

Little Missouri Lateral NGL Pipeline Construction Inspection Report PU-19-85



Prepared for:
**North Dakota
Public Service Commission**

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Executive Summary

The North Dakota Public Service Commission (PSC) retained Wenck Associates, Inc. (Wenck) to complete site inspections during construction of the ONEOK Little Missouri Lateral Pipeline (i.e., the Project). The project is a 12-inch Natural Gas Liquids (NGL) pipeline in McKenzie County, North Dakota, constructed by ONEOK Bakken Pipeline L.L.C. (ONEOK). The purpose of the inspections was to ensure the project was constructed in compliance with the siting laws and rules and the applicable PSC Orders for the Project.

A pre-construction conference call was held for the Project on 5 June 2019; Wenck attended the call. Wenck reviewed Project documents to become familiar with the Project and PSC Orders for the Project. Construction involving soil disturbance for the Project began 18 June 2019. Wenck visually inspected the Project area on 18 and 19 June 2019 and observed topsoil and subsoil removal and segregation conducted by Jomax Construction Company Inc. (Jomax). A Topsoil Inspection report was previously submitted to the PSC. submitted

Construction inspections were conducted on 18 July 2019, and 21 August 2019. Pipe depth was documented at multiple location and the pipeline was installed with the depth of cover required by the Commission's Order. Horizontal Directional Drilling (HDD) was conducted were proposed. During construction site inspections, there were some isolated soil segregation mixing issues observed, primarily near the east end of the project. This mixing was brought to the attention of a ONEOK representative. To resolve these issues, Wenck recommended care be taken during subsequent trench backfilling to minimize further mixing, and to assure subsoil and topsoil remains segregated to the best extent feasible. Wenck also recommends the implementation of spotters during machinery use to ensure topsoil stockpiles are kept free from subsoil mixing during soil handling procedures. Overall, construction of the project appears to be in compliance with the applicable siting laws, rules, and PSC orders.

Per discussion with ONEOK personal, Wenck was made aware that final topsoil replacement of this project may not occur before the onset of winter freeze-up. If topsoil stockpiles are proposed to be left over-the winter months, Wenck recommends additional erosion control measures be installed to protect topsoil stockpiles from long-term exposure and the typically wet spring months. Wenck observed a few isolated areas that additional erosion controls should be installed immediately.

1.0 Background and Scope

1.1 INTRODUCTION

The Little Missouri Lateral 12-inch mixed natural gas liquids (NGLs) will be a single pipeline segment located in McKenzie County and will transport NGLs, or Y-Grade product, approximately 10.8 miles originating from the Little Missouri Gas Processing Plant at the southeast quarter of T149N, R98W, Section 30 and terminate at an interconnection with ONEOK's Demicks Lake Pipeline (PU-18-399) at the southwest quarter of T149N R100W Section 1.

The pipe for the Little Missouri Lateral Pipeline is a 12.75-inch outside diameter steel pipe with 0.25 inches wall thickness for line pipe and 0.281-inches for road crossings. The maximum operating pressure will be 1,480 pounds per square inch and the maximum flow rate of each pipe will be 20,000 barrels per day. The Project is under the jurisdiction of the North Dakota Public Service Commission (PSC), which issued its Findings of Fact, Conclusions of Law, and Order in Case No. PU-19-85 on 31 May 2019, granting Certificates of Corridor Compatibility No. 211 and Route Permits No. 221 for the Project.

1.2 REGULATORY PURPOSE AND SCOPE OF WORK

The North Dakota Energy Conversion and Transmission Facility Act (North Dakota Century Code Chapter 49-22) authorizes the Public Service Commission to determine that the location, construction, and operation of jurisdictional energy conversion and transmission facilities will produce minimal adverse effects on the environment and the welfare of citizens of North Dakota. Construction inspections ensure that such projects are constructed in compliance with the siting laws (North Dakota Century Code Chapter 49-22) and rules (North Dakota Administrative Code Article 69-06) and the applicable Commission Orders.

The North Dakota PSC retained Wenck Associates, Inc. (Wenck) to complete construction inspections of the Project. Wenck's scope of work was to perform and document on-site inspections during the construction phase of the Project to verify that the project was constructed in compliance with the siting laws, siting rules, and applicable Commission Orders and to verify that the pipeline was installed with the depth of cover required by the Commission's Order. The inspection process included a review of the Application for Corridor Compatibility and Route Permit, the Project's Order, and other applicable documents. This report includes documentation of site visit observations and a summary of findings and issues that should be addressed for the Project to be considered complete and in full compliance.

2.0 Findings of Site Inspection

2.1 METHODS

Matt Retka, Project Manager/Soil Classifier, Zach Leitner, Field Inspector, and Jeremy Hackley, Field Inspector (all with Wenck), visited the Project site to conduct construction inspections on 18 July 2019 and 21 August 2019. Representatives from Onshore Quality Control Specialists, LLC. (QCS), James Martin, Chief Inspector, and Alex Compton, Environmental Inspector, accompanied Wenck staff during the visits. QCS, under the management of James Martin, oversees the daily actions of the construction contractors to ensure work is being conducted according to approved plans and procedures.

