



TECHNICAL MEMORANDUM

To: Kip Kovar, PE, District Engineer, Garrison Conservancy District

From: Brent Erickson, PE, Senior Project Manager, AE2S

CC: Kurt Ronnekamp, PE, Program Manager, Black & Veatch
Grady Wolf, Environmental Program Manager, KLJ
Mark Funston, PE, Engineering Manager, Black & Veatch

Re: **ENDAWS Preliminary Design T05280**
Proposed ENDAWS Segment 1 Reroutes TM302

Date: April 17, 2023

1 RECOMMENDATION & SUMMARY

This memorandum proposes reroutes to the Eastern North Dakota Area Water Supply (ENDAWS) Segment 1 pipeline alignment to avoid impacts to delineated United State Fish and Wildlife Service (USFWS) Wetland Basins.

The reroutes in this technical memorandum are compared to the findings presented in the Technical Memorandum dated January 31, 2023 (ENDWAS TM 301), that summarized the interface of the ENDWAS Segment 1 pipeline and USFWS Wetland Basins. The USFWS impact TM identified 55 USFWS Wetland Basins that were inside of the EIS 150-foot pipeline easement.

1.1 Recommendation

Following are the recommendations of this technical memorandum:

1. Modify the ENDAWS Segment 1 pipeline alignment with nine (9) reroutes.
 - a. Reroutes are shown on the attached Mapbook.
 - b. Reroutes are summarized in **Table 1** below.
 - c. Reroutes result in 26 USFWS Wetland Basins being avoided by construction.
2. Complete a field review of Reroute #9 listed in **Table 1** below to confirm that the USFWS Basins would require trenchless methods to avoid.
 - a. ENDWAS TM 301 identified USFWS Wetland Basins designated as USFWS -0040 to USFWS – 0049 as requiring trenchless methods to avoid impact.

Technical Memorandum

Re: ENDAWS Preliminary Design TO5280

Proposed ENDAWS Segment 1 Reroutes TM302

April 17, 2023

- b. Reroute #9 identified in this technical memorandum avoids these USFWS basins.
 - c. Reroute #9 requires the proposed alignment to travel outside of the 400-foot EIS study area.
 - d. A field review to determine the potential to utilize trenched installation mitigation measures for USFWS -0040 to USFWS – 0049 is recommended prior to initiation additional clearances for the proposed reroute.
3. Initiate additional field work and clearances for Routes #1, #2, #3, #4, and #8 listed in **Table 1** below.
- a. These proposed reroutes extend outside of the 400-foot EIS study area.
 - b. Prior to final design additional field investigations and environmental clearances will need to be obtained for these reroutes.
 - c. KLJ and BoR should be consulted regarding the extent of the additional investigations and clearances required.

1.2 Reroute Criteria

Utilizing the proposed reroutes will result in a total of 26 USFWS Wetland Basins being avoided by the construction of the ENDAWS Segment 1 pipeline. There are two classifications of reroutes:

1. Minor Reroutes stay within the 400-foot EIS study area and will require no additional clearances. A total of four (4) minor reroutes are proposed.
2. Major Reroutes travel outside of the 400-foot EIS corridor and will require additional clearances. A total of five (5) major reroutes are proposed.

Major Reroutes are proposed to total approximately 16,000 feet in length or less than 10% of the total length of the ENDAWS Segment 1 pipeline.

1.3 Reroute Summary

By implementing the proposed reroutes the following benefits can be achieved when compared to the impacts presented in the ENDAWS USFWS Impact TM.

- Reduction in the USFWS temporary impacts from 10.950 acres to 5.011 acres.
- Reduction in the number of required trenchless crossings from 13 to five (5).
- Increase in total avoidance of USFWS Basins of 17.254 acres from 10.732 acres.

Reroute type, length, and location are summarized in **Table 1**.

Section 3 and **Table 2** below provide a revised summary of the all of the USFWS Wetland Basins intersected by the EIS ENDAWS alignment and the proposed routes.

Table 1 Proposed Reroute Summary

Reroute #	Type	Length (ft)	Location	USFWS Basins Avoided
1	Major	900	SE1/4 S33 T147N R77W	2
2	Major	1500	SW1/4 S35 T147N R77W	1
3	Major	900	SW1/4 S31 T147N R77W	1
4	Minor	4700	S1/2 S35 T146N R76W	5
5	Major	6900	N1/2 S6 T146N R76W	8
6	Minor	1900	N1/2 S9 T146N R74W	1
7	Minor	700	NE1/4 S9 T146N R73W	1
8	Minor	2500	NW1/4 S10 T146N R73W	1
9	Major	6700	N1/2 S7 T146N R73W	7

Notes:

1. "Reroute #" is a unique identifier created for this table.
2. "Type" as follows.
 - a. "Minor" reroutes stay within the 400-foot EIS study area and will require no additional clearances.
 - b. "Major" reroutes travel outside of the 400-foot EIS corridor and will require additional clearances.
3. "Length:" is the approximate horizontal length of rerouted pipeline easement.
4. "Location" is the approximate Section, Township, and Range of the reroute.
5. "USFWS Basins Avoided" is the total number of delineated USFWS Wetland Basins that the reroute will completely avoid as compared to the original EIS alignment.

