

PU-19-368 Tioga Lateral NGL Pipeline Project Topsoil Inspection Report



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

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A Observation Point Photolog

Executive Summary

The North Dakota Public Service Commission (PSC) retained Wenck Associates, Inc. (Wenck) to complete topsoil inspection(s) during construction of the ONEOK Tioga Lateral 16-inch Natural Gas Liquids (NGL) Pipeline (i.e., the Project) in Williams County, North Dakota (ND), constructed by ONEOK Bakken Pipeline L.L.C. (ONEOK). The purpose of the inspections is to ensure the project is constructed in compliance with the siting laws and rules and the applicable PSC Orders for the Project, which includes a requirement that topsoil must be segregated from subsoil during installation of the pipeline.

Construction involving soil disturbance for the Project began 15 April 2020 and 16 April 2020. Wenck was present to observe the topsoil salvage and segregation by Jomax Construction Company, Inc. (i.e., Jomax) at the start of the project. Wenck revisited the project on 28 May 2020 and 29 May 2020 and performed additional topsoil inspections.

Wenck has observed topsoil and subsoil removal and segregation done by the Jomax contractor crews slated for construction of the project. ONEOK has confirmed utilizing the same contractor for the entire project, thus Wenck has prepared this Final Topsoil Inspection Report.

This Final Topsoil Inspection Report includes documentation of topsoil stripping and segregation during the 15-16 April and 28-29 May on-site inspections of the project. By and large, soil removal and storage processes are satisfactory and continue to be completed properly. Isolated minor issues of poor segregation and slight mixing were observed sporadically throughout the Project. Contractors were made aware of these minor issues and plans for resolving these issues can be put in place to implement during topsoil replacement.

The Spread 1 and 2 trenching and pipe backfill has begun with some partial segments being completed. Construction inspections for the project have been initiated and will continue later this year.

1.0 Background and Scope

1.1 INTRODUCTION

The Tioga Lateral 16-inch Natural Gas Liquids (NGLs) transmission pipeline PU-19-368 is comprised of two pipeline segments, all within Williams County. The first segment, Spread 1, is approximately 35.4 miles originating from the Hess Corporation's (HESS) Tioga Gas Processing Plant in Williams County T157N, R95W, Section 23. The second segment, Spread 2, is approximately 39.2 miles terminating at ONEOK's Stateline to Riverview NGL Pipeline in Williams County T155N, R103W, Section 21. Jomax Construction Company is conducting ROW topsoil clearing and pipeline construction of all identified project spreads.

The Route is approximately 74.6 miles in length, ranging from northeast of Tioga, ND to northwest of Williston, ND. Approximately 58 percent of the Route is co-located with existing linear infrastructure.

The pipe for the Project will be 16-inch diameter steel pipe with 0.281-inch wall thickness standard, 0.312-inch wall thickness road crossings, and 0.500-inches for railroad crossings. The maximum operating pressure will be 1,480 pounds per square inch and the maximum flow rate will be 30,000 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-19-368 on 1 April 2020, granting Certificate of Corridor Compatibility No. 214 and Route Permit No. 224 for the Project.

1.2 REGULATORY PURPOSE AND SCOPE OF WORK

The North Dakota Energy Conversion and Transmission Facility Siting 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 are to 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 PSC retained Wenck Associates, Inc. (Wenck) to complete construction inspections, and specifically a topsoil inspection, of the Project. The inspection process included a review of the Application for Corridor Compatibility and Route Permit, the Project's Order, and other applicable documents. The PSC's Certificate Relating to Order Provision #12 for the Project states: *"Company understands and agrees that topsoil, up to 12 inches, or topsoil to the depth of cultivation, whichever is greater, over and along trench areas where cuts will be made, must be carefully stripped and segregated from the subsoil. Any area on which excavated subsoil will be placed must first be stripped of topsoil. The stripped topsoil must not be stockpiled in natural drainages, and must be protected from water erosion. Care must be taken to protect topsoil from unnecessary compaction by heavy machinery. Unless otherwise approved by the Commission, topsoil must be removed before topsoil freezes in the late fall/early winter to the point that frost inhibits proper soil segregation. After backfilling with subsoil is completed, any excess subsoil must be placed over the excavation area, blending the grade into existing topography. Topsoil must be replaced over areas from which it was stripped only after the subsoil is replaced."*

Wenck's scope of work was to perform and document on-site inspections during the topsoil removal phase of the Project to verify that topsoil was properly removed and kept segregated from subsoil until replacement occurred. The number of on-site inspections was to be based on Wenck's determination that equipment operators demonstrated proficiency concerning topsoil and subsoil removal and segregation in compliance with the Commission's Order. This report includes, but is not limited to, 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.

1.3 BACKGROUND

1.3.1 Regional Soils

The majority of the project and Williams County is located in the dissected uplands of the Northwestern Glaciated Plains and Missouri Coteau. The primary soils of the region were formed in Wisconsin-aged till or residuum of weathered shale, siltstone, or sandstone of the Sentinel Butte Formation. The regional geology typically consists of a mantle of till (when present) overlying the older residual sediments. The majority of the soils present throughout the Project would be classified as mollisols and characterized by a relatively dark, thick "A" (topsoil) horizon. The primary exception to this are the entisols soils found nearer summit and shoulder-slopes of hilltops, that lack a mollic epipedon (i.e., thick A horizon). Some soils would be considered salt-affected, which have adverse properties from salinity and/or sodicity.

The main difference between topsoil and subsoil in this region are most often the presence of calcium carbonates, salts such as sodium, and the reduction in organic matter. Calcareous soils can be visually distinguished by the lighter colors associated with calcium carbonates, which generally also correlates to a reduction in organic matter. Topsoil segregation on saline and sodium affected soils (i.e., natric soils) are usually less apparent, but can distinguished by accumulations of salt, clay and/or associated columnar structure (i.e., clay pans). Salt-affected sodic soils, when tilled or disturbed, are typically hard and cloddy when dry, often coated with a visible salt crust.

1.3.2 Soil Stripping and Segregation Best Practices

Topsoil has biological, physical and chemical properties that are critical to successful reclamation of the project site. The surface layer of most soils is generally preferred for topsoil because of its content of organic matter. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth. Topsoil, typically considered the A horizon, should be stripped to the correct depth according to natural variations in the depth of this top layer of organic matter rich soil.

