; and water retention and detention.
Rural Water Supply (Total = $109.7M)	$13.7	$18.8	$77.2	Community regionalizations, system expansions, storage improvements, transmission line installations, and WTP improvements.
Water Supply (Total = $679.9M)	$467.9	$1.6	$210.4	Municipal water supply projects, Northwest Area Water Supply, Red River Valley Water Supply, Southwest Pipeline Project, and Western Area Water Supply.
Municipal Water Supply	$0.0	$1.6	$210.4	Municipal water system expansions, improvements, and replacements.
Northwest Area Water Supply	$36.0	-	-	Intake Contract II, Bottineau and Souris Reservoirs and Pump Stations, Inline Booster Pump Stations, Minot WTP Phase III, Raw Water Line Initialization, and Biota WTP Phase II.
Red River Valley Water Supply	$254.3	-	-	Pipeline construction, Eastern North Dakota Alternative Water Supply design, McClusky Canal Intake preliminary design, and Biota WTP and Main Pump Station design.
Southwest Pipeline Project	$131.6	-	-	Strategic hydraulic improvements, WTP expansion, rural service additions, and DWR operations.
Western Area Water Supply	$46.0	-	-	Rural water service area expansions to new users and Williston WTP expansion.
TOTAL ($1.05B)	**$605**	**$110**	**$333**	

APPENDIX K

SUMMARY OF COST-SHARE PROGRAM MODIFICATION ISSUES, COMMENTS, & CHANGES

SWC PROJECT FUNDING POLICY, PROCEDURE, & GENERAL REQUIREMENTS

Mod. #	SWC Approved	More Discussion	Issue, Comment, Changes
1.	✓ 10/13/22		Definitions were moved to the end as an Appendix.
2.	✓ 10/13/22		Clarify that applications are through WebGrants. Language added to policy per comments received. (Pg. 2)
3.	✓ 11/10/22		Loan application information. Language added to policy per comments received. (Pg. 2)
4.	✓ 11/10/22		Use of the WIRLF and LILF should be limited to projects that are not eligible for DWSRF or CWSRF. Language added to policy from Century Code that specifies projects that are not eligible for DWSRF should be given preference from WIRLF. (Pg. 2)
5.	✓ 10/13/22		Incomplete applications. Language added that the expectation is that applications submitted by the 45-day deadline must be complete. (Pg. 3)
6.	✓ 11/10/22		Clarify what is required to apply for pre-construction and construction and specify that Tier I approvals don't guarantee Tier II approvals. (Two Tier Process). Language added to policy per comments received. (Pg. 3)
7.	✓ 10/13/22		Construction contingency cap of 10%. Remains in policy as suggested in draft. (Pg. 3)
8.	✓ 10/13/22		Engineering plans and specifications, DWR permits, and status of local funding. Required as part of Tier II construction cost-share requests to reduce carryover. (Pg. 3)
9.	✓ 11/10/22		Completed Capital Improvement Plan and demonstration of sustainable Capital Improvement Fund for water supply projects. Language added to policy under Tier II requirements. (Pg. 4)
10.	✓ 10/13/22		Local sponsors will be required to attend SWC meetings in person or remotely when their applications are being considered. Language added per Commission direction (Pg. 4)
11.	✓ 10/13/22		$1M threshold for EAs. No modification made to policy. (Pg. 4)
12.	✓ 10/13/22		Removal of language related to $100M+ projects. Remains the same as suggested in draft. (Pg. 5)

13.	✓ 10/13/22		Signage indicating cooperation with DWR. Language added to policy to promote cooperative efforts. (Pg. 5)
14.	✓ 10/13/22		Project progress reports. Required at four years per statutory requirement. (Pg. 5)
15.	✓ 11/10/22		Projects in litigation. Language added that it is the sponsor's responsibility to notify the Commission and DWR of litigation related to their project(s). (Pg. 6)
16.	✓ 10/13/22		Community flood protection projects resulting in FEMA accreditation may be exempt from B/C ratio requirements. Remains in policy as suggested in draft. Added an additional option for consideration. (Pg. 6)
17.	✓ 10/13/22		Prohibition of project fracturing. Remains the same as suggested in draft. (Pg. 7)
18.	✓ 11/10/22		Purchase of property and easements should be extended to water supply projects. No modification made to policy. Remains only for flood protection and retention. (Pg. 7)
19.	✓ 11/29/22		Fire protection. Increased from average daily to peak daily from previous 10 years reported. Specified that storage above this amount is the sponsor's financial responsibility. (Pg. 7)
20.	✓ 11/10/22		Stormwater management. Added clarity related to ineligibility within corporate limits of cities. (Pg. 7)
21.	✓ 10/13/22		Invoices one year or older. Language added to policy instead of operating procedures. (Pg. 7)
22.	✓ 11/29/22		AIA CIP concept. Added to policy to promote financial sustainability of projects. Included the term "basic." Removed language that set cost-share at 75% and 60% for rural and municipal, respectively. (Pg. 8)
23.	✓ 11/10/22		Preconstruction cost-share percentages. Two options provided – same as construction or up to 50%. (Pg. 8)
24.	✓ 10/13/22		Cost overrun approvals – construction costs only. Remains the same as suggested in draft with the addition of "construction-related engineering" also eligible per comments received. (Pg. 8)
25.	✓ 11/10/22		MSI program. Remains in policy as suggested in draft. (Pg. 8)
26.	✓ 11/29/22		Water supply cost-share for regional systems and transmission of reclaimed water. Both types of projects added to language as eligible projects per current practice. Specified that reclaimed water transmission projects may be eligible. (Pg. 9)

