WENCK File #B2579-0032
October 2019

Caliber Bear Den Interconnect Pipeline Revegetation Inspection Report PU-16-420

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 a reclamation and revegetation inspection following construction of the Caliber Bear Den Interconnect Pipeline (Project) in McKenzie County, North Dakota (ND), constructed by Caliber Bear Den Interconnect, LLC. (Caliber). The purpose of the inspection was to ensure the project was constructed in compliance with the siting laws and rules and the applicable PSC Orders for the Project, which includes requirements for restoration and repair of infrastructure affected by Project construction, reclamation, and reseeding.

The Project was constructed December 2016 through March 2017, and initial reclamation activities were complete in May 2017. Wenck completed a revegetation site inspection 7 August 2019. This report includes documentation from the site inspection and the status of reclamation and revegetation efforts to date.

Overall the reclamation and revegetation of the Project were satisfactory. The ROW had been reclaimed and recontoured to as near as is practicable topography as prior to construction. Establishment of seeded grasses was good with a few minor problem areas of annual weed cover and noxious weed populations. Cropland and hayland production were comparable within versus outside of the ROW, though a few more years are needed to fully re-establish production. The as-built inspection was done two years ago in July 2017; since that time the establishment of planted grasses has visibly improved in terms of absolute cover and relative cover in comparison to annual weed cover.

1.0 Background and Scope

1.1 INTRODUCTION

The Caliber Bear Den Interconnect Pipeline, L.L.C. (Caliber) is a subsidiary of Caliber Midstream Partners, L.P. The Caliber Bear Den Interconnect Pipeline Project (Project) originates at Enable Midstream's Devore Terminal approximately 7.2 miles south of Watford City and extends to the northwest to terminate at Dakota Access Pipeline's (DAPL) Watford City Terminal, located in McKenzie County, North Dakota. The Project includes a 12.75-inch diameter underground steel pipeline with a total length of approximately 5.3 miles. 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-16-420 on 2 November 2016, granting a Certificate of Corridor Compatibility No. 195 and Route Permit No. 206 for the Project.

Project construction was completed January 2017 and the pipeline was in service by March 2018. Reclamation and clean-up activities began concurrently with construction and were complete by May 2017. Re-seeding was completed along certain segments of the line in October and November 2017. This report documents current conditions in the Project area over one full growing season after the 2017 reseeding efforts.

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 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 a reclamation and revegetation 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 Findings of Fact, Conclusions of Law, and Order for the Project include the following findings and order provisions related to reclamation and revegetation.

- Order Provision 18. *Company understands and agrees that it shall, as soon as practicable upon the completion of the construction of the transmission facility, restore the area affected by the activities to as near as is practicable to the condition as it existed prior to the beginning of construction.*

- Order Provision 19. *Company understands and agrees that all pre-existing township and county roads and lanes used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to the construction of the transmission facility and that will accommodate their previous use, and that areas used as temporary roads or working areas during construction must be restored to their original condition.*

- Order Provision 20. *Company understands and agrees that reclamation, fertilization, and reseeding is to be done according to the Natural Resources Conservation Service recommendations, unless otherwise specified by the landowner and approved by the Commission.*

- Order Provision 21. *Company will fulfill its obligation for reclamation and maintenance of the approved transmission facility right-of-way, transmission facility, and associated facilities continuing throughout the life of the transmission facility.*

- Order Provision 22. *Company will repair all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.*

- Order Provision 23. *Company will repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility*

- Order Provision 24. *Company agrees to comply with the Tree and Shrub Mitigation Specifications, attached.*

- Order Provision 25. *Company understands and agrees that it shall remove all waste that is a product of construction and operation, restoration, and maintenance of the site, and properly dispose of it on a regular basis.*

Wenck's scope of work was to perform and document a reclamation and revegetation inspection after one full growing season but not less than one year from the anniversary date of completion of fertilization and seeding. The reclamation and revegetation inspection must include a follow-up inspection of areas of concern identified in the as-built construction inspection. 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.

2.0 Findings of Site Inspection

2.1 METHODS

Sara Simmers, Wenck environmental scientist, inspected the Project route on 7 August 2019. A representative from Caliber, David Ray, accompanied Wenck staff during the site visit.

The site was inspected by driving to access points, visually observing the route from public roads and fencelines, and where access was granted, walking within the Project right-of-way (ROW) to determine species composition. Geographic coordinates were recorded at observation points and potential problem areas using a handheld Global Positioning System (GPS) (Garmin GPSMAP 60CSx; <10m accuracy; NAD83 datum) (**Appendix A; Figure 1**). Digital photographs (iPhone 7) were taken showing representative portions of the route and problem areas (**Appendix B**).

2.2 ON-SITE INSPECTION OBSERVATIONS

The ROW had been reclaimed and recontoured to as near as is practicable topography as prior to construction. Establishment of seeded grasses was good with a few minor problem areas of annual weed cover and noxious weed populations. Cropland and hayland production were comparable within versus outside of the ROW, though a few more years are needed to fully re-establish production. The as-built inspection was done two years ago in July 2017; since that time the establishment of planted grasses has visibly improved in terms of absolute cover and relative cover in comparison to annual weed cover.