During pipeline installation preparation and excavation work, contractors are to segregate topsoil and subsoil. Mixing subsoil with the topsoil can be detrimental to the re-vegetation and vegetative productivity of the soil. Subsoil material generally has lower organic matter content than topsoil, making it typically lighter in color. It may also have different chemical (i.e., salts) and physical properties (i.e., texture) than the topsoil. Occasionally, the most unfavorable characteristic of subsoil horizons is the accumulation of salts. Salts, such as sodium, among others, can severely restrict plant growth. The presence or absence of

existing plant roots can be used as an indication between topsoil and unsuitable subsoil in certain situations, such as clay-pan subsoils.

To summarize, hilltops and steeper sloping terrain generally have thinner topsoil layers; while lower, flatter foot-slopes and swales typically have thicker topsoil layers. The most common exception to this are salt-affected soils, where the accumulation of salts and clay often restrict plant root growth. Equipment operators should be aware of the natural soil landscape relationships, as well as the potential for accumulations of salts, both of which drive topsoil thicknesses, and adjust stripping depths accordingly.

2.0 Findings of Site Inspection

2.1 METHODS

Wenck Field Inspectors: Joseph Sander, Project Manager/Environmental Scientist, Sam Mauch, Field Inspector visited the Project site between 15 April and 29 May 2020. Timothy Swan, Construction Coordinator, ONEOK, was also present to accompany Wenck staff during inspections of Spreads 1 and 2.

The site was inspected visually by driving to access points and walking or driving within the Project right-of-way (ROW). Topsoil removal began the day of the first inspection, 15 April 2020. Wenck Staff was present to ensure PSC order provisions were understood and followed. Jomax Pipeline Construction began and continues to conduct all construction on the Project spreads. During inspections, Contractors/equipment operators were observed during the topsoil removal phases of the Project to check that topsoil has been properly removed, piled, and kept segregated from subsoil.

Digital photographs were taken showing representative portions of the route and documenting potential problem areas (**Appendix A**). Geographic coordinates were recorded at observation points and potential problem areas using ESRI ArcGIS Collector and Survey123 software applications on a tablet utilizing internal satellite triangulation software or paired with a Trimble Global Positioning System (GPS) (**Table 1**). Digital photographs were taken with the tablet utilizing the Survey123 application to geotag photograph locations and associate all collected data from each Observation Point. Observation Point locations were then overlaid on GIS generated maps along the Project route (**Figures 1-7**).

2.2 ON-SITE INSPECTION OBSERVATIONS

Spread 1

Mr. Sander was present on day 1 of topsoil removal, 15 April 2020, to meet with and observe Jomax equipment operator's commencement of topsoil stripping. Mr. Sander was accompanied by Timothy Swan during the topsoil inspections. Topsoil inspection continued the following day, 16 April 2020. Jomax staff was observed properly stripping and segregating topsoil. Jomax operators appropriately discontinued topsoil stripping at depth reaching subsoil horizons. Topsoil was stripped to correct depths at various topographical locations. Topsoil thickness was averaging 8-inches in depth. There was also verification that Jomax did not extend pass the ROW limits. (**Table 1, Observation Points 9-15**).

On 29 May 2020, Mr. Sander visited Spread 1 unaccompanied. Contact with Beau Eddins, Chief Inspector Spread 1, Epcon, was made over the phone, but he was unable to accompany. One instance where topsoil thickness was stripped to approximately 6-inches, but corroboration showed that topsoil could have been stripped to a greater extent. (**Table 1, Observation Point 24**). Trenching and pipe backfill has been initiated along some portions of Spread 2. Trenching and some backfilling has occurred from the Spread 1 starting location trending eastward near Ray, ND and from the Hess Plant trending southwest of Tioga, ND. Construction at portions of the Project in-between these two points has largely not yet been initiated and was unstripped of topsoil at the time of the inspections.

Overall, construction and topsoil handling along Spread 1 looked satisfactory with appropriate topsoil stockpiles and segregation.

Spread 2

On 15 April 2020 and 16 April 2020, Mr. Sander visited Spread 2 of the Project. Mr. Sander met and was accompanied by Timothy Swan during the topsoil inspections. Observations of topsoil stockpiling and segregation conducted by Jomax staff were overall compliant. Jomax operators appropriately discontinued topsoil stripping once subsoil horizons were encountered. There was an area where topsoil could have been stripped to a slightly greater extent (1 inch), however this was deemed acceptable due to limitation of both heavy machinery and natural topsoil variability. Topsoil thickness ranged from 8-12-inches. (**Table 1, Observation Points 1-8, 16-18**).

On 28 May 2020, Mr. Sander and Mr. Mauch visited Spread 2 unaccompanied. Contact with Harlon Quinalty, Chief Inspector Spread 2, Epcon, was made over the phone, but was unable to accompany. While there were indications of successful topsoil and subsoil stripping and segregation (Point 19), there was also some evidence for a potential lack of topsoil and subsoil segregation during trenching at isolated locations near Point 20. (**Table 1, Observation Points 19-20**).

On 29 May 2020, Mr. Sanders visited Spread 2 of the Project unaccompanied. Observations of topsoil stockpiling and segregation were overall compliant. There was an instance where topsoil was stripped to 12-inches or more and was still present at ground surface, which is acceptable assuming the depth of cultivation did not exceed the stripping depth. Topsoil thickness ranged from 8-12-inches on most occasions with more than 12-inches occurring in a few locations. (**Table 1, Observation Points 21-23**). Trenching and pipe backfill has been initiated along some portions of Spread 2. Trenching and backfilling had been completed from the Project endpoint to approximately 4-miles west of Hwy 85/2 and trenching had been completed to approximately 1-mile west of Hwy 85/2. Topsoil stripping had been completed to Spread 1 initiation point.

Overall, construction and topsoil handling along Spread 2 looked satisfactory with appropriate topsoil stockpiles and segregation.

Topsoil Inspection Summary

In conclusion, the contractors did a good job with the stripping of topsoil. Contractors paid close attention to topsoil stripping depths which tended to vary several inches depending upon the location. In flatter areas, often only topsoil needed to be stripped and stockpiled, as there was no need to strip into the subsoil prior to trenching. Hilltop stripping required separate stockpiles of subsoil in order to create a level workspace for equipment and pipe installation. Aside from a few isolated instances, overall, the topsoil stockpiles appeared to be kept as free of subsoils as possible.