The site was inspected visually by driving to access points and walking or driving within the Project right-of-way (ROW). Jomax is the pipeline contractor company working on the project. Contractors/equipment operators were observed during the topsoil removal, trench digging, pipe installation, trench filling, and topsoil re-spreading phases of the Project to check that soils had been properly removed, segregated, and replaced during the construction process. Pipe depths, measured from open trenches, were inspected. General construction procedures were also observed. Digital photographs were taken showing typical Project infrastructure and documenting problem areas (**Appendix A**). Geographic coordinates were recorded at observation points or potential problem areas using a handheld Global Positioning Systems (GPS) (Garmin GPSMAP 60CSx; <10m accuracy; NAD83 datum and Trimble GOXT, submeter accuracy, NAD83 datum) (**Table 1**).

2.2 ON-SITE INSPECTION OBSERVATIONS

The first construction inspection was conducted on 18 July 2019. Mr. Hackley met with QCS environmental inspector Alex Compton at Jomax yard to help navigate through the project construction. Pipe in trench measurements were appropriate in depth and at or deeper than required. Trench wall profiles showed that topsoil had been stripped appropriately. Observations were made of a backhoe gathering the majority of the subsoil stockpile to be redistributed along the ROW. A motor grader will then be used collect the remaining subsoil stockpile and grade it all into the existing topography. Observations were made that waterbodies, wetlands, noxious weeds, and other environmentally sensitive areas were all marked clearly to mitigated against construction impacts. After the previous day's heavy rains, an area susceptible to topsoil stockpile erosion was observed without erosion controls. This issue was discussed with Alex Compton and resolved on-site with the installation of silt fence and straw wattles. (**Appendix A, Observation Points 168-180**).

The final construction inspection was completed on 21 August 2019. Mr. Retka and Mr. Leitner met with QCS Chief Inspector James Martin on-site during project construction. At this time, it was reported by ONEOK that 85% of trenching, 83% of pipe laying, and 19% of backfill had been completed for the project. Wenck's inspections were initiated near the start of the project, along the eastern corridor of the pipeline and HDD under Spring Creek. There were some isolated soil segregation mixing issues observed near the east end of the project. Pipe depths within the trench were measured at a minimum of 48-inches, and discussion with Mr. Martin indicated that that pipe depths were appropriately increased to 72-inches across section lines. Construction inspection continued west to the tie-in with the Demicks Lake project. Some stockpiles had prevalence of weed species along the route. Despite Mr. Martin mentioning that there had been some turn-over of the construction crew

management, visual construction observations showed that the project is being installed as specified. (**Appendix A, Observation Points 2745-2759e**).

In general, the contractors appear to have done a satisfactory job with the stripping of topsoil and project construction. QCS inspectors seemed to have a good rapport with the construction contractors and were well informed on the construction activities. Work areas visited during the inspection were kept free of debris and waste.

3.0 Recommendations for Resolution of Issues

Construction Inspections of The Little Missouri Lateral Pipeline PU-19-85 have verified that the project is constructed in compliance with the siting laws, siting rules, and applicable Commission Orders. Measurements of pipe depth within trenches confirm that the pipeline is being installed with the depth of cover required. No major issues were observed during construction inspections. However, Wenck makes the following recommendations to alleviate minor issues observed at the project:

- ▲ Continue implementing erosion control measures, especially if stockpiles are to be left over winter.
- ▲ Timely chemical and/or physical control to suppress weeds within topsoil stockpiles will facilitate successful revegetation of the project during reclamation.
- ▲ Use of spotters and careful handling of soil during subsequent trench backfilling to minimize subsoil/topsoil mixing, and to assure subsoil and topsoil remains segregated to the best extent feasible.
- ▲ Backfill of the trench is to be conducted to assure the pipeline is buried with a minimum of 48 inches of cover. This is increased to 72 inches of cover across unimproved section lines.

4.0 Signatures

The services performed by Wenck staff for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints. Recommendations and findings contained in this report represent our professional judgment and are based upon available information and technically accepted practices at the present time and location. Other than this, no warranty is implied or expressed.



