

As-Built Inspection Report

Desktop Trees & Shrubs Review

Dakota Access Pipeline

Crude Oil Pipeline

Mountrail, Williams, McKenzie, Dunn, Mercer, Morton, & Emmons Counties, ND

ND PSC Case No. PU-14-842

Contract PU-742-16



Prepared for:

North Dakota Public Service Commission

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Inspection Report - Desktop Trees & Shrubs Review
- December 2016

Keitu Engineers & Consultants, Inc.

Kathleen Spilman, P.E.



December 2016

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Executive Summary

The State of North Dakota, acting through its North Dakota Public Service Commission (PSC), Division of Public Utilities, has contracted Keitu Engineers & Consultants, Inc. (Keitu) to perform consulting services for construction and post-construction inspections for the Dakota Access Pipeline (DAPL). This report represents the findings a construction inspection performed via a desktop Geographical Information System (GIS) study during November and December of 2016.

This report is limited only to the Trees and Shrub removal aspect along the pipeline per an initial desktop study. This report supplements the construction reports submitted previously to the PSC. Additional reports concerning tree and shrub removal may be included in future inspection report submissions.

Introduction

The purpose of this report is to specifically address item numbers 7 and 8 in the Tree and Shrub Mitigation Specification Plan.

Item 7 specifically states... *“Trees and shrubs must be selectively cleared, leaving mature trees and shrubs intact where practical”*. Item 8 specifically states...*“The maximum width of clear cuts through windbreaks, shelterbelts and all other wooded areas is 50 feet, unless otherwise approved by the Commission”*. The Commission did amend the 50 foot restriction to 85 feet in a subsequent order for the project.

Purpose and Scope of Inspection

The purpose of this desktop inspection was to inspect the entire 380+ miles of the DAPL pipeline route in North Dakota for adherence to the provisions of the applicable PSC orders. The entire route, 380+ miles, were inspected via Geographical Information Systems based on GIS files provided by DAPL dated May 26th, 2016 and also 2015 and 2016 NAIP aerial photography.

Methods

ArcGIS 10.3 was used to create a project map that contained GIS information from DAPL (temporary workspace, permanent right-of-way, pipeline centerline, etc), National Agricultural Imagery Program (NAIP) Aerial Photography from 2016, 2015, and occasionally from 2014, and other base map information such as, but not limited to; townships, sections, roadways were also utilized.

This map was then used to follow the pipeline from north to south along its entire length in North Dakota. The right-of-way (ROW) was followed using viewable scales of 1,128 and 2,257 approximately 90% of the time, scales of 4,514 and above were used on occasion, especially in open farmland area. The route was followed using 2015 aerial photography looking for the presence of trees and shrubs in the “future” ROW. If trees and shrubs were found, the aerial photograph was switched to 2016 and the area of trees and shrub removed was measured, as close as practical, perpendicular to the ROW. Where trees and/or shrubs were removed in excess of 85 feet a GIS line file was created which documented the location and the width of trees/shrubs removed.

It should be noted that in all counties where this project crossed, with the exception of Morton County, that the NAIP 2016 Aerial photography clearly shows a majority of the DAPL pipeline ROW clearing activities. In Morton County, the ROW is evident across about 50% of the County, but it is also noted that not many tree/shrub areas are crossed by the DAPL project, per the 2015 aerial photography in Morton County.

Definition

During this study it was found that interpretation of Items 7 & 8 as listed above is not always as straightforward as it might seem. Wooded areas do not grow in straight lines and also pipelines do not always go in straight lines. In one area, for example, 75 feet of trees existing along the south boundary of the ROW extending north before ending. A few hundred feet away, a second stand of trees may extend south into the ROW from the northern boundary. If both stands of trees were completely removed, now providing a clear ROW the entire 150 feet, it is not clear that this practice violated the order as written. Therefore the numerous instances where this type of event occurred were not included in this report.