27.	✓ 11/10/22		Utilization of DEQ's Priority Ranking System as a secondary prioritization for water supply projects. Current practice approved by Commission but added following Commission discussion at October meeting. (Pg. 8)
28.	✓ 11/10/22		Water supply cost-share at 75%. Changed back to original cost-share percentages of 75% rural and 60% municipal, with up to 75% for regionalization projects – economies of scale per comments received. (Pg. 9)
29.	✓ 11/29/22		Replacement projects. Draft Language removed. (Pg. 9)
30.	✓ 10/13/22		Drought Disaster Livestock Program Cost-share at 65% and a range of cap values from $4,500-$10,000 per comments received. (Pg. 9)
31.	✓ 10/13/22		Combined flood recovery and flood acquisition programs. Remains the same as suggested in draft. Added language to account for extreme events that could require modified cost-share. (Pg. 10)
32.	✓ 10/13/22		Reduced cost-share percentage for retention projects receiving federal funds. Remains the same as suggested in draft with reduction in cost-share percentage language removed. (Pg. 11)
33.	✓ 11/10/22		Limitation of low head approvals for roller mitigation, rip-rap, not both. Remains the same as suggested in draft. (Pg. 12)
34.	✓ 11/10/22		EAP cost-share at 75%. Changed back to 80% per comments received. (Pg. 12)
35.	✓ 11/10/22		Provide definition of Capital Improvement Plan, Capital Improvement Fund, and Capital. Language added to policy to provide additional clarity. (Pg. 13)
36.	✓ 11/10/22		Consider referencing "Work" in construction definition and define Work. Language added to policy per comments received. (Pgs. 13 & 15)
37.	✓ 11/10/22		Construction and Preconstruction definitions should be added or modified. New language and definitions added to policy per comments received. (Pgs. 13 & 14)
38.	✓ 11/10/22		Economic Impact definition needed to address loan requirements. Language added to policy to address statutory requirements. (Pg. 13)
39.	✓ 11/10/22		Engineering Services - proof of selection process. Removed language related to that requirement per comments and previous draft. (Pg. 2 previous draft)
40.	✓ 11/10/22		Expansion definition to include additional capacity. No change made to existing policy. Capacity improvements remains a part of improvements definition. (Pg. 13)

41.	✓ 11/10/22		Remove language in Extraordinary Maintenance definition related to extending the overall life of projects. Removed/struck language per comments received. (Pg. 13)
42.	✓ 11/10/22		Provide a definition for Reclaimed Water. Language added to policy per comments received. (Pg. 14)
43.	✓ 11/10/22		Provide a definition for Replacement. Language added to policy per comments received. (Pg. 14)
44.	✓ 11/10/22		Replacements should be defined and under improvements instead of extraordinary maintenance. Replacement definition provided per comments received, but remains under extraordinary maintenance. (Pg. 14)
45.	✓ 11/10/22		Provide a definition for "Shovel Ready." Shovel Ready is not a term used in policy so no definition was added.
46.	✓ 11/10/22		Define types of stormwater infrastructure. Not necessary. No changes made to policy definition.
47.	✓ 11/10/22		Define Wastewater and Wastewater Effluent. Definitions added to policy per comments received. (Pg. 15)
48.	✓ 11/10/22		Add lead line replacements to eligibility. No changes to policy. Lead lines to homes from curb stops are owned by individual property owners. Funding options are available through DEQ.
49.	✓ 11/10/22		Expansions to those hauling water should be high priority. This would be nearly impossible to implement and identify.
50.	✓ 11/10/22		Don't require EA for federally approved retention projects. No change made to policy per statutory requirements.

SUMMARY OF COST-SHARE PROGRAM MODIFICATION ISSUES, COMMENTS, & CHANGES

PRIORITIZATION GUIDANCE

Mod. #	SWC Approved	More Discussion	Issue, Comment, Changes
1.	✓ 11/10/22		Funding preference is currently given to high priority projects for the first 12 months of the budget cycle. Moderate projects were added to expand projects that could move forward.
2.	✓ 11/10/22		Address economies of scale and systems that have the ability to take reduced cost-share. Draft language available for review in Prioritization Guidance. Sponsors who can accept a 10% reduction in cost-share or more can have projects move up one priority level.
3.	✓ 11/10/22		Federally authorized water supply or flood control projects. Same as previous draft.
4.	✓ 11/10/22		Mitigation of low head dam roller effects as a high priority. Same as previous draft.
5.	✓ 11/10/22		Water supply regionalization projects. Revised language provided under high priority - referencing economies of scale.
6.	✓ 11/10/22		Update the phrase "corrects a violation of a primary water quality condition in a water supply system" to "corrects a violation of a primary drinking water standard under the Safe Drinking Water Act". Prioritization Guidance modified to reflect suggested change.
7.	✓ 11/10/22		Consider adding "corrects an exceedance of a secondary drinking water standard under the Safe Drinking Water Act" to Prioritization Guidance. No changes made to Prioritization Guidance.
8.	✓ 11/10/22		Language related to severe or anticipated water supply shortages in areas experiencing rapid population growth. Reverted back to original language to support rapidly growing communities.
9.	✓ 11/29/22		MSI projects. Moved to "Moderate" priority.
10.	✓ 11/10/22		Flood recovery acquisitions. Broadened to flood-related per policy modifications.
11.	✓ 11/10/22		Industrial water supply projects need to be addressed. Added as a moderate priority to account for industry in guidance.
12.	✓ 11/10/22		Replacements need to be addressed as a low priority. Added to Prioritization Guidance as a low priority per comments received. Emergency replacements could be addressed as "Essential."

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DRAFT

PROJECT FUNDING POLICY, PROCEDURE, AND GENERAL REQUIREMENTS

[TABLE OF CONTENTS (To Be Added)]

POLICY PURPOSE & STATEMENT

The Water Commission (Commission) has adopted this policy to support local sponsors in development of sustainable water related projects in North Dakota. This policy reflects the Commission's cost-share priorities and provides basic requirements for all projects considered for prioritization during the agency's budgeting process. Projects and studies that receive funding from the agency's appropriated funds are consistent with the public interest. The Commission values and relies on local sponsors and their participation to assure on-the-ground support for projects and prudent expenditure of funding for project or program development.