3.0 Issues, Resolutions, and Recommendations

During site inspections, there were very few locations where the subsoil pile was observed touching the topsoil pile, and locations where subsoil was mixed slightly with the topsoil. On hilltops, greater subsoil is removed in order to create a level surface to operate and install pipe. Very few subsoil stockpiles were observed in direct contact with topsoil stockpiles. In these isolated instances, there is potential for slight mixing of the subsoil and topsoil at the points of contact. The final pass taken by graders during topsoil stripping inevitably disturbs a small amount of subsoil. Both of these types of mixing are minimal and were known to occur by the contractors. The mixed soils are located on the surface of the stockpile(s) and will be the first layer spread when replacing the soils. As a result, any mixed soils will be covered with a majority of the appropriately segregated topsoil and should not pose a major concern for site reclamation. Topsoil handling will continue to be monitored by Wenck during the subsequent construction inspection(s) and report.

4.0 References

North Dakota Public Service Commission (ND PSC). 2020. Online Case Search. Available from: http://www.psc.nd.gov/database/company_case_list.php. Accessed April-June 2020.

5.0 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.

Project Manager, Joseph Sanders, and Field Inspector, Sam Mauch, prepared the report.



6/12/2020

Matt Retka, Project Manager/Soil Classifier

Date



6/12/2020

Joseph Sander, Environmental Scientist



Date

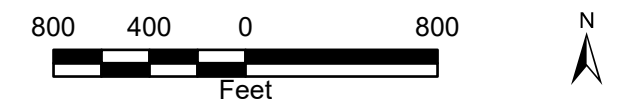
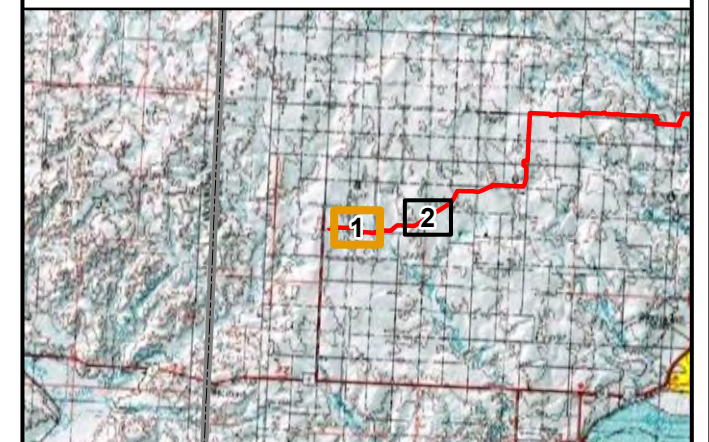
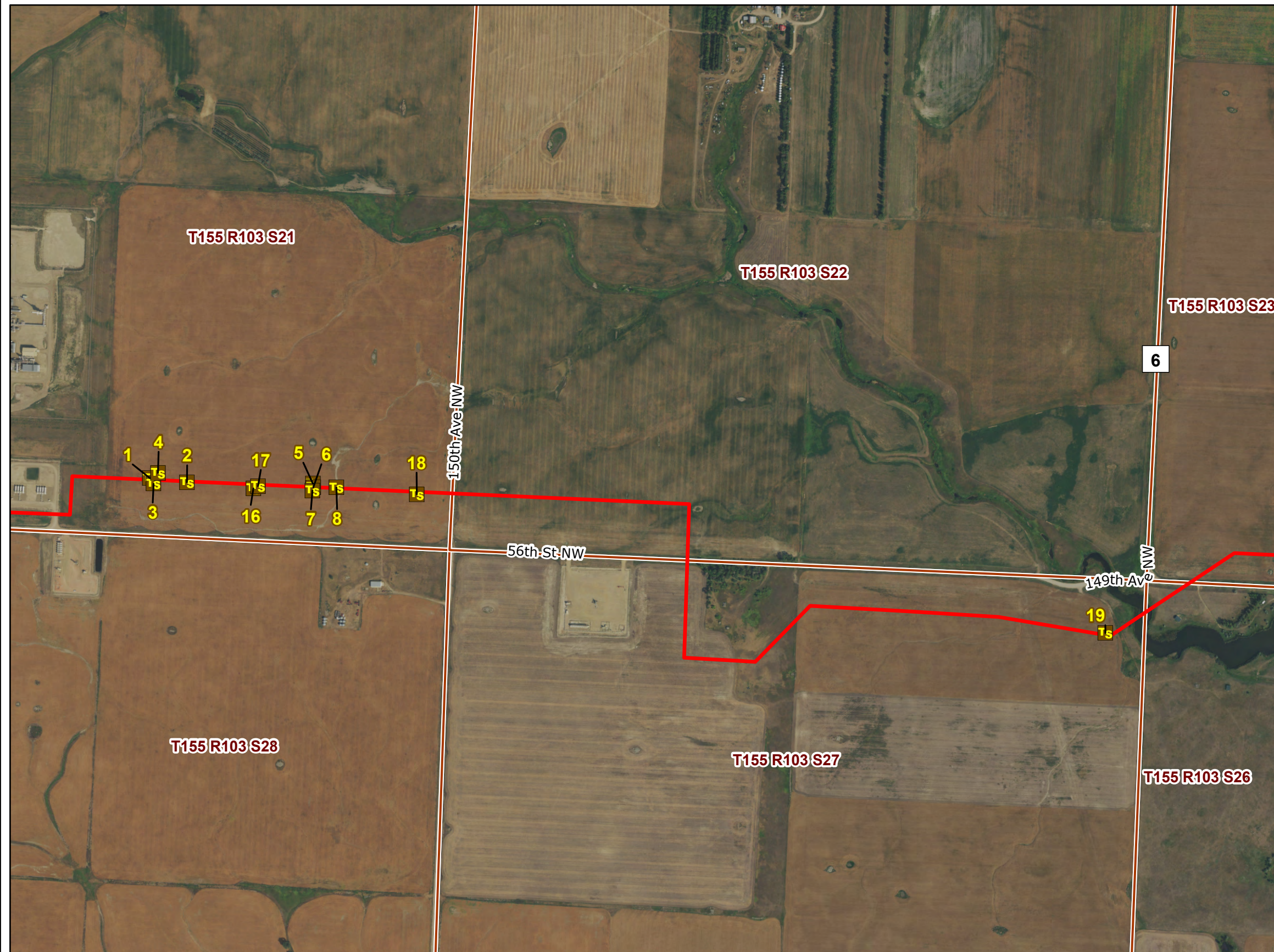
1. Observation Point Coordinates