For measurement purposes, the length of tree or shrub removal was based on measurement along a line drawn perpendicular to the ROW boundary.

Findings

At the present time 83 sites were identified as being cleared in excess of 85 feet. These sites are listed in Table 1.

Appendix A contains examples of three of the 83 sites identified. These maps explain the methodology employed to use aerial photography for this study to determine potential violations.

Additional maps can be created for all sites listed, if desired.

Conclusions

It is our conclusion that DAPL did not follow the “Tree and Shrub Mitigation Specifications” listed in the PSC Order. Particularly in regards to Item 7, ...”leaving mature trees and shrubs intact where practical” and Item 8, ... “Clear cuts...” 85 feet, as amended by the PSC. When viewing the aerial photos it seems apparent that the entire 150ft ROW was cleared whenever possible and not selectively clearing the ROW also seems apparent.

Certification

I declare that, I have the specific qualifications based on education, training, and experience to assess a project of the nature, I believe to the best of my professional knowledge the contents of this report accurate represents the condition of this project to date.



Dean N. Mostad
GIS Analyst

This study and subsequent report has been prepared under my supervision. This report is being issued with my approval.



Kathleen M. Spilman, P.E.
Project Manager

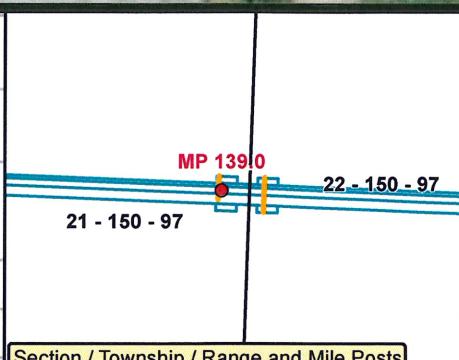
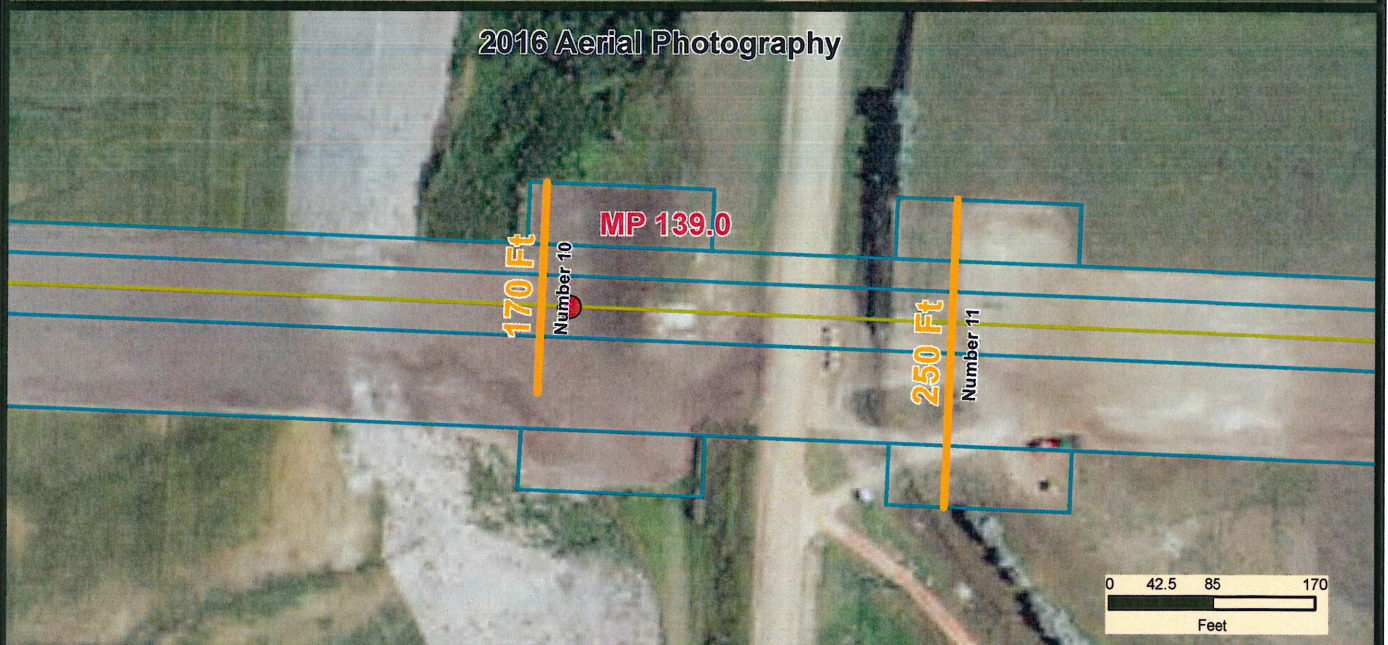
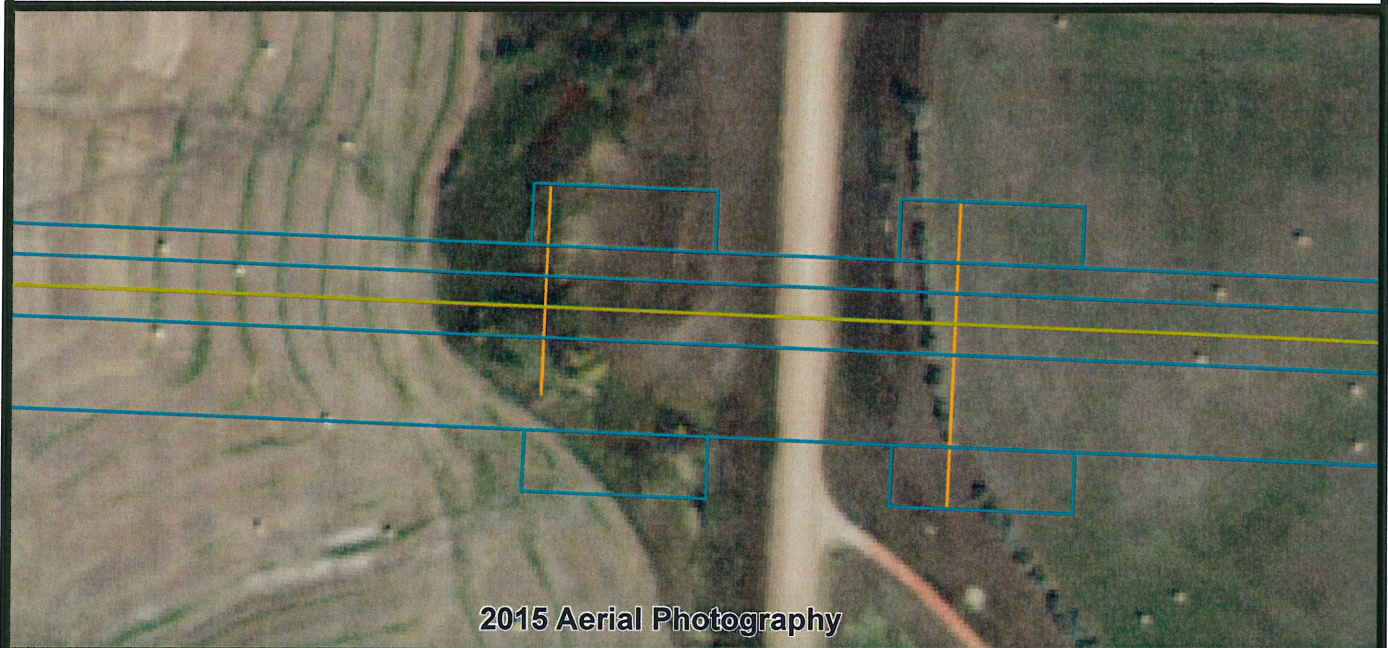
Table 1 – Tree and Shrub Cleared Locations Greater Than 85 Feet