It is the policy of the Commission that only the items described in this document will be eligible for cost-share or loans upon approval by the Commission, unless specifically authorized by Commission action. No funds will be used in violation of Article X, § 18 of the North Dakota Constitution (Anti-Gift Clause).

APPLICATION PREOCESS, REQUIREMENTS, AND REVIEW PROCEDURES

APPLYING FOR COST-SHARE ASSISTANCE

An application for cost-share is required in all cases and must be submitted by the local sponsor through North Dakota's WebGrants portal. Sponsors seeking funding for water development projects through the Department of Water Resources' (Department) Cost-Share Program should choose the "Funding for Infrastructure in North Dakota" (FIND) option/opportunity. To apply for funding through FIND, applicants must first establish a North Dakota login and account. Specific information related to WebGrants and the application process are available at www.dwr.nd.gov under "Project Development" and then "Cost-Share Program." The application form is maintained and updated by the Secretary.

APPLYING FOR LOAN ASSISTANCE

In addition to cost-share and grants, the Commission may lend a portion of the local share based on demonstrated financial need. Project sponsors who are seeking loans for water infrastructure through the Bank of North Dakota (BND) administered Water Infrastructure Revolving Loan Fund (WIRLF) or Infrastructure Revolving Loan Fund (IRLF), must first receive Commission approval. For WIRLF or IRLF requests, sponsors must provide a letter of verification from BND indicating the sponsor's debt service capacity, and an explanation of the overall economic impact of the project as part of their request to the Commission. Projects not eligible for state revolving funds under chapters 61-28.1 and 61-28.2 must be given priority for loans from the WIRLF.

Applications for WIRLF or IRLF loans are also initiated through the WebGrants portal. After receiving Commission approval to apply to BND for WIRLF or IRLF loans, sponsors must follow BND loan application requirements.

PRE-APPLICATIONS FOR ASSESSMENT PROJECTS

A pre-application process is allowed for cost-share of assessment projects. This process only requires the local sponsor to submit a brief narrative of the project, and a delineation of costs (using SFN 61801). The Secretary will then review the material presented, make a determination of project eligibility, and estimate the cost-share funding the project may anticipate receiving.

A project eligibility letter will then be sent to the local sponsor noting the percent of cost-share assistance that may be expected on eligible items as well as listing those items that are not considered to be eligible costs. In addition, the project eligibility letter will state that the Secretary will recommend approval when all cost-share requirements are addressed. The local sponsor may use the project eligibility letter to develop a project budget for use in the assessment voting process. Upon completion of the assessment vote and all other requirements an application for cost-share can be submitted.

APPLICATION REQUIREMENTS AND MATERIALS

Applications for cost-share are accepted at any time. Incomplete applications or applications received less than 45 days before a Commission meeting will not be considered at that meeting and will be held for consideration at a future meeting. Meeting dates are available on the DWR homepage.

The Commission will consider cost-share requests submitted by sponsors, and will issue agreements under a two-tier process for applicable projects. Cost-share for pre-construction-related (Tier I) expenses will be considered first; followed by construction-related (Tier II) expenses after completion of pre-construction activities, including plans and specifications for bidding project construction.

In order for an application to be considered complete for Commission consideration, it must include the following supplemental materials.

Tier I (Pre-Construction) Applications

- Category of cost-share activity.
- Location of the proposed project or study area shown on a map.
- Description, purpose, goal, objective, and narrative of the proposed activities.
- Delineation of costs (SFN 61801), with contingencies of no more than 10 percent of the total project construction costs.
- Anticipated timeline of project from preliminary study through final closeout.
- Potential federal, other state, or other North Dakota state entity participation.
- Completed life cycle cost analysis worksheet for water supply projects. The completed worksheet must include a no action alternative, and up to three additional plausible alternatives - including repair, replacement, and regionalization options. If repair, replacement, and regionalization alternatives are excluded from the life cycle cost analysis, justification must be provided by the project sponsor.

Under the two-tier process, approval of Tier I pre-construction cost-share does not guarantee future cost share for construction activities.

Tier II (Construction) Applications

- Updated Tier I pre-construction application materials (see above).
- Engineering plans and specifications for purposes of bidding the project.
- Status of required permitting, including submission of approved drain, sovereign land, or construction permits if required by state statute.
- Status and type of local funding sources.

- When applicable for flood control projects, a Conditional Letter of Map Revision (CLOMR) from the United States Federal Emergency Management Agency (FEMA).

- Potential territorial service area conflicts or service area agreements, if applicable.

- A completed Capital Improvement Plan (CIP) for water supply projects as outlined in the Commission's CIP Guidance. A completed CIP should include demonstration of a sustainable Capital Improvement Fund (CIF), that at a minimum sets aside a percentage of the cost of the asset(s) for which the Commission is cost-sharing over the expected life of the asset(s). (Required at the time applications include a request for construction cost-share.)

- Completed economic analysis worksheet for water conveyance and flood-related projects expected to cost two hundred thousand dollars or more.

- Results of a positive assessment vote (rural flood control projects only).

- A completed sediment analysis (drain reconstructions only).

- A property acquisition plan (flood property acquisition program only).

- Additional information as deemed appropriate by the Secretary or Commission.

Water Development Plan Submittals
Applications for cost-share are separate and distinct from the Department and Commission's biennial project information collection effort that is part of the budgeting process and published as the State Water Development Plan (WDP). All local sponsors are encouraged to submit project financial needs for the WDP. Projects not submitted as part of the WDP process may be held until action can be taken on those that were included during budgeting, unless determined to be an emergency that directly impacts human health and safety or that are a direct result of a natural disaster.

APPLICATION REVIEWS

Upon receiving an application for cost-share, the Secretary will review the application and accompanying information. If the Secretary is satisfied that the proposal meets all requirements, the Secretary will give a 10-day notice to the local sponsor when their application for cost-share is placed on the tentative agenda of the Commission. The local sponsor will be required to attend that meeting in person or remotely when their application is being considered.