Matt Retka, Project Manager

9/04/2019
Date

1. Observation Point Coordinates

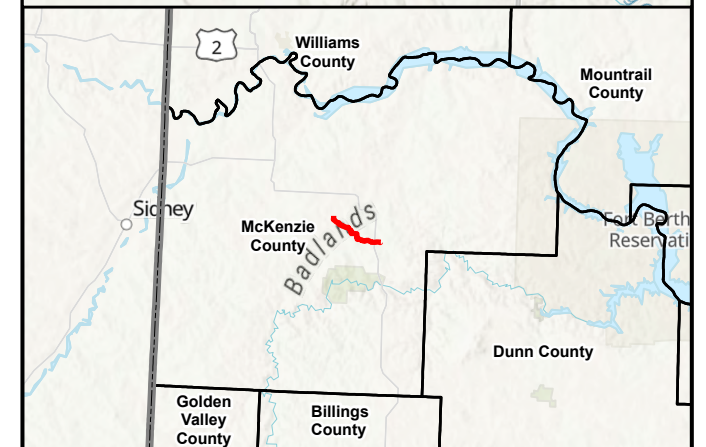
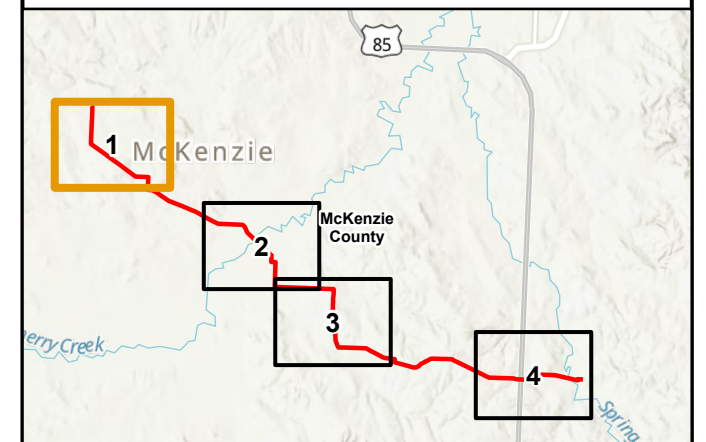
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170	47.750281	-103.432539	7/18/2019
171	47.741973	-103.432266	7/18/2019
172	47.738801	-103.425077	7/18/2019
173	47.733278	-103.413235	7/18/2019
174	47.718379	-103.370346	7/18/2019
175	47.720230	-103.373274	7/18/2019
176a	47.721158	-103.374939	7/18/2019
176b	47.721158	-103.374939	7/18/2019
177	47.721739	-103.375824	7/18/2019
178a	47.722453	-103.377164	7/18/2019
178b	47.722453	-103.377164	7/18/2019
179	47.703425	-103.348121	7/18/2019
180	47.692001	-103.286934	7/18/2019
2745	47.69317816	-103.2730792	8/21/2019
2746se	47.69307105	-103.2711602	8/21/2019
2747	47.69315421	-103.2751819	8/21/2019
2748e	47.69336317	-103.2751012	8/21/2019
2749ne	47.69186107	-103.2846367	8/21/2019
2750	47.69168295	-103.2872334	8/21/2019
2751e	47.69197750	-103.2864182	8/21/2019
2752ne	47.72256332	-103.3773956	8/21/2019
2753w	47.72212471	-103.3767585	8/21/2019
2754se	47.72212471	-103.3767585	8/21/2019
2755nw	47.71966676	-103.3724807	8/21/2019
2756se	47.71966676	-103.3724807	8/21/2019
2757	47.75040565	-103.4325219	8/21/2019
2758n	47.75065715	-103.4325217	8/21/2019
2759e	47.75065715	-103.4325217	8/21/2019

Construction Observation Locations

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**Little Missouri Lateral
Figure 1**

- Little Missouri Lateral Centerline (PU-19-85)
- Construction Observation Point Location



2018 Aerial Photograph (Source: NAIP)

Path: U:\GIS\257910036\pro\ONEOK_Little_Missouri_Lateral\ONEOK_Little_Missouri_Lateral.aprx
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PU-19-85 LITTLE MISSOURI LATERAL CONSTRUCTION INSPECTION

Construction Observation Locations



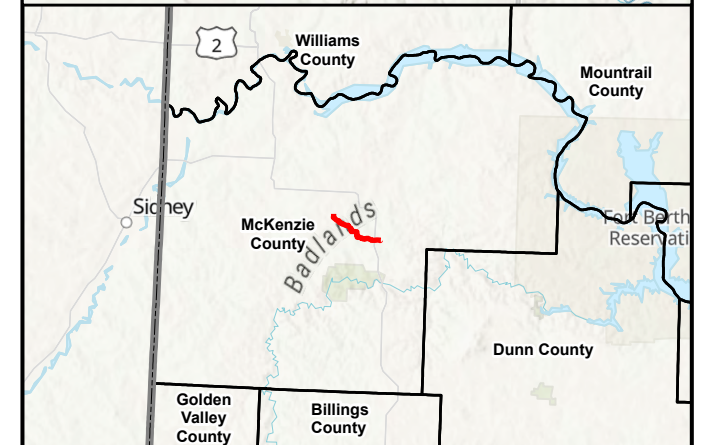
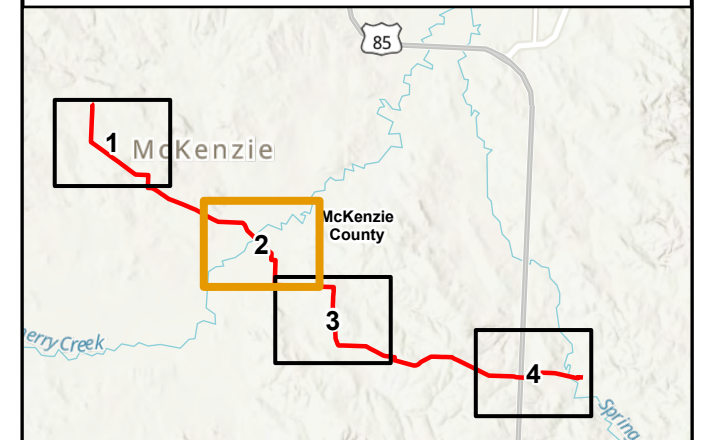
SEPT 2019