1.4 Next Steps

After acceptance of any of the proposed reroutes the preliminary design and easement acquisition for Segment 1 of ENDAWS pipeline can begin.

Major reroutes will require additional environmental clearances and field work that will not be able to begin until snow has cleared for the project area.

2 BACKGROUND

In 2019 and 2020, Black & Veatch (BV, Engineer) and its consultants completed an appraisal-level design (also known as a conceptual-level design) of facilities and transmission pipelines necessary to obtain water for the Red River Valley Water Supply (RRVWSP) project from the McClusky Canal. The engineering evaluation completed on behalf of the Garrison Conservancy District (GDCCD, Owner), became part of the U.S. Department of the Interior, Bureau of Reclamation's (Reclamation's) Environmental Impact Statement (EIS). A record of decision (ROD) signed on January 15, 2021, authorized the recommended project that obtains water from both the McClusky Canal, and the Missouri River near Washburn, North Dakota (ND). This project is named the Eastern North Dakota Alternate Water Supply (ENDAWS).

The appraisal-level design identified alternative components for delivering McClusky Canal water to eastern and central North Dakota, including various water sources, intakes, pumping stations, and biota water treatment. Multiple transmission main alignments were evaluated before selection of a preferred alignment, which is depicted by yellow and red lines on **Figure 1**. The preferred ENDAWS 72-inch diameter transmission main alignment GDCCD intends to proceed with 32-mile segment shown in yellow line on **Figure 1**. This segment (ENDAWS Segment 1) begins at the McClusky Canal near North Dakota Highway 200 and extends east to the site of the RRVWSP's Hydraulic Break Tanks.



Figure 1 ENDAWS and RRVWSP Program Features

The ENDAWS EIS included considerations and commitments specific to USFWS easements and wetlands summarized as follows:

Technical Memorandum

Re: ENDAWS Preliminary Design TO5280

Proposed ENDAWS Segment 1 Reroutes TM302

April 17, 2023

- Prior to the start of the final design phase, coordinate with the USFWS personnel to identify where the proposed pipeline and USFWS lands interface.
- If the proposed pipeline alignment crosses an USFWS easements, meet with the USFWS personnel to review the interface of the ENDAWS project and USFWS easements.

GDCC was presented a Technical Memorandum dated January 31, 2023 (ENDWAS USFWS Impact TM), that summarized the interface of the ENDWAS Segment 1 pipeline and USFWS Wetland Basins. The USFWS impact TM identified 55 USFWS Wetland Basins that were inside of the proposed 150-foot pipeline easement.

3 REVISED USFWS WETLAND EASEMENT SUMMARY

Table 2 below is a summary of the locations where the proposed ENDAWS Segment 1 pipeline alignment intersects known delineated USFWS Wetland Basins. These locations are graphically presented in the attached Mapbook.

A version of this table was presented in the ENDWAS USFWS Impact TM. Revisions to the table below include the following.

- “Type” has been updated to reflect the following designations.
 - “Avoid” no intersection with construction.
 - “Trenchless” will utilize trenchless methods to avoid impact.
 - “Temporary” will utilize trenched installation and best management practices to mitigate impact.
- Additional USFWS Locations have been added with the AE2S applied designator of “USFWS-RR-####”.
 - One (1) additional USFWS Wetland Basin was identified as intersecting a proposed reroute.
 - This location is listed in **Table 2** at a location relative to the nearest previously identified “Location”.
 - Additional USFWS Locations are also shown on the attached Mapbook.

Table 2 Summary of USFWS Easements and ENDAWS Segment 1 Intersections

Location	Type	USFWS IFWS	USFWS TRACTNO	Avoided Acres	Temporary Impact Acres	County
USFWS-0001	Avoid	599	446X,1,2	0.419	0	Sheridan

Technical Memorandum

Re: ENDAWS Preliminary Design TO5280

Proposed ENDAWS Segment 1 Reroutes TM302

April 17, 2023

Location	Type	USFWS IFWS	USFWS TRACTNO	Avoided Acres	Temporary Impact Acres	County
USFWS-0002	Avoid	599	446X,1,2	0.138	0	Sheridan
USFWS-0003	Avoid	599	323X-2-12	1.691	0	Sheridan
USFWS-0004	Avoid	599	192X	0.851	0	Sheridan
USFWS-0005	Avoid	599	20X-1	0.373	0	Sheridan
USFWS-0006	Avoid	599	253X	0.010	0	Sheridan
USFWS-0007	Avoid	599	253X	0.316	0	Sheridan
USFWS-0008	Avoid	599	253X	0.090	0	Sheridan
USFWS-0009	Avoid	599	253X	0.076	0	Sheridan
USFWS-0010	Avoid	599	20X-1	1.433	0	Sheridan
USFWS-0011	Trenchless	599	20X-1	0.041	0	Sheridan
USFWS-0012	Trenchless	599	20X	1.611	0	Sheridan
USFWS-0013	Temporary	599	20X	0	0.212	Sheridan
USFWS-0014	Avoid	599	20X	0.076	0	Sheridan
USFWS-0015	Avoid	599	20X	0.266	0	Sheridan
USFWS-0016	Avoid	599	194X,1	0.170	0	Sheridan
USFWS-0017	Avoid	599	194X,1	0.328	0	Sheridan
USFWS-0018	Avoid	599	325X,1-4	0.239	0	Sheridan
USFWS – RR-0001	Temporary	599	325X,1-4	0	0.583	Sheridan
USFWS-0019	Avoid	599	325X,1-4	0.316	0	Sheridan
USFWS-0020	Avoid	599	325X,1-4	0.184	0	Sheridan
USFWS-0021	Avoid	599	193X,1	0.187	0	Sheridan