The Secretary will provide a recommendation to the Commission for its action. The Secretary's review of the application will include the following items and any other considerations that the Secretary deems necessary and appropriate.

- All required Tier I or Tier II application materials;
- Field inspection results, if deemed necessary by the Secretary;
- The percent and limit of proposed cost-share determined by category of cost-share activity and eligible expenses;

- Assurance of sustainable operation, maintenance, and replacement of project facilities by the local sponsor, (including a Capital Improvement Plan and evidence of a Capital Improvement Fund for water supply projects);
- Available funding in the Commission budget, if in the WDP, and a priority ranking when appropriate;
- Results of economic analysis of water conveyance or flood-related projects, when applicable; and
- Results of life cycle cost analysis for water supply projects, when applicable.

SECRETARY APPROVALS

The Secretary is authorized to approve cost-share up to $75,000 and also approve cost overruns up to $75,000 without Commission action. The Secretary 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 consideration.

AGREEMENT AND DISTRIBUTION OF FUNDS

No funds will be disbursed until the Commission and local sponsor have entered into an agreement for cost-share participation. No agreement for construction funding will be entered into until all required Department permits have been acquired.

For construction projects, the agreement will address indemnification and vicarious liability language. The local sponsor must require that the local sponsor and the state be made an additional insured on the contractor's commercial general liability policy including any excess policies, to the extent applicable. The levels and types of insurance required in any contract must be reviewed and agreed to by the Secretary. The local sponsor may not agree to any provision that indemnifies or limits the liability of a contractor.

For any property acquisition, the agreement will specify that if the property is later sold, the local sponsor is required to reimburse the Commission the percent of sale price equal to the percent of original cost-share.

The Secretary may make partial payment of cost-sharing funds as deemed appropriate. Upon notice by the local sponsor that all work or construction has been completed, the Secretary may conduct a final field inspection, and the local sponsor must identify with signage that the completed project was paid for through a cooperative effort with the Department. If the Secretary is satisfied that the work has been completed in accordance with the agreement, the final payment will be disbursed to the local sponsor, less any partial payment previously made.

PROJECT PROGRESS REPORTS

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.

LITIGATION

If a project submitted for cost-share is the subject of litigation, the application may be deferred until the litigation is resolved. If a project approved for cost-share becomes the subject of litigation before all funds have been disbursed, the Secretary may withhold funds until the litigation is resolved. In either of the aforementioned cases, the sponsor will notify the Department and Commission of litigation related to their project(s).

ECONOMIC ANALYSIS

Project sponsors seeking cost-share for construction of flood control or water conveyance projects with a total cost of two hundred thousand dollars or more must complete the Commission's economic analysis worksheet. The results of the economic analysis must be provided with the sponsor's application for cost-share assistance for agency review. When the results of the economic analysis are determined by the Department to be accurate, the results will then be presented to the Commission for their consideration as part of the cost-share request.

Projects that yield a benefit to cost (BC) ratio of one to one, or greater, are eligible for up to the maximum allowable cost-share per project type and policy. Projects that yield a BC ratio of less than one to one will have the BC ratio used as a percentage of the allowable cost-share (i.e. eligible costs, multiplied by the applicable cost-share percentage, multiplied by the BC ratio) – unless otherwise authorized by the Commission.

Projects that will result in FEMA accredited flood protection for communities may be exempt from the requirement of using the BC ratio as a percentage of the allowable cost-share.

LIFE CYCLE COST ANALYSIS

Project sponsors seeking cost-share for water supply projects must complete the Commission's life cycle cost analysis worksheet. The completed worksheet must include a no action alternative, and up to three additional plausible alternatives - including repair, replacement, and regionalization options. If repair, replacement, and regionalization alternatives are excluded from the life cycle cost analysis, justification must be provided by the project sponsor.

The results of the life cycle cost analysis must be provided with the sponsor's application for cost-share assistance for agency review. When the results of the life cycle cost analysis are determined by the agency to be accurate, the results will then be presented to the Commission for their consideration as part of the cost-share request.

PROJECT FRACTURING

The fracturing or separating of projects into smaller components to avoid policy requirements is prohibited. If the Commission determines a project has been fractured for this purpose, the entire project, or elements of the project, may be considered ineligible for cost-share assistance.

INELIGIBLE ITEMS

Ineligible items from cost-share include:

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 a landowner unless specifically identified as eligible within the Flood Protection Program, or for water retention projects.

3 Work and costs incurred prior to a cost-share approval date, except for emergencies as determined by the Secretary.

4 Project related operation and regular maintenance costs.

5 Sediment removal as part of reconstruction of an existing drain.

6 Funding contributions provided by federal, other state, or other North Dakota state entities that supplant costs.

7 Elements of finished water storage projects that are sized in excess of the capacity necessary for peak daily consumption. Additional storage capacity beyond what is necessary to serve peak daily consumption is considered a local funding responsibility. This excludes storage associated with water treatment plants. Peak daily consumption means the peak reported water usage identified during the previous ten-year period.

8 Wastewater treatment processes and wastewater effluent transmission lines not for beneficial use.

9 Stormwater management studies and projects within the corporate limits of cities. To differentiate between a flood control project and stormwater 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.

10 Work incurred outside the scope of the approved study or project.

11 Invoices that are dated one year or more before the date they are received by the Department for reimbursement. Invoices submitted by agricultural producers who have been approved for cost-share through the Drought Disaster Livestock Water Assistance Program are exempt.

12 Local requirements imposed beyond State and Federal requirements for the project.

COST-SHARE ELIGIBLE PROJECTS AND PROGRAMS

COST-SHARE CATEGORIES

The Commission supports the following categories of projects and programs for cost-share.

BASIC ASSET INVENTORY ASSESSMENT AND CAPITAL IMPROVEMENT PLANNING (BAIACIP) PROGRAM

The Commission encourages planning efforts that support the long-term financial sustainability of water supply infrastructure projects and works. The primary purpose of the BAIACIP program is to help local project sponsors with the development and establishment of capital improvement funds necessary for proactive financial management of their water supply systems.