Map 1 of 4

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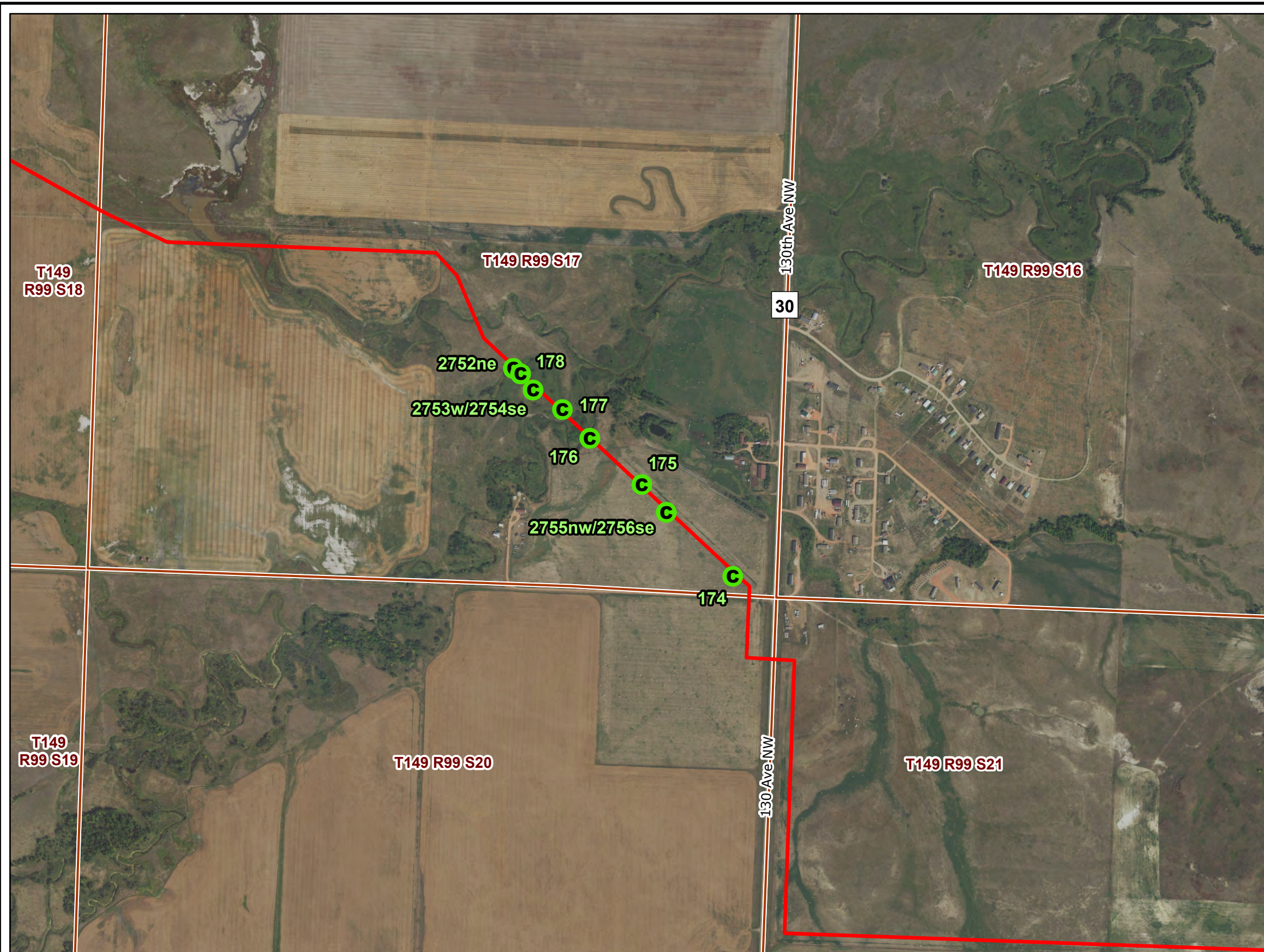
**Little Missouri Lateral
Figure 2**

- Little Missouri Lateral Centerline (PU-19-85)
- Construction Observation Point Location



2018 Aerial Photograph (Source: NAIP)

Path: U:\GIS\2579\0036\pro\ONEOK_Little_Missouri_Lateral\ONEOK_Little_Missouri_Lateral.aprx
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PU-19-85 LITTLE MISSOURI LATERAL CONSTRUCTION INSPECTION