Observation Point	Date	Lat.	Long.
1	15-Apr-20	48.22805568	-103.9377236
2	15-Apr-20	48.22800477	-103.9365636
3	15-Apr-20	48.22794471	-103.9376041
4	15-Apr-20	48.22817293	-103.9374788
5	15-Apr-20	48.22809403	-103.9326472
6	15-Apr-20	48.22801981	-103.9326294
7	15-Apr-20	48.22794911	-103.9326533
8	15-Apr-20	48.22803454	-103.931913
9	15-Apr-20	48.24917657	-103.364906
10	15-Apr-20	48.24906122	-103.3649584
11	15-Apr-20	48.24920763	-103.3654298
12	15-Apr-20	48.24903178	-103.3653317
13	15-Apr-20	48.24904872	-103.3648345
14	16-Apr-20	48.24893319	-103.3661368
15	16-Apr-20	48.24886152	-103.3641227
16	16-Apr-20	48.22793876	-103.9344895
17	16-Apr-20	48.22798919	-103.93435
18	16-Apr-20	48.22796776	-103.9294026
19	28-May-20	48.22572413	-103.9078105
20	28-May-20	48.23598785	-103.8618632
21	29-May-20	48.28310218	-103.5509302
22	29-May-20	48.23785971	-103.5174192
23	29-May-20	48.24169479	-103.4566562
24	29-May-20	48.31292221	-103.0731753

Topsoil Observation Locations

Tioga Lateral Pipeline
Figure 1

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

Path: U:\GIS\2579\0038\pro\Tioga_Lateral\Tioga_Lateral.aprx
Date: 6/11/2020 Time: 11:32 AM User: MueKJ0907

PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION



Topsoil Observation Locations

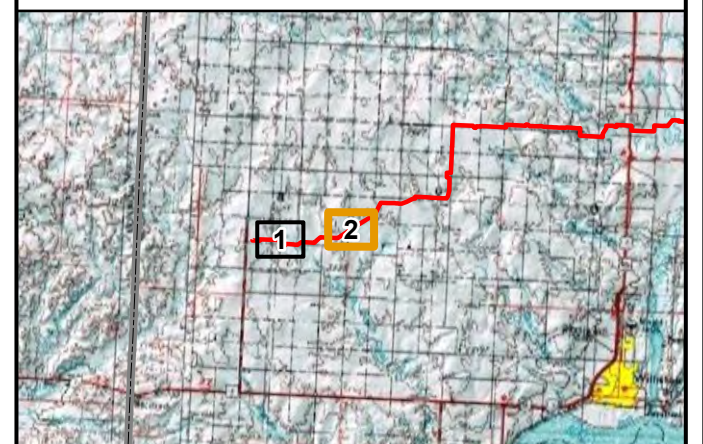


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Map 1 of 7

Tioga Lateral Pipeline Figure 2

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)
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Date: 6/11/2020 Time: 11:32 AM User: MueKJ0907

PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations





Responsive partner. Exceptional outcomes.