Sponsors seeking cost-share assistance through the BAIACIP program must follow Commission criterial established for this program as outlined in APPENDIX D.

PRE-CONSTRUCTION

The Commission supports local sponsor development of eligible projects, including pre-construction activities. Pre-construction expenses are cost-shared at the same percent as the construction costs when approved by the Commission. Copies of the deliverables must be provided to the Secretary upon completion. The Secretary will determine the payment schedule and interim progress report requirements.

COST INCREASES

When a sponsor has been approved for cost-share assistance and additional cost-share is requested as a result of increased construction-related costs, only those eligible construction-related costs, and construction engineering costs that are directly related to, and are resulting from the cost increase, are eligible for additional cost-share. Pre-construction engineering costs are a non-eligible expense as part of cost increase cost-share requests.

MAIN STREET INITIATIVE

The Commission supports water development infrastructure that aligns with the Main Street Initiative, which is one of North Dakota's five Strategic Initiatives. The four foundational pillars of the Main Street Initiative are Skilled Workforce; Smart, Efficient Infrastructure; Healthy, Vibrant Communities; and Economic Diversification. In support of the Main Street Initiative, the Commission can provide additional cost-share assistance of 10 percent beyond existing cost-share percentages, with a maximum of $250,000 in additional funding, if an eligible water infrastructure project:

1. Is located within a community that has received a "Main Street Champion" designation from North Dakota's Department of Commerce (NDDC);

2. Has been identified as an integral part of a completed comprehensive planning effort or action plan that was developed through the NDDC "Partners In Planning" grant program; and

3. Meets all other Commission eligibility requirements for cost-share.

WATER SUPPLY

The Commission supports water supply efforts associated with regional, rural, and municipal water supply systems. The transmission of reclaimed water for beneficial use may be an eligible cost. Debt per capita, water rates and financial need may be considered by the Commission when determining an appropriate cost-share percentage or priority. The Commission may also utilize the Department of Environmental

Quality's Priority Ranking System for Financial Assistance through the Drinking Water State Revolving Loan Fund Program as a secondary prioritization ranking for water supply projects.

Regional, Rural, And Municipal Water Supply Projects.

The Commission reserves flexibility to adjust percentages on a case-by-case basis, but generally may provide:

Up to 75 percent cost-share for:

- Regional and rural water system expansions and improvements
- New connections between communities and regional or rural systems that reduce costs through economies of scale
- Improvements required to meet primary drinking water standards

Up to 60 percent cost-share for:

- Municipal water supply expansions and improvements
- Connection of new rural water customers located within extraterritorial areas of a municipality

Water depots for industrial use receiving water from facilities constructed using Commission funding or loans have the following additional requirements:

- 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.
- If industrial water service will be contracted, public notice of availability of water service contracts is required when the depot becomes operational.
- Public access to water on a non-contracted basis must be provided at all depots.

Federal Municipal, Rural, And Industrial Water Supply Program

The Municipal, Rural, and Industrial Water Supply Program, which uses federal funds, is administered according to North Dakota Administrative Code Article 89-12.

Drought Disaster Livestock Water Assistance Program

This program provides assistance for water supply projects that support livestock impacted during drought declarations and is administered according to North Dakota Administrative Code Article 89-11. The Commission may provide up to 65 percent cost-share for Drought Disaster Livestock Water Assistance Program projects, but no more than $10,000 per project, and three projects per applicant.

FLOOD CONTROL

The Commission may provide cost-share for eligible items of flood control projects protecting communities from flooding and may include the repair of dams that provide a flood control benefit. When applicable, project sponsors must first acquire a Conditional Letter of Map Revision (CLOMR) from FEMA prior to applying for construction-related cost-share assistance.

Flood Protection Program

This program supports local sponsor efforts to mitigate impacts and prevent future property damage due to flood events. The Commission may provide cost-share up to 60 percent of eligible costs for flood protection projects and related property acquisitions. Flood recovery acquisition efforts in severely impacted communities may be considered for alternative cost-share percentages based on the severity of the event and at the Commission's discretion.

All contracted costs directly associated with property acquisitions for project development or recovery under this program will be considered eligible for cost-share. This includes the acquisition of flood damaged properties or properties necessary for project development. Contracted costs may include: appraisals, legal fees (title and abstract search or update, etc.), property survey, closing costs, hazardous materials abatement needs (asbestos, lead paint, etc.), and site restoration.

Prior to applying for assistance related to acquisitions, the local sponsor must adopt and provide to the Secretary an acquisition plan that includes a description and map of properties to be acquired; the estimated cost of property acquisition, including contract costs and removal of structures; and the benefit of acquiring the properties.

The local sponsor must include a perpetual restrictive covenant on any properties purchased under this program. These covenants must be recorded either in the deed or in a restrictive covenant that would apply to multiple deeds. Costs for property acquired, by easement or fee title, to preserve the existing conveyance of a breakout corridor recognized as essential to FEMA system accreditation may be eligible under this program.

The local sponsor must fund the local share for acquisitions. Federal funds are considered "local" for this program if they are entirely under the authority and control of the local sponsor. For any property acquisition, the agreement will specify that if the property is later sold, the local sponsor is required to reimburse the Commission the percent of sale price equal to the percent of original cost-share.

The cost-share application must include the return interval or design flow for which the project will provide protection. The Commission will calculate the amount of its financial assistance, based on the needs for protection against:

1. One-hundred-year flood event as determined by a federal agency;
2. The national economic development alternative; or
3. 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.