Construction Observation Locations



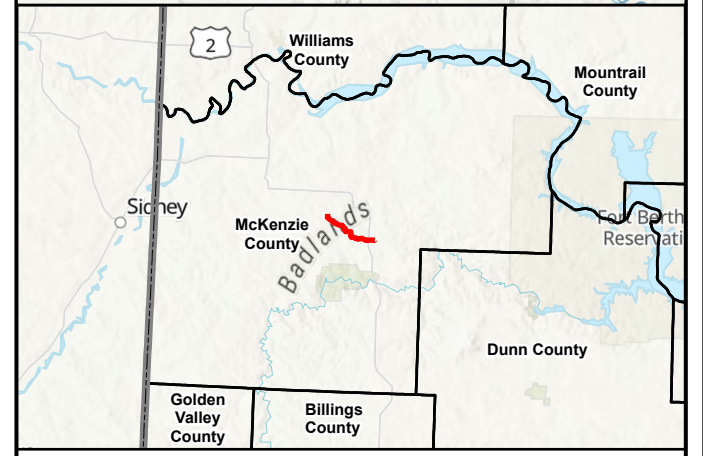
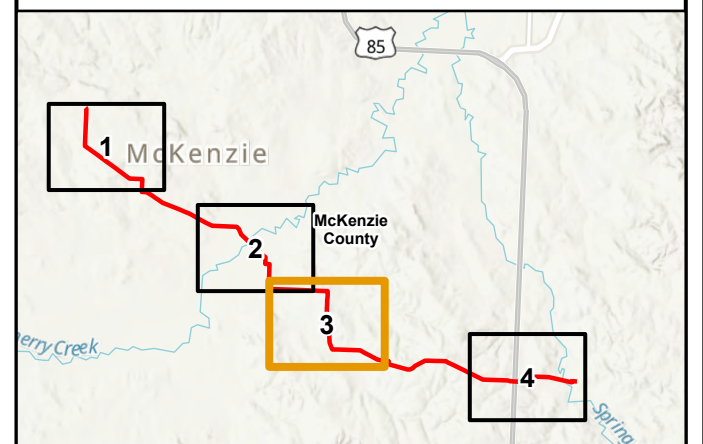
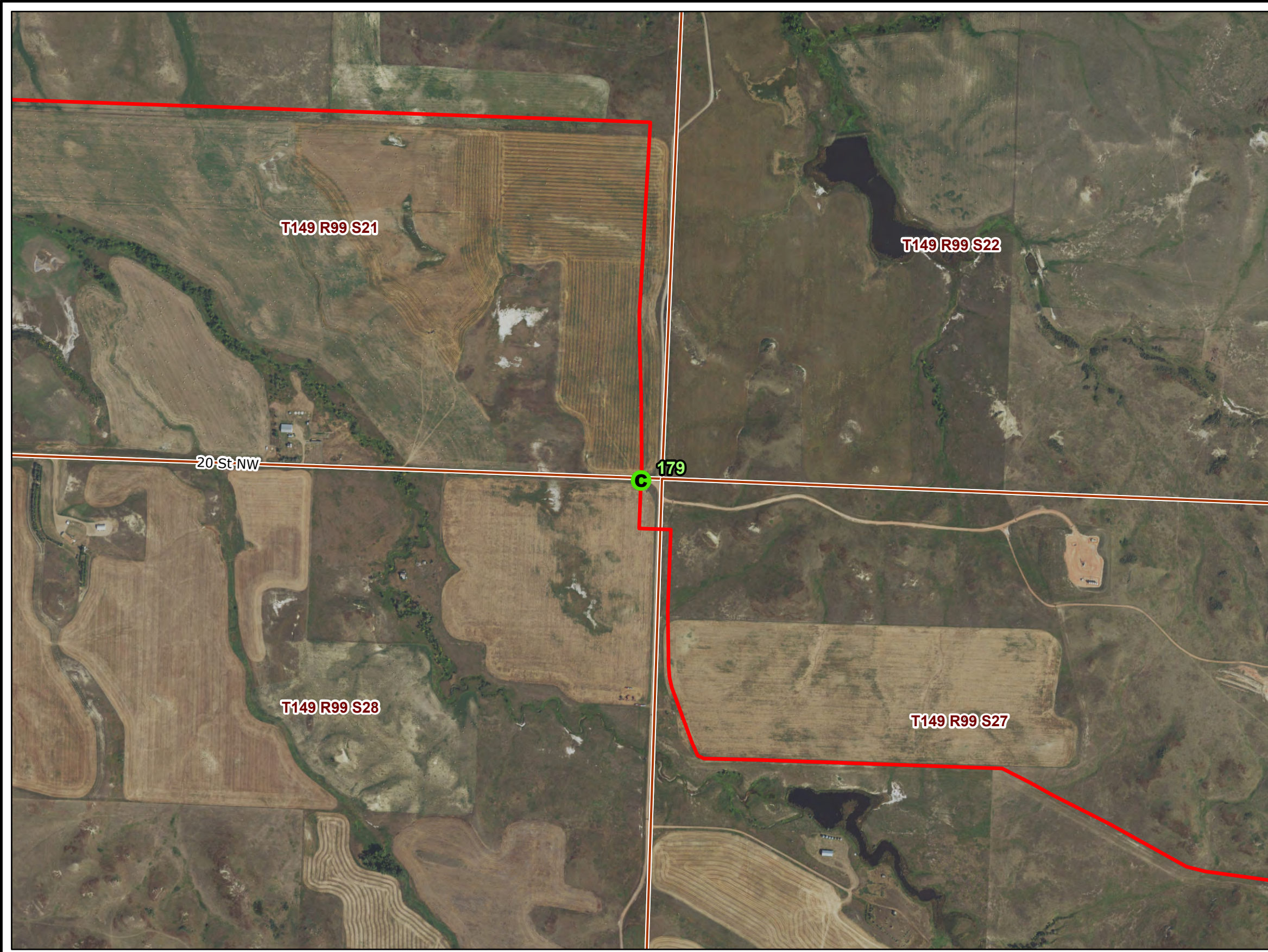
SEPT 2019