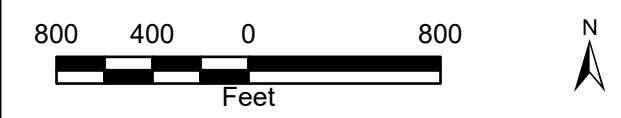
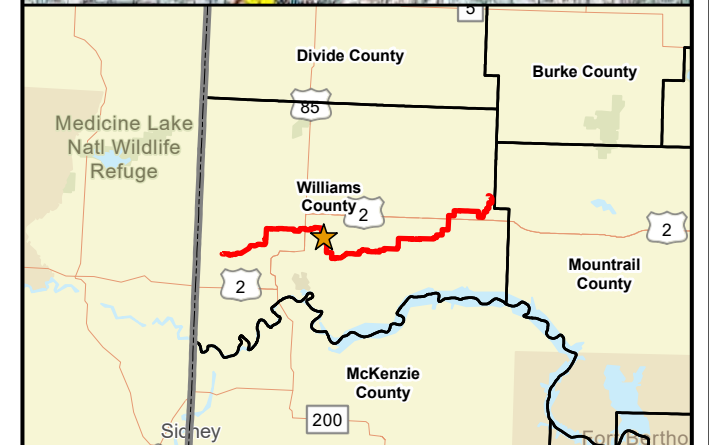
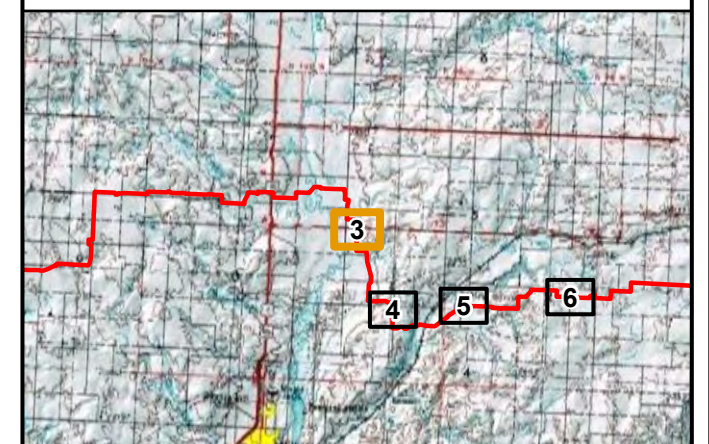
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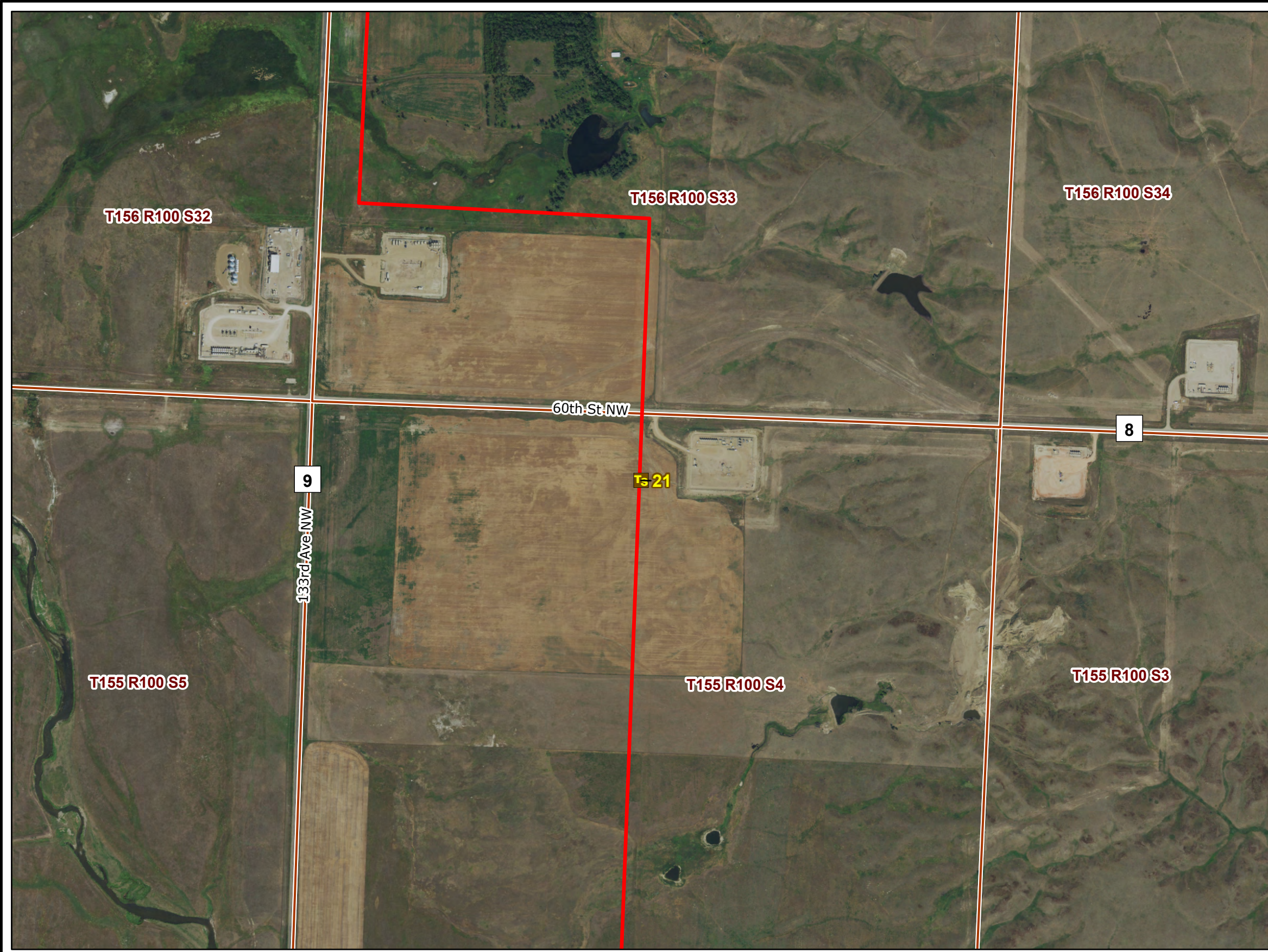
Tioga Lateral Pipeline
Figure 3

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

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PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations





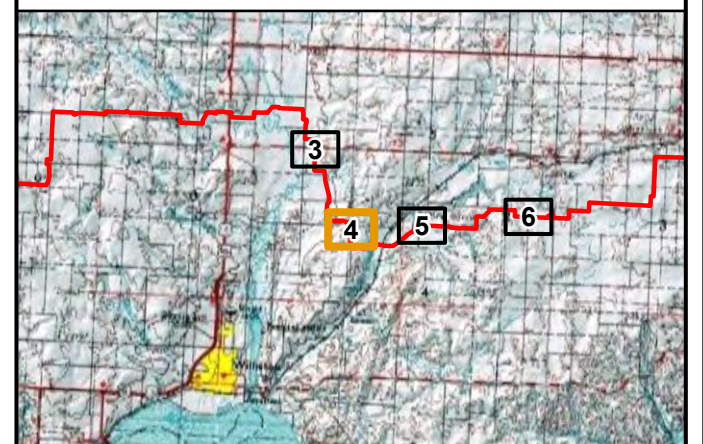
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**Tioga Lateral Pipeline
Figure 4**

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

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PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations





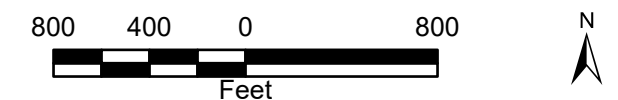
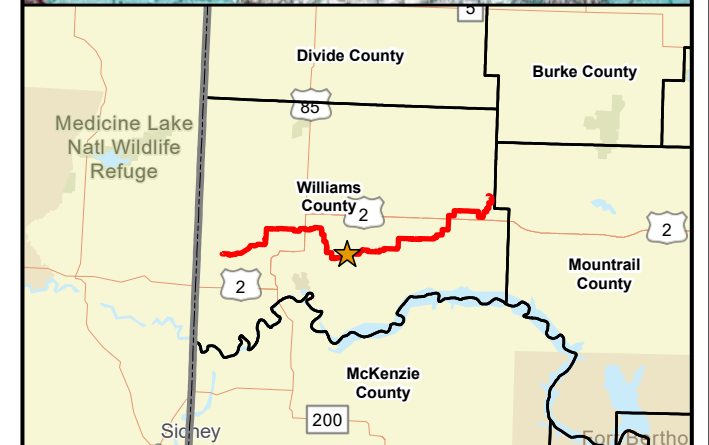
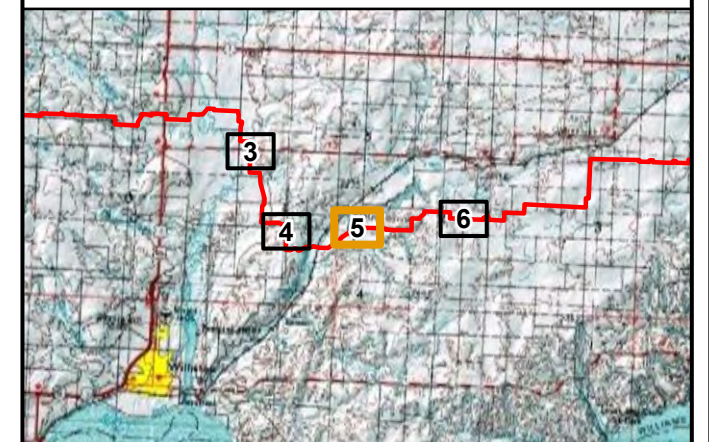
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Public Service Commission