Technical Memorandum

Re: ENDAWS Preliminary Design TO5280

Proposed ENDAWS Segment 1 Reroutes TM302

April 17, 2023

Location	Type	USFWS IFWS	USFWS TRACTNO	Avoided Acres	Temporary Impact Acres	County
USFWS-0022	Avoid	599	194X,1	0.082	0	Sheridan
USFWS-0023	Temporary	599	194X,1	0	0.037	Sheridan
USFWS-0024	Temporary	599	194X,1	0	0.016	Sheridan
USFWS-0025	Temporary	599	194X,1	0	0.148	Sheridan
USFWS-0026	Temporary	599	194X,1	0	0.021	Sheridan
USFWS-0027	Temporary	599	194X,1	0	0.450	Sheridan
USFWS-0028	Temporary	599	194X,1	0	0.072	Sheridan
USFWS-0029	Trenchless	599	194X,1	0.374	0	Sheridan
USFWS-0030	Temporary	599	194X,1	0	0.010	Sheridan
USFWS-0031	Temporary	599	194X,1	0	0.474	Sheridan
USFWS-0032	Trenchless	599	176X,1	1.159	0	Sheridan
USFWS-0033	Temporary	599	176X,1	0	0.153	Sheridan
USFWS-0034	Temporary	599	176X,1	0	0.358	Sheridan
USFWS-0035	Temporary	599	38X,1	0	0.488	Sheridan
USFWS-0036	Avoid	599	38X,1	0.415	0	Sheridan
USFWS-0037	Trenchless	599	429X,1	2.749	0	Sheridan
USFWS-0038	Avoid	548	95X,1,2	0.355	0	Wells
USFWS-0039	Avoid	548	95X,1,2	0.080	0	Wells
USFWS-0040	Avoid	548	170X,1	0.359	0	Wells
USFWS-0041	Avoid	548	170X,1	0.038	0	Wells
USFWS-0042	Avoid	548	170X,1	1.155	0	Wells

Technical Memorandum
 Re: ENDAWS Preliminary Design TO5280
 Proposed ENDAWS Segment 1 Reroutes TM302
 April 17, 2023

Location	Type	USFWS IFWS	USFWS TRACTNO	Avoided Acres	Temporary Impact Acres	County
USFWS-0043	Avoid	548	170X,1	0.424	0	Wells
USFWS-0044	Avoid	548	170X,1	0.007	0	Wells
USFWS-0045	Avoid	548	215X	0.284	0	Wells
USFWS-0046	Avoid	548	215X	0.019	0	Wells
USFWS-0047	Avoid	548	215X	0.039	0	Wells
USFWS-0048	Avoid	548	215X	0.478	0	Wells
USFWS-0049	Avoid	548	167X-2,3	0.422	0	Wells
USFWS-0050	Temporary	548	167X-2,3	0	0.023	Wells
USFWS-0051	Temporary	548	167X-2,3	0	0.039	Wells
USFWS-0052	Temporary	548	167X-2,3	0	0.207	Wells
USFWS-0053	Temporary	548	167X-2,3	0	0.563	Wells
USFWS-0054	Temporary	548	167X-2,3	0	1.003	Wells
USFWS-0055	Temporary	548	167X-2,3	0	0.154	Wells
Total				17.254	5.011	

Notes:

1. "Location" is a unique identifier created by AE2S for each delineated USFWS Wetland Basin that intersects the proposed ENDAWS Segment 1 pipeline alignment. See the attached Mapbook for a visual depiction of the location.
2. "Type" as follows.
 - a. "Avoid" no intersection with construction.
 - b. "Trenchless" will utilize trenchless methods to avoid impact.
 - c. "Temporary" will utilize trenched installation and best management practices to mitigate impact.
3. "USFW ISWS" "USFWS TRACTNO" are attributes from the USFWS supplied Shapefiles.
4. "Avoided Acres" is the area of delineated USFWS Wetland Basin
 - a. Intersected by the original ENDAWS Segment 150-foot-wide easement where the pipeline is being rerouted, or
 - b. A trenchless crossing that avoids impact.
5. "Temporary Impact Acres" is the area of delineated USFWS Wetland Basin intersected by the proposed ENDAWS Segment 150-foot-wide easement that is proposed to be temporarily impacted by installation of the ENDAWS pipeline.