Number	Length	Latitude	Longitude	Number	Length	Latitude	Longitude
1	113 Ft	48.286233	-102.745348	43	150 Ft	47.585636	-102.880903
2	199 Ft	48.286480	-102.747104	44	128 Ft	47.582691	-102.878986
3	100 Ft	48.289877	-102.768840	45	150 Ft	47.580259	-102.877345
4	100 Ft	48.289936	-102.770367	46	150 Ft	47.579059	-102.876204
5	122 Ft	48.146522	-103.788444	47	124 Ft	47.577254	-102.873944
6	150 Ft	48.093486	-103.778660	48	125 Ft	47.575980	-102.872515
7	97 Ft	48.098113	-103.770141	49	129 Ft	47.574296	-102.871778
8	125 Ft	48.087007	-103.801944	50	118 Ft	47.571209	-102.872049
9	150 Ft	47.768685	-103.263584	51	207 Ft	47.569545	-102.872748
10	170 Ft	47.796387	-103.091396	52	134 Ft	47.568580	-102.873142
11	250 Ft	47.796272	-103.090034	53	100 Ft	47.567100	-102.872961
12	115 Ft	47.797622	-102.996862	54	125 Ft	47.562373	-102.872551
13	168 Ft	47.794016	-102.913612	55	117 Ft	47.505843	-102.775683
14	150 Ft	47.786615	-102.905036	56	126 Ft	47.504313	-102.773217
15	150 Ft	47.786013	-102.905324	57	150 Ft	47.502440	-102.770560
16	150 Ft	47.783824	-102.905204	58	122 Ft	47.501436	-102.769128
17	150 Ft	47.768580	-102.897792	59	150 Ft	47.500146	-102.767641
18	100 Ft	47.745031	-102.897465	60	133 Ft	47.499027	-102.766929
19	125 Ft	47.741436	-102.897278	61	127 Ft	47.491419	-102.764757
20	125 Ft	47.735526	-102.894137	62	126 Ft	47.487024	-102.762939
21	125 Ft	47.721455	-102.874728	63	150 Ft	47.482781	-102.759983
22	109 Ft	47.713565	-102.865409	64	199 Ft	47.480342	-102.757640
23	94 Ft	47.706137	-102.857502	65	150 Ft	47.472510	-102.747237
24	137 Ft	47.701736	-102.852722	66	100 Ft	47.471467	-102.745882
25	100 Ft	47.701003	-102.851962	67	100 Ft	47.468609	-102.743263
26	200 Ft	47.695419	-102.849619	68	115 Ft	47.447133	-102.704605
27	125 Ft	47.694262	-102.849361	69	123 Ft	47.446084	-102.703615
28	150 Ft	47.688136	-102.848441	70	139 Ft	47.374574	-102.359517
29	100 Ft	47.655246	-102.836034	71	106 Ft	47.373957	-102.358166
30	100 Ft	47.652510	-102.837113	72	104 Ft	47.373303	-102.356826
31	98 Ft	47.650979	-102.843361	73	105 Ft	47.372661	-102.355512
32	125 Ft	47.625571	-102.860451	74	242 Ft	47.371107	-102.350900
33	125 Ft	47.624820	-102.860443	75	174 Ft	47.284535	-102.179246
34	93 Ft	47.623660	-102.860266	76	110 Ft	47.281698	-102.174460
35	150 Ft	47.606419	-102.876569	77	99 Ft	47.261032	-102.142616
36	150 Ft	47.605514	-102.876573	78	124 Ft	47.254578	-102.130656
37	150 Ft	47.604915	-102.876575	79	132 Ft	47.213020	-102.060506
38	125 Ft	47.598912	-102.876273	80	124 Ft	47.129556	-101.947906
39	111 Ft	47.597723	-102.875726	81	149 Ft	47.123293	-101.940701
40	132 Ft	47.596796	-102.874835	82	101 Ft	46.674151	-101.258730
41	150 Ft	47.595024	-102.875081	83	99 Ft	46.143641	-100.227142
42	120 Ft	47.588330	-102.879036				