FEMA Levee System Accreditation Program

The Commission may provide cost-share up to 60 percent for eligible services for FEMA 44 CFR 65.10 flood control or reduction levee system certification analysis. The analysis is required for FEMA to accredit the levee system for flood insurance mapping purposes. Typical eligible costs include site visits and field surveys to include travel expenses, hydraulic evaluations, closure evaluations, geotechnical evaluations, embankment protection, soils investigations, interior drainage evaluations, internal drainage hydrology and hydraulic reports, system modifications, break-out flows, and all other engineering services required by FEMA. The analysis will result in a comprehensive report to be submitted to FEMA and the Secretary.

Administrative costs to gather existing information or to recreate required documents, maintenance and operations plans and updates, and emergency warning systems implementation are not eligible.

Water Retention Projects

The goal of water retention projects is to reduce flood damages by storing floodwater upstream of areas prone to flood damage. The Commission may provide cost-share up to 60 percent of eligible costs for water retention projects including purchase price of the property. Water retention structures constructed with Commission cost-share must meet state dam safety requirements, including the potential of cascade failure. A hydrologic analysis including an operation plan and a quantification of the flood reduction benefits for 25, 50, and 100-year events must be submitted with the cost-share application.

Individual Rural And Farmstead Ring Dike Program

This program is intended to protect individual rural homes and farmsteads through ring dike programs established by water resource districts. All ring dikes within the program are subject to the Commission's Individual Rural and Farmstead Ring Dike Criteria provided in Appendix B. Protection of a city, community or development area does not fall under this program but may be eligible for the flood control program. The Commission may provide up to 60 percent cost-share of eligible items for ring dikes up to a limit of $55,000 per ring dike.

Landowners enrolled in the Natural Resource Conservation Service's (NRCS) Environmental Quality Incentive Program (EQIP) who intend to construct rural or farmstead ring dikes that meet the Department's elevation design criteria are eligible for a cost-share reimbursement of 20 percent of the NRCS construction payment, limited to a combined NRCS and Commission contribution of 80 percent of project costs.

WATER CONVEYANCE

The Commission may provide cost-share for eligible items of water conveyance projects. Water conveyance projects include rural flood control, bank stabilization, and snagging and clearing.

Rural Flood Control

These projects are intended to improve the drainage and management of runoff from agricultural sources. The Commission may provide cost-share up to 45 percent of the eligible items for the construction of drains, channels, or diversion ditches. Construction costs for public road crossings that are integral to the project are eligible for cost-share as defined in N.D.C.C. § 61-21-31 and 61-21-32. If an assessment-based rural flood control project involves multiple districts, each district involved must join in the cost-share application.

Cost-share applications for rural assessment drains will only be processed after the assessment vote has passed, and a drain permit has been obtained. If the local sponsor wishes to submit a cost-share application prior to completion of the aforementioned steps, a pre-application process will be followed.

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.

Bank Stabilization

The Commission may provide cost-share up to 50 percent of eligible items for bank stabilization projects on public lands or those lands under easement by federal, state, or political subdivisions. Bank stabilization projects are intended to stabilize the banks of lakes or watercourses, as defined in N.D.C.C § 61-01-06, with the purpose of protecting public facilities. Drop structures and outlets are not considered for funding as bank stabilization projects but may be eligible under other cost-share program categories. Bank stabilization projects typically consist of a rock or vegetative design and are intended to prevent damage to public facilities including utilities, roads, or buildings adjacent to a lake or watercourse.

Snagging And Clearing

Snagging and clearing projects consist of the removal and disposal of fallen trees and associated debris encountered within or along the channel of a natural watercourse. Snagging and clearing projects are intended to prevent damage to structures such as bridges and maintain the hydraulic capacity of the channel during flood flows. The Commission may provide cost-share for up to 50 percent of the eligible items for snagging and clearing as well as any sediment that has accumulated in the immediate vicinity of snags and any trees in imminent danger of falling in the channel or watercourses as defined in N.D.C.C § 61-01-06. Items that are not eligible include snagging and clearing of man-made channels; the dredging of watercourses for sediment removal; the clearing and grubbing of cattails and other plant vegetation; or the removal of any other unwanted materials.

RECREATION

The Commission may provide cost-share up to 40 percent for projects intended to provide water-based recreation. Typical projects provide or complement water-based recreation associated with dams.

IRRIGATION

The Commission may provide cost-share for up to 50 percent of the eligible items for irrigation projects. The items eligible for cost-share are those associated with the off-farm portion of new central supply works, including water storage facilities, intake structures, wells, pumps, power units, primary water conveyance facilities, and electrical transmission and control facilities. The Commission will only enter into cost-share agreements with political subdivisions, including irrigation districts, and not with individual producers.

DAMS AND EMERGENCY ACTION PLANS

The Commission supports projects that address dam safety, deficiencies, repairs, and removals, as well as emergency action plans. In addition to the following cost-share percentages, the Commission may lend a portion of the local share based on demonstrated financial need. For dams and emergency action plans, the Commission may:

1. Provide cost-share for up to 60 percent of the eligible items for dam deficiency or repair projects and dam breach or removal projects.

2. Provide cost-share up to 75 percent to mitigate public dangers associated with low head dam roller effects. Cost-share funding will be considered under this category for dam removals, or the placement of rock rip rap, but not both. Modifications, repairs, or removals that go beyond what is required to mitigate roller effects may be cost-shared at lesser amounts – depending on the purpose for which the supplemental modifications or repairs are being made (i.e. recreation, water supply, flood control, irrigation, etc).

3. Provide cost-share up to 80 percent to develop or update emergency action plans of each dam classified as high or medium/significant hazard.

APPENDIX A

DEFINITIONS

CAPITAL IMPROVEMENT FUND is money set aside from a portion of user fees for replacement of capital projects. Documentation for a Capital Improvement Fund shall include information regarding the Capital Improvement Fund's goal in meeting the Capital Improvement Plan, a rate structure to meet the goal, implementation of the rate structure, details about any restrictions on the fund, and mechanisms for releasing assets from the fund for projects.