Map 2 of 4

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**Little Missouri Lateral
Figure 3**

- Little Missouri Lateral Centerline (PU-19-85)
- Construction Observation Point Location



2018 Aerial Photograph (Source: NAIP)
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PU-19-85 LITTLE MISSOURI LATERAL CONSTRUCTION INSPECTION
 Construction Observation Locations

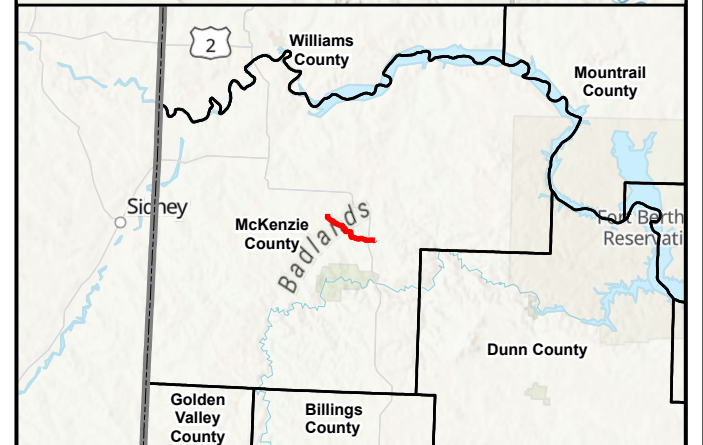
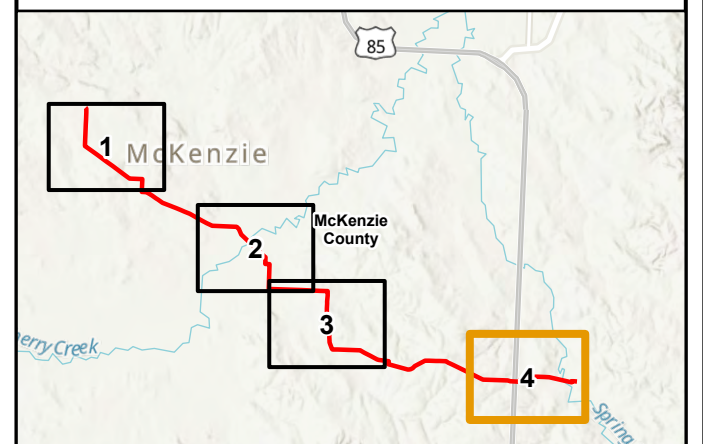