Tioga Lateral Pipeline
Figure 5

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

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PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations

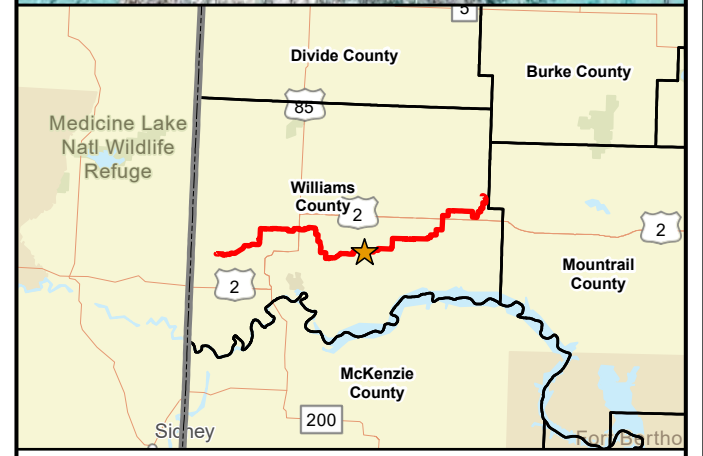
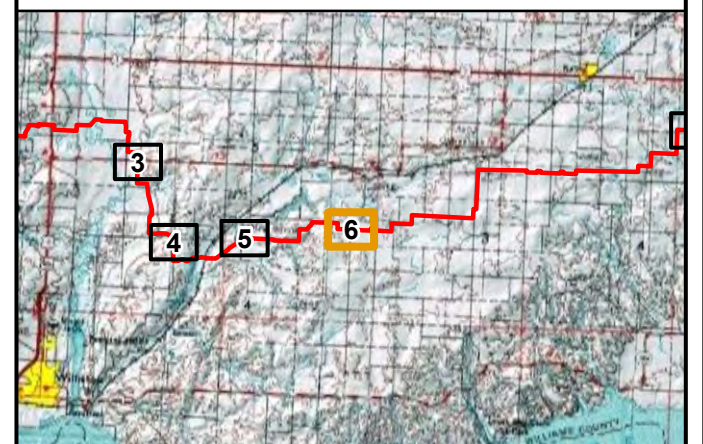


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Map 5 of 7

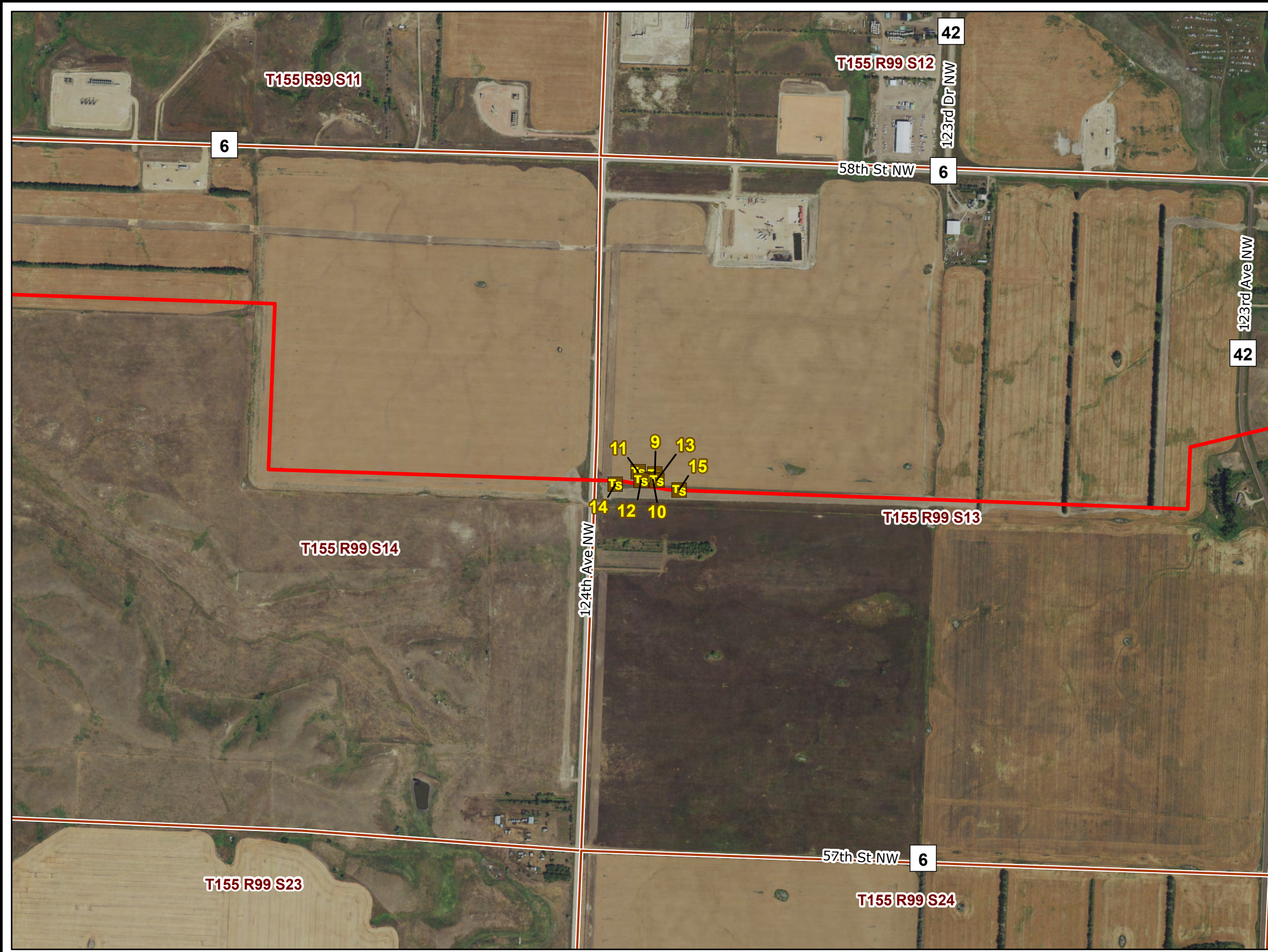
**Tioga Lateral Pipeline
Figure 6**

- Topsoil Observation Point Location
- Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