CAPITAL IMPROVEMENT PLAN is a planning and management tool that contains a timeline and estimated costs for planned replacement of individual Capital Projects for a system over a specified period of time. A Capital Improvement Plan should include an inventory of all existing assets, a condition assessment of all assets, estimated replacement costs, and an estimated timeframe for replacements.

CAPITAL PROJECTS include reservoirs, pump stations, water treatment plants, and pipelines.

CONSTRUCTION COSTS are those efforts and services to be completed as work under construction contract documents. Items could include earthwork, concrete, mobilization and demobilization, dewatering, materials, seeding, rip-rap, crop damages, re-routing electrical transmission lines, moving storm and sanitary sewer system and other underground utilities and conveyance systems affected by construction, mitigation required by law related to the construction contract, water supply works, irrigation supply works, and other items and services provided by the contractor. Construction costs are only eligible for cost-share if incurred after Commission approval and if the local sponsor has complied with North Dakota Century Code (N.D.C.C.) in soliciting and awarding bids and contracts, and complied with all applicable federal, state, and local laws.

COST-SHARE means funds appropriated by the legislative assembly or otherwise transferred by the Commission to a local entity under Commission policy as reimbursement for a percentage of the total approved cost of a project approved by the Commission.

DEPARTMENT means the Department of Water Resources.

ECONOMIC ANALYSIS means an estimate of the economic benefits and direct costs that result from the development of a project.

ECONOMIC IMPACT describes the direct and indirect changes in a defined region's economy due to a specific business, organization, policy, program, project, activity or other economic event.

ENGINEERING SERVICES include pre-construction and construction engineering. Pre-construction engineering is the engineering necessary to develop plans and specifications for permitting and construction of a project including preliminary and final design, material testing, flood insurance studies, hydraulic models, and geotechnical investigations. Construction engineering is the engineering necessary to build the project designed in the pre-construction phase including construction contract management, and construction observation. Administrative and support services not specific to the approved project are not engineering services. Engineering services are eligible costs if incurred after Commission approval.

EXPANSIONS are construction related projects that increase the project area or users served. Expansions do not include maintenance, replacement, or reconstruction activities.

EXTRAORDINARY MAINTENANCE COSTS include the repair or replacement of portions of facilities or components that are above and beyond regular or normal maintenance.

GRANT means a one-time sum of money appropriated by the legislative assembly and transferred by the Commission to a local entity for a particular purpose. A grant is not dependent on the local entity providing a particular percentage of the cost of the project.

IMPROVEMENTS are construction related projects that upgrade a facility to provide increased efficiency, capacity, or redundancy. Improvements do not include any activities that are maintenance or replacement.

LIFE CYCLE COST ANALYSIS means the summation of all costs associated with the anticipated useful life of a project, including project development, land, construction, operation, maintenance, and disposal or decommissioning.

LITIGATION for this policy is defined as legal action that would materially affect the ability of the local sponsor to construct the project; that would delay construction such that the authorized funds could not be spent; or is between political subdivisions related to the project.

LOAN means an amount of money lent to a sponsor of a project approved by the Commission to assist with funding approved project components. A loan may be stand-alone financial assistance.

LOCAL SPONSOR is the entity submitting a cost-share application and must be a political subdivision, state entity, or commission legislatively granted North Dakota recognition that applies the necessary local share of funding to match Commission cost-share. They provide direction for studies and projects, public point of contact for communication on public benefits and local concerns, and acquire necessary permits and rights-of-way.

PRE-CONSTRUCTION activities include study and report phase efforts, and preliminary and final design. Study and report phase efforts are meant to identify water related problems, evaluate options to solve or alleviate the problems based on technical and financial feasibility, and provide a recommendation and cost estimate of the best option to pursue. Engineering design is considered complete when final plans, drawings, and specifications for permitting and construction of a project, including associated cultural resource and archeological studies, are delivered to the local sponsor. Study and report phases, as well as design can also include mapping and surveying to gather data for a specific task such as flood insurance studies and floodplain mapping, LiDAR acquisition, and flood imagery attainment.

RECLAIMED WATER is municipal wastewater that has been treated to meet specific water quality criteria with the intent of being used for a range of purposes. The term recycled water is synonymous with reclaimed water.

REGULAR MAINTENANCE COSTS include normal repairs and general upkeep of facilities to allow facilities to continue proper operation and function. These maintenance items occur on a regular or annual basis. Regular maintenance activities simply help ensure the asset will remain serviceable throughout its originally predicted useful life.

REPLACEMENT means installing components similar to what currently exists with the intention of preserving existing service levels.

STORMWATER is rainwater or melted snow that runs off streets, lawns, and other sites.

SUSTAINABLE OPERATION, MAINTENANCE, AND REPLACEMENT PLAN is a description of the anticipated operation, maintenance, and replacement costs with a statement that the operation, maintenance, and replacement of the project will be sustainable by the local sponsor.

WASTEWATER is used water discharged from homes, businesses, industry, and agricultural facilities.

WASTEWATER EFFLUENT is treated wastewater flowing out of a wastewater treatment plant.

WATER CONVEYANCE PROJECT means any surface or subsurface drainage works, bank stabilization, or snagging and clearing of water bodies.

WORK includes and is the result of performing or providing all labor, services, and documentation necessary for construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the construction contract documents.[1]

[1] Engineers Joint Contract Documents Committee, 2014 – National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers

APPENDIX B
INDIVIDUAL RURAL AND FARMSTEAD RING DIKE CRITERIA

MINIMUM DESIGN CRITERIA

- Height: The dike must be built to an elevation 2 ft above either the 100-year flood or the documented high water mark of a flood event of greater magnitude, whichever is greater.