SEPT 2019
 Map 3 of 4

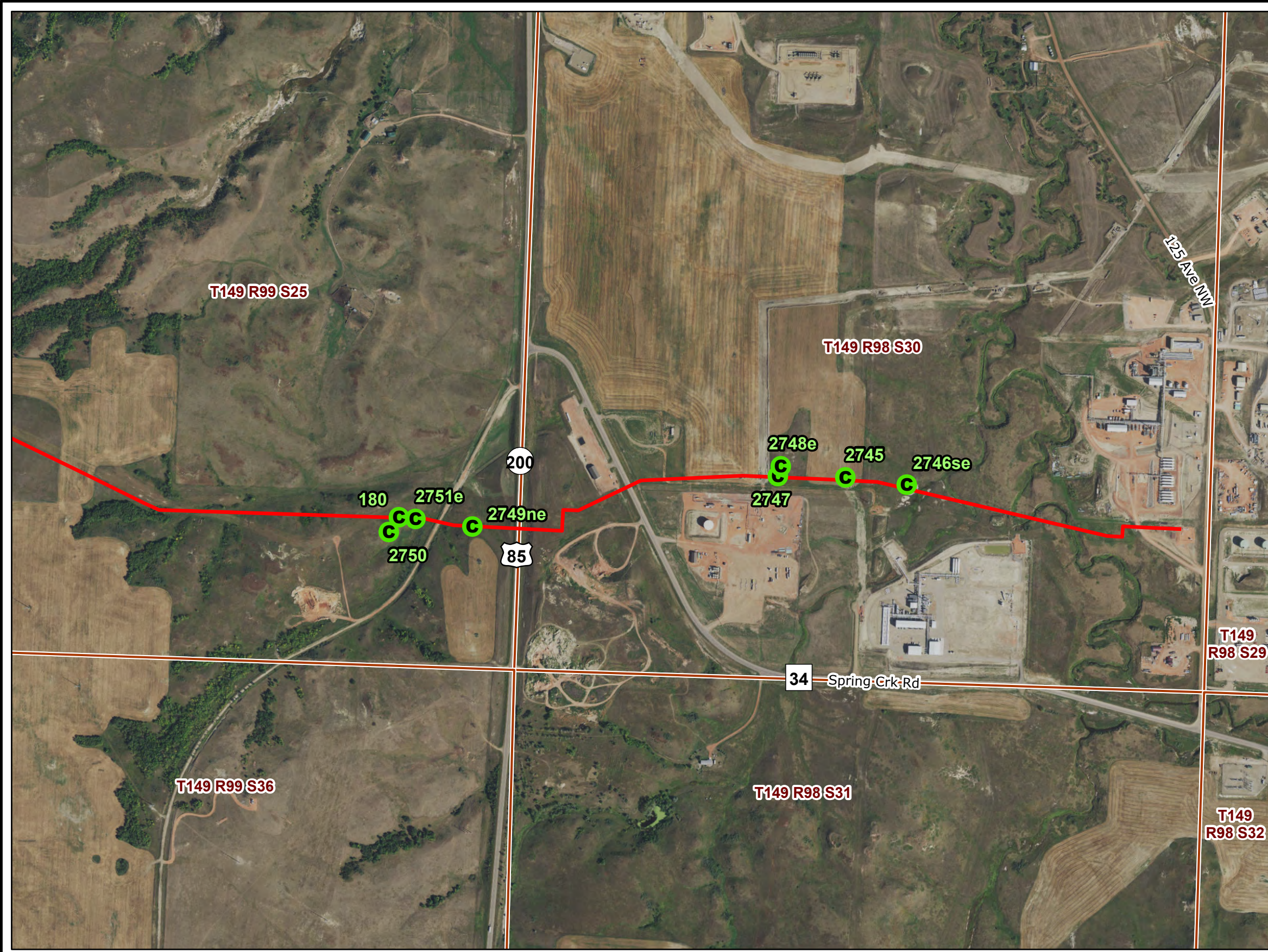
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**Little Missouri Lateral
Figure 4**

- Little Missouri Lateral Centerline (PU-19-85)
- Construction Observation Point Location



2018 Aerial Photograph (Source: NAIP)
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PU-19-85 LITTLE MISSOURI LATERAL CONSTRUCTION INSPECTION

Construction Observation Locations



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Map 4 of 4

Photographs

Little Missouri Lateral- On-Site Photographs



Observation Point: 168

Date Taken: July 18, 2019
Direction Photo is Taken: West
Station 570+00

Photo Description: Pipe depth approximately 72 inches. Appropriately no topsoil in trench profile.

Latitude: 47.75072
Longitude: -103.43255



Observation Point: 169

Date Taken: July 18, 2019
Direction Photo is Taken: West
Station 569+00

Photo Description: Pipe depth approximately 72 inches. Appropriately no topsoil in trench profile.

Latitude: 47.75042
Longitude: -103.43255



Observation Point: 170

Date Taken: July 18, 2019
Direction Photo is Taken: South
Station 569+00

Photo Description: Topsoil stockpiles in process of being properly redistributed on ROW backslope.

Latitude: 47.75028
Longitude: -103.43254

Little Missouri Lateral- On-Site Photographs



Observation Point: 171

Date Taken: July 18, 2019

Direction Photo is Taken: North
Station 539+00

Photo Description: Appropriately no topsoil in trench profile. No pipe in trench.

Latitude: 47.74197

Longitude: -103.43227



Observation Point: 172

Date Taken: July 18, 2019

Direction Photo is Taken: West
Station 518+00

Photo Description: Backhoe gathering the majority of subsoil from stockpile. Motor grader will then make passes to more precisely move the remaining subsoil from the stockpile to fill the ROW.

Latitude: 47.73880

Longitude: -103.42508



Observation Point: 173

Date Taken: July 18, 2019

Direction Photo is Taken: South
Station 476+00

Photo Description: Swale on non-working side with potential for erosion. No erosion control in place. Brought to the attention of Alex Compton, QSC Environmental inspector. Crew sent to resolve this issue.

Latitude: 47.73328

Longitude: -103.41324

Little Missouri Lateral- On-Site Photographs



Observation Point: 174

Date Taken: July 18, 2019
Direction Photo is Taken: West
Station 352+00

Photo Description: Noxious weed area X-16 marked appropriately.

Latitude: 47.71838
Longitude: -103.37035



Observation Point: 175

Date Taken: July 18, 2019
Direction Photo is Taken: East
Station 363+00

Photo Description: HDD pipe to be bored under the Cherry Creek waterbody.

Latitude: 47.72023
Longitude: -103.37327



Observation Point: 176a

Date Taken: July 18, 2019
Direction Photo is Taken: South
Station 367+00

Photo Description: Cherry creek waterbody S-5 appropriately marked.

Latitude: 47.72116
Longitude: -103.37494

Little Missouri Lateral- On-Site Photographs



Observation Point: 176b

Date Taken: July 18, 2019

Direction Photo is Taken: West

Station 367+00

Photo Description: Temporarily constructed bridge over Cherry Creek waterbody S-5.