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PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations





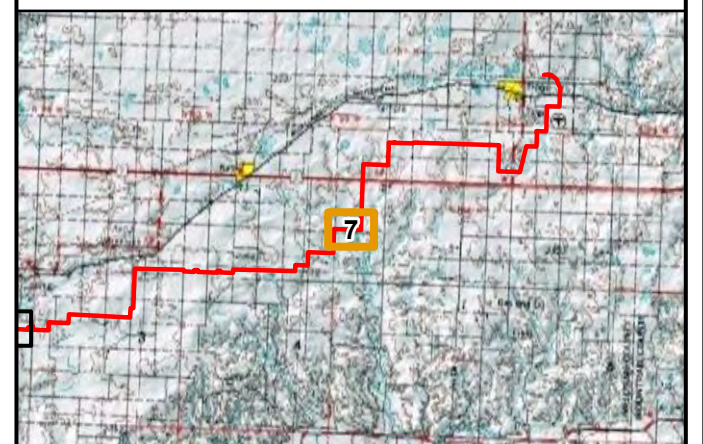
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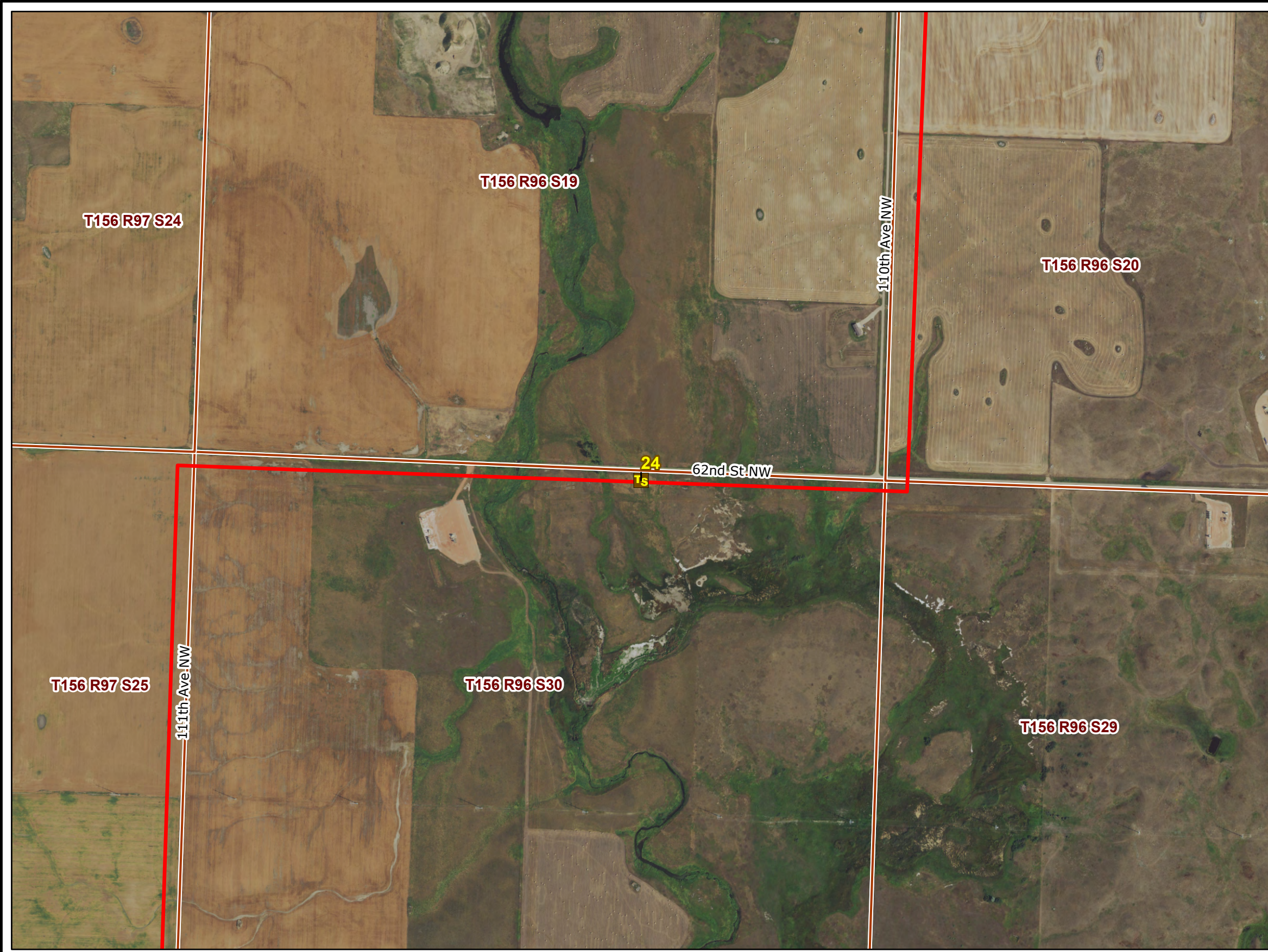
**Tioga Lateral Pipeline
Figure 7**

-  Topsoil Observation Point Location
-  Tioga Lateral Centerline (PU-19-368)



2018 Aerial Photograph (Source: NAIP)

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PU-19-368 TIOGA LATERAL PIPELINE TOPSOIL INSPECTION

Topsoil Observation Locations



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Map 7 of 7

Observation Point Photolog

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 1

Date Taken: 04/15/2020 9:15 AM

Direction Photo is Taken: E

Spread: 2

Photo Description: Full 12 inches topsoil stripped.

Latitude: 48.22805568

Longitude: -103.93772364



Observation Point: 2

Date Taken: 04/15/2020 9:21 AM

Direction Photo is Taken: S

Spread: 2

Photo Description: Appropriately no presence of subsoil in the topsoil stockpile.