- Top Width:

If dike height is 5 ft or less:	4 ft top width
If dike height is between 5 ft and 14 ft:	6 ft top width
If dike height is greater than 14 ft:	8 ft top width

- Side Slopes: 3 horizontal to 1 vertical

- Strip topsoil and vegetation: 1 ft

- Adequate embankment compaction: Fill in 6-8 inch layers, compact with passes of equipment

- Spread topsoil and seed on ring dike

LANDOWNER RESPONSIBILITY

Landowners are responsible to address internal drainage on ring dikes. If culverts and flap gates are installed, these costs are eligible for cost-share. The landowner has the option of completing the work or hiring a contractor to complete the work. IF CONTRACTOR DOES THE WORK, payment is for actual costs with documented receipts. IF LANDOWNER DOES THE WORK, payment is based on the following unit prices:

- Stripping, spreading topsoil, and embankment fill: Secretary will determine rate schedule based on current local rates.

- Seeding: Cost of seed times 200 percent

- Culverts: Cost of culverts times 150 percent

- Flap gates: Cost of flap gates times 150 percent

OTHER FACTS AND CRITERIA

- The topsoil and embankment quantities will be estimated based on dike dimensions. Construction costs in excess of the 3:1 side slope standard will be the responsibility of the landowner. Invoices will be used for the cost of seed, culverts, and flap gates.

- Height can be determined by existing FIRM data or known elevations available at county floodplain management offices. Engineers or surveyors may also assist in establishing height elevations.

- The projects will not require extensive engineering design or extensive cross sections.

- A dike permit is required if the interior volume of the dike consists of 50 acre-feet, or more.

APPENDIX C
STANDARD OPERATING PROCEDURES

It has been determined by the Commission that there are Cost-Share Program operational procedures that are more appropriately clarified through Standard Operation Procedures (SOP). The following SOP have been approved by the Commission to assist Department staff with various administrative decisions related to the Cost-Share Program.

COST INCREASES

The following are various types of projects for which sponsors request cost increase assistance.

1. Projects approved for cost-share during the current biennium, and are requesting additional cost-share funding for cost increases.

   SOP

   - Requests in excess of $75,000 will be presented to the Commission for consideration.
   - Requests of $75,000 or less will be considered by the Secretary.

2. Projects approved for cost-share during past biennia, and are requesting current biennium cost-share funding or available carryover funds for cost increases.

   SOP

   - Requests in excess of $75,000 may be deferred for the first six months of the biennium before being presented to the Commission for consideration.
   - Requests of $75,000 or less may be deferred for the first six months of the biennium before being considered by the Secretary.

3. Projects that were denied or deferred for cost increase funding during the previous biennium.

   SOP

   - Requests in excess of $75,000 may be deferred for the first six months of the biennium before being presented to the Commission for consideration.
   - Requests of $75,000 or less may be deferred for the first six months of the biennium before being considered by the Secretary.

PROJECTS NOT SUBMITTED TO THE WATER DEVELOPMENT PLAN

Project sponsors will sometimes request cost-share funding for projects that are eligible under the agency's cost-share policy, but were not submitted or included in the current Water Development Plan (WDP). The following are various types of projects that are not included in the current WDP, but are submitted for cost-share consideration.

1. Projects that were, or were not identified in the previous biennium WDP, and are not included in the current WDP.

SOP

- These projects will be deferred for the first six months of the biennium for Commission consideration. (Exceptions are those projects considered to be an emergency – directly impacting human health and safety.)

APPENDIX D

[UNDER DEVELOPMENT]

DRAFT

SWC PROJECT PRIORITIZATION GUIDANCE

Projects submitted during the project planning inventory process[1] that meet SWC cost-share eligibility requirements will be considered for prioritization. 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~~ High or Moderate priorities for the first 12 months of each budget cycle.

Sponsors who are able to accept reduced SWC cost-share of 10% or more of the maximum allowable amount can be moved up one priority designation level.

ESSENTIAL PROJECTS *(No Priority Ranking)*

Agency operational expenses.

An imminent water supply loss to an existing multi-user system, an immediate flood or dam related threat to human life or primary residences, or emergency response efforts.

Existing agency debt obligations.

SWC project mitigation.

HIGH PRIORITY PROJECTS

Federally authorized water supply or flood control projects ~~with a federal funding appropriation.~~

Mitigation of low head dam roller effects.

~~Federally authorized water supply or flood control projects that do not have a federal appropriation.~~

New water supply connections between communities and rural or regional water systems that result in reduced costs through economies of scale.

~~Corrects a lack of water supply for a group of water users or connects a city to a regional/rural system.~~

Corrects a violation of a primary drinking water standard under the Safe Drinking Water Act. ~~water quality condition in a water supply system.~~

Addresses severe or anticipated water supply shortages for domestic use in a service area or city with rapid population growth.

~~Main Street Initiative related projects.~~

Protects primary residences or businesses from flooding in population centers or involves flood -related ~~recovery~~ property acquisitions.

MODERATE PRIORITY PROJECTS

Dam safety repairs and emergency action plans.

Expansion of an existing water supply system.(including to industrial water users).

Levee system accreditations, water retention, ~~or flood protection property acquisitions~~.

Irrigation system construction.

New rural flood control projects.

Bank stabilization.

Snagging and clearing in population centers.

Main Street Initiative related projects.

LOW PRIORITY PROJECTS

Studies, reports, analyses, surveys, models, evaluations, mapping projects, or engineering designs.[11]

Improvement or extraordinary maintenance of a water supply system.

Improvement or extraordinary maintenance of rural flood control projects.

Recreation projects.

Individual rural and farmstead ring dike constructions.

Replacement of existing infrastructure.

Snagging and clearing in sparsely populated areas.

Footnotes

1. All local sponsors are encouraged to submit project financial needs during the budgeting process. Projects not submitted as part of the project information collection effort may be held until action can be taken on those that were included during budgeting, unless determined to be an emergency that directly impacts human health and safety or that are a direct result of a natural disaster.

1l. May be considered as a higher priority if the related project is of higher priority.

Disclaimer

This process is meant to provide guidance for prioritizing water projects during the budgeting process that may be eligible for cost-share assistance through the Department of Water Resources. Interpretation and deviations from the process are within the discretion of the state as authorized by the State Water Commission or Legislature.