Latitude: 47.72116

Longitude: -103.37494



Observation Point: 177

Date Taken: July 18, 2019

Direction Photo is Taken: West

Station 370+00

Photo Description: Waterbody S-6 appropriately marked.

Latitude: 47.72174

Longitude: -103.37582



Observation Point: 178a

Date Taken: July 18, 2019

Direction Photo is Taken: Northwest

Station 374+00

Photo Description: Wetland W-7 marked and surrounded with silt fence erosion control.

Latitude: 47.72245

Longitude: -103.37716

Little Missouri Lateral- On-Site Photographs



Observation Point: 178b

Date Taken: July 18, 2019
Direction Photo is Taken: West
Station 374+00

Photo Description: Timber mats placed within wetland W-7.

Latitude: 47.72245
Longitude: -103.37716



Observation Point: 179

Date Taken: July 18, 2019
Direction Photo is Taken: North
Station 243+00

Photo Description: Trench dug and awaiting pipe placement.

Latitude: 47.70343
Longitude: -103.34812



Observation Point: 180

Date Taken: July 18, 2019
Direction Photo is Taken: East
Station 64+00

Photo Description: Bore pipe being welded and inspected. Pipe to be bored under wetland and access road.

Latitude: 47.69200
Longitude: -103.28693

Little Missouri Lateral- On-Site Photographs



Observation Point: 2745

Date Taken: August 21, 2019

Direction Photo is Taken:

Photo Description: Approximately 10-foot wide trench near east end of project.

Latitude: 47.69317816

Longitude: -103.2730792



Observation Point: 2746se

Date Taken: August 21, 2019

Direction Photo is Taken: Southeast

Photo Description: Spring Creek. Overlooking HDD and effective erosion control.

Latitude: 47.69307105

Longitude: -103.2711602



Observation Point: 2747

Date Taken: August 21, 2019

Direction Photo is Taken:

Photo Description: Wenck measured pipe at 48-inches. Survey stake reads 3.7 feet. Appropriately no topsoil in trench profile.

Latitude: 47.69315421

Longitude: -103.2751819

Little Missouri Lateral- On-Site Photographs



Observation Point: 2748e

Date Taken: August 21, 2019

Direction Photo is Taken: East

Photo Description: Topsoil and subsoil mostly segregated. Minor mixing.

Latitude: 47.69336317

Longitude: -103.2751012



Observation Point: 2749ne

Date Taken: August 21, 2019

Direction Photo is Taken: Northeast

Photo Description: Pipe depth measured at 48-inches within open trench.

Latitude: 47.69186107

Longitude: -103.2846367



Observation Point: 2750

Date Taken: August 21, 2019

Direction Photo is Taken:

Photo Description: Topsoil and subsoil segregated appropriately. Erosion control recommended.

Latitude: 47.69168295

Longitude: -103.2872334

Little Missouri Lateral- On-Site Photographs



Observation Point: 2751e

Date Taken: August 21, 2019

Direction Photo is Taken: East

Photo Description: Overlooking wetland 5. Some soil mixing has occurred.

Latitude: 47.69197750

Longitude: -103.2864182



Observation Point: 2752ne

Date Taken: August 21, 2019

Direction Photo is Taken: Northeast

Photo Description: overlooking area that was open trenched through wetland.

Latitude: 47.72256332

Longitude: -103.3773956



Observation Point: 2753w

Date Taken: August 21, 2019

Direction Photo is Taken: West

Photo Description: Topsoil stockpile and HDD workspace near Cherry Creek.

Latitude: 47.72212471

Longitude: -103.3767585

Little Missouri Lateral- On-Site Photographs



Observation Point: 2754se

Date Taken: August 21, 2019

Direction Photo is Taken: Southeast

Photo Description: Cherry Creek HDD access road.

Latitude: 47.72212471

Longitude: -103.3767585



Observation Point: 2755nw

Date Taken: August 21, 2019

Direction Photo is Taken: Northwest

Photo Description: Overlooking backfilled ROW. Awaiting final topsoil redistribution.

Latitude: 47.71966676

Longitude: -103.3724807



Observation Point: 2756se

Date Taken: August 21, 2019

Direction Photo is Taken: Southeast

Photo Description: Overlooking backfilled ROW. Awaiting final topsoil redistribution.

Latitude: 47.71966676

Longitude: -103.3724807

Little Missouri Lateral- On-Site Photographs



Observation Point: 2757

Date Taken: August 21, 2019

Direction Photo is Taken:

Photo Description: Pipe measured at 64-inches near Demicks Lake tie-in. Appropriately no topsoil in trench profile.

Latitude: 47.75040565

Longitude: -103.4325219



Observation Point: 2758n

Date Taken: August 21, 2019

Direction Photo is Taken: North

Photo Description: Overlooking trenching near the Demicks Lake pipeline tie-in.

Latitude: 47.75065715

Longitude: -103.4325217



Observation Point: 2759e

Date Taken: August 21, 2019

Direction Photo is Taken: East

Photo Description: Overlooking Demicks Lake pipeline tie-in. Looks good.

Latitude: 47.75065715

Longitude: -103.4325217