Latitude: 48.22800477

Longitude: -103.93656359



Observation Point: 3

Date Taken: 04/15/2020 9:26 AM

Direction Photo is Taken: E

Spread: 2

Photo Description: Strip depth marking.

Latitude: 48.22794471

Longitude: -103.93760408

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 4

Date Taken: 04/15/2020 9:30 AM

Direction Photo is Taken: SE

Spread: 2

Photo Description: Machinery actively Stripping towards stockpile.

Latitude: 48.22817293

Longitude: -103.93747883



Observation Point: 5

Date Taken: 04/15/2020 1:18 PM

Direction Photo is Taken:

Spread: 2

Photo Description: Topsoil test pit. Adjacent to ROW. Average depth of topsoil 8 inches.

Latitude: 48.22809403

Longitude: -103.93264723



Observation Point: 6

Date Taken: 04/15/2020 1:25 PM

Direction Photo is Taken: E

Spread: 2

Photo Description: Topsoil stripped to appropriate depth, exposing top extent of B1 Horizon. Adjacent to topsoil test pit 1.

Latitude: 48.22801981

Longitude: -103.93262942

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 7

Date Taken: 04/15/2020 1:34 PM

Direction Photo is Taken: S

Spread: 2

Photo Description: Stockpile inspection adjacent to Observation Points 5 and 6. Proof of proper absence of subsoil mixing.

Latitude: 48.22794911

Longitude: -103.93265333



Observation Point: 8

Date Taken: 04/15/2020 1:48 PM

Direction Photo is Taken: E

Spread: 2

Photo Description: Initial strip depth guide.

Latitude: 48.22803454

Longitude: -103.931913



Observation Point: 9

Date Taken: 04/15/2020 2:54 PM

Direction Photo is Taken:

Spread: 1

Photo Description: Topsoil test pit. Topsoil average of 8 inches.

Latitude: 48.24917657

Longitude: -103.36490597

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 10

Date Taken: 04/15/2020 3:02 PM

Direction Photo is Taken:

Spread: 1

Photo Description: Topsoil test pit in stripped ROW. Shows an additional 3 inches are left after initial pass. Operator states a second pass is made with grader to smooth surface and takes an additional few inches in the process.

Latitude: 48.24906122

Longitude: -103.36495843



Observation Point: 11

Date Taken: 04/15/2020 3:36 PM

Direction Photo is Taken: SW

Spread: 1

Photo Description: Topsoil stripped to proper depth, exposing top extent of horizon B1.

Latitude: 48.24920763

Longitude: -103.36542979



Observation Point: 12

Date Taken: 04/15/2020 3:41 PM

Direction Photo is Taken: SE

Spread: 1

Photo Description: Topsoil stockpile shows no signs of subsoil mixing.

Latitude: 48.24903178

Longitude: -103.36533173

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 13

Date Taken: 04/15/2020 3:48 PM

Direction Photo is Taken: SE

Spread: 1

Photo Description: Initial guide cut. Showing exposure of B1 horizon in some locations.

Latitude: 48.24904872

Longitude: -103.36483446



Observation Point: 14

Date Taken: 04/16/2020 8:49 AM

Direction Photo is Taken: E

Spread: 1

Photo Description: ROW observer ensures stockpiling during stripping with dozer does not exceed ROW extent.

Latitude: 48.24893319

Longitude: -103.36613682



Observation Point: 15

Date Taken: 04/16/2020 9:07 AM

Direction Photo is Taken: E

Spread: 1

Photo Description: First pass with grader. Prepares area for easier dozer operation. Topsoil segregation will be completed when dozer finishes.

Latitude: 48.24886152

Longitude: -103.36412274

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 16

Date Taken: 04/16/2020 10:31 AM
Direction Photo is Taken: E
Spread: 2

Photo Description: Topsoil stockpile overview.

Latitude: 48.22793876
Longitude: -103.93448953



Observation Point: 17

Date Taken: 04/16/2020 10:36 AM
Direction Photo is Taken:
Spread: 2

Photo Description: Topsoil test pit shows approximately 1 inch of topsoil in finished stripped ROW, which is acceptable given variations across the landscape and equipment precision.

Latitude: 48.22798919
Longitude: -103.93435001



Observation Point: 18

Date Taken: 04/16/2020 10:46 AM
Direction Photo is Taken: W
Spread: 2

Photo Description: Backhoe scrapes subsoil away from topsoil stockpile and dozers position to scrape subsoil toward north side of ROW.

Latitude: 48.22796776
Longitude: -103.92940258

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 19

Date Taken: 05/28/2020 3:53 PM

Direction Photo is Taken: S

Spread: 2

Photo Description: HDD entry, little to no topsoil left in trench profile, stripping topsoil successful.

Latitude: 48.22572413

Longitude: -103.90781053



Observation Point: 20

Date Taken: 05/28/2020 5:25 PM

Direction Photo is Taken: NE

Spread: 2

Photo Description: Potential topsoil and subsoil mixing in stockpile. Incident appears isolated.

Latitude: 48.23598785

Longitude: -103.86186324



Observation Point: 21

Date Taken: 05/29/2020 11:50 AM

Direction Photo is Taken: S

Spread: 2

Photo Description: Topsoil stripped to a depth greater than 12 inches. Remaining topsoil present at stripped depth, but this is allowable given maximum stripping requirements.

Latitude: 48.28310218

Longitude: -103.55093016

PU-19-368 (ONEOK Tioga Lateral): Observation Point Photolog



Observation Point: 22

Date Taken: 05/29/2020 12:10 PM

Direction Photo is Taken: S

Spread: 2

Photo Description: Topsoil stripped to a depth of 8-12 inches. Stockpiles free of subsoil mixing.

Latitude: 48.23785971

Longitude: -103.51741919



Observation Point: 23

Date Taken: 05/29/2020 12:28 PM

Direction Photo is Taken: E

Spread: 2

Photo Description: Showing hillslopes are cut into subsoils.

Latitude: 48.24169479

Longitude: -103.45665621



Observation Point: 24

Date Taken: 05/29/2020 1:38 PM

Direction Photo is Taken: W

Spread: 1

Photo Description: Topsoil stripped to approximately 6 inches. Topsoil still present at surface. Remaining topsoil should be stripped to a greater extent.

Latitude: 48.31292221

Longitude: -103.07317528



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