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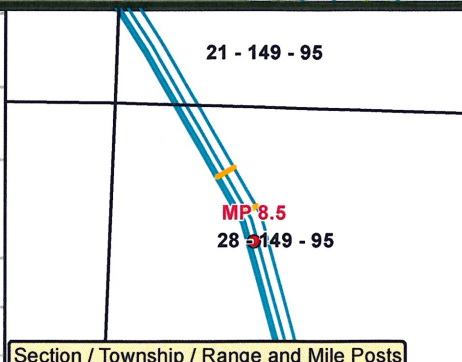
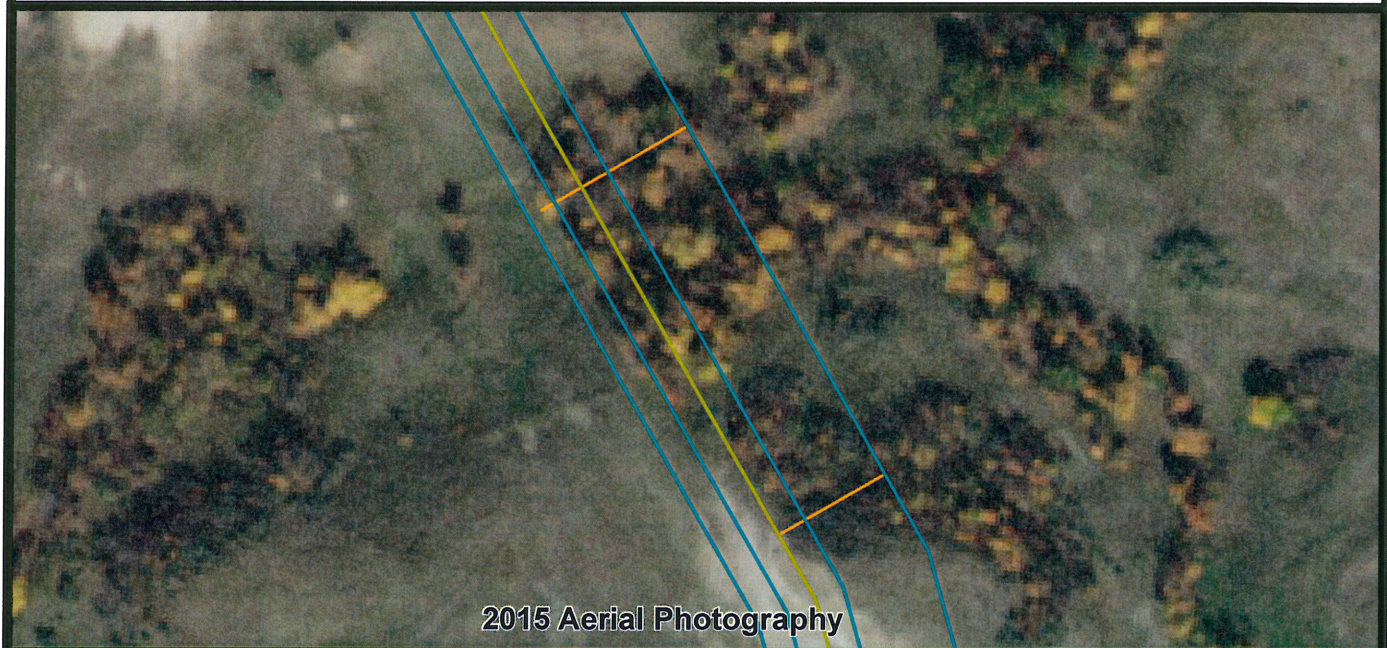
Appendix A – Maps



Legend

- Tree/Shrub Removal Length
- DAPL Project Boundary
- MP Segment 6
- MP Segment 7
- MP Segment 8
- MP Segment 9

N
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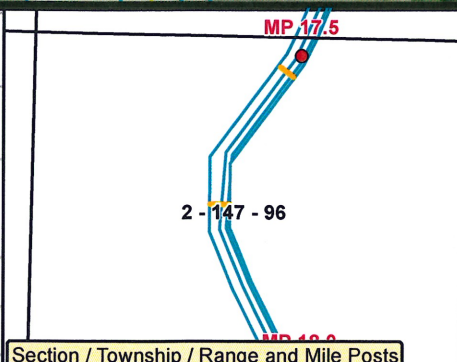
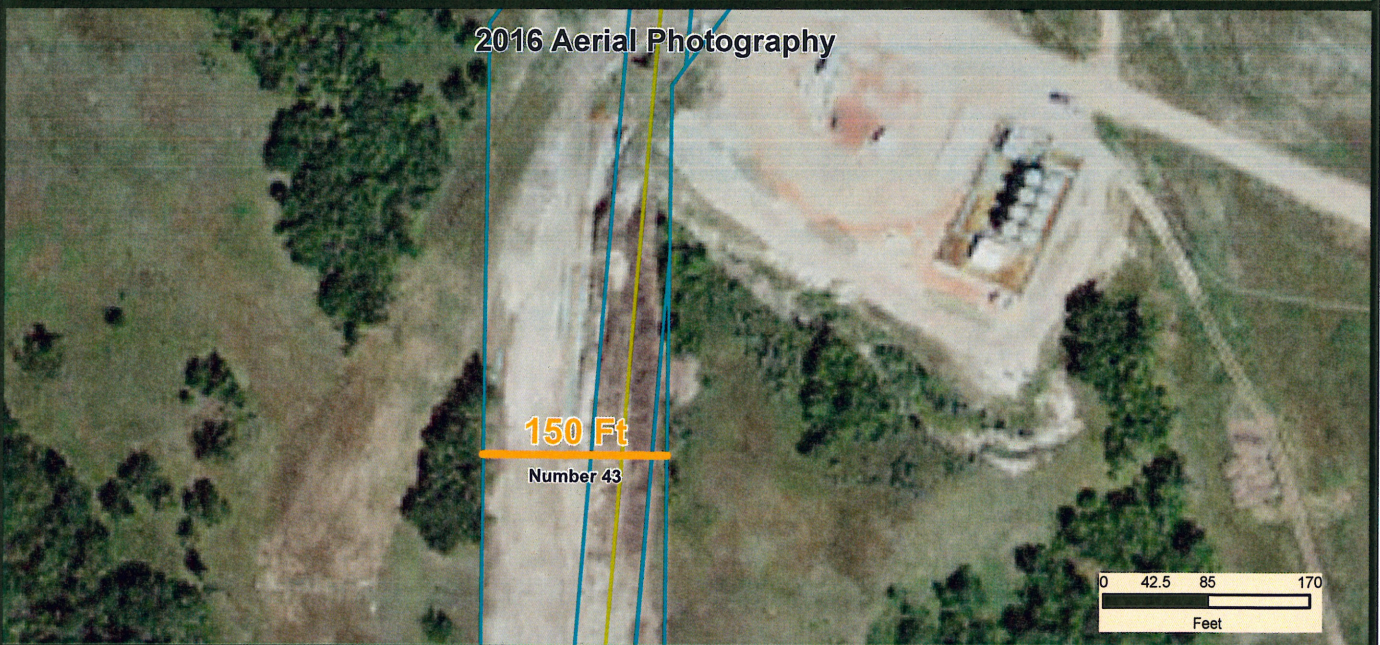


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