2.2.1 Grassland/Rangeland/Hayland

The Project ROW crossed areas of grassland presumably used for rangeland and hayland, or potentially under CRP, for approximately two-thirds of its total length (**Appendix B; Observation Points 696, 697, 698, 704, 706**). Reclaimed hayland parcels had about 20% alfalfa, 20% seeded grasses, 20% annual weed cover, and 40% bare ground. Through other grassland parcels, the ROW vegetation ranged from <5% to 50% cover of the annual weeds kochia and pigeongrass; with 50-90% cover of vigorous growth of seeded grasses. Grasses included western wheatgrass, crested wheatgrass, slender wheatgrass, green needlegrass, quackgrass, smooth brome, and Kentucky bluegrass.

Seed tags were not available, but the species that were likely planted on most grassland parcels were the native grass species western wheatgrass, green needlegrass, and slender wheatgrass. These species are often recommended by the NRCS. The introduced grass species crested wheatgrass, smooth brome, quackgrass, and Kentucky bluegrass may have also been planted as part of the seed mix or may have recolonized from adjacent areas (**Table 1**).

Kochia was the dominant annual weed in grassland reclamations; Russian thistle was present in alfalfa hayland parcels (**Table 1**). No noxious weeds were observed in reclaimed grassland parcels.

Table 1. Species[1] Observed in Reclaimed Grassland/Rangeland

	Native	Introduced
Grasses	Western wheatgrass (*Pascopyrum smithii*) Slender wheatgrass (*Elymus trachycaulus*) Green needlegrass (*Nassella viridula*) Canada wild rye (*Elymus canadensis*)	Quackgrass (*Elymus repens*) Smooth brome (*Bromus inermis*) Crested wheatgrass (*Agropyron cristatum*) Pigeon grass (*Setaria* sp.)
Forbs		Kochia (*Bassia scoparia*) Russian thistle (*Salsola* sp.)

[1]Noxious weeds in bold.

2.2.2 Cropland

The Project ROW crossed cropland for approximately one-third of its length. Crop growth was visually consistent in density, height, and color within and outside of the ROW in most parcels, indicating reclamation was successful (**Appendix B; Observation Points 694, 695, 699, 700, 701, 703**). Yield cannot be compared visually so it is unknown if yield was comparable within versus outside of the ROW. Annual weed cover was comparable within and outside of the ROW. Populations of Canada thistle were noted at field edges within the ROW in two locations (**Appendix B; Observation Points 700, 703**).

2.2.3 Stream/Wetland Crossings

One open cut stream/drainage crossing was observed from a distance (**Appendix B; Observation Point 696/Photo 1080**). A recently installed line was adjacent to the Caliber ROW which was seeded and mulched and overlapped with the width of previous disturbance from the Caliber line, such that it was difficult to assess revegetation of the Caliber line specifically.

Another stream/drainage was observed where the pipeline was horizontally bored underneath stream (**Appendix B; Observation Point 706/Photos 1095, 1096**). The ROW was necked down to a narrow width adjacent to the bore route; however, the surface of this area had been disturbed during construction and used for an access road, according to the Caliber representative. Seeded grasses were not as well established along this drainage crossing, with more bare ground.

2.2.4 Roads and Maintenance

Gravel roads crossed by the ROW had been bored underneath to avoid impacts and were in good condition. No temporary access roads were associated with the Project. The ROW was being maintained in good condition. No trash or equipment was observed. Valve sites were fenced, secure, and maintained well. Annual weeds had been sprayed and were under control (**Appendix B; Observation Points 694, 703**). One valve site had Canada thistle outside of the security fence which needs control (**Appendix B; Observation Points 703/Photo 1089**).

2.2.5 As-Built Inspection Concerns

The two main concerns noted in the as-built inspection report were subsidence and poor establishment of seeded grasses.

The areas of subsidence discussed in the as-built inspection had been corrected at the time of the revegetation inspection. Re-contouring matched adjacent topography and no significant depressions were observed within the ROW. One area in a crop field appeared to have a few areas of shallow subsidence that were noticeable but were not deep or problematic (**Appendix B, Observation Point 699/Photo 1084**).

The poor establishment of seeded grasses documented in the July 2017 as-built inspection was likely due to dry conditions in 2017 that would have limited germination and growth of young seedlings planted in May 2017. According to email communication with Caliber representative Jeff Skaare, reseeding/overseeding of affected grassland areas was done in October/November 2017. Growth of seeded grasses or seeded grasses and alfalfa were typically over 60%, and in most areas was 75-90% with dense, vigorous growth. Compared to the very minimal growth documented during the as-built inspection, it appears grass establishment is well underway.

3.0 Issues, Resolutions, and Recommendations

3.1 MONITOR AND TREAT ANNUAL WEEDS

Annual weeds should be monitored along the route in hayland per landowner preferences. One portion of the ROW on the north end of the route crossed through a parcel of hayland or CRP (**Observation Points 704, 706/Photos 1091, 1094, 1095, 1096**). This portion includes a necked down crossing of a stream which had areas of bare ground. The ROW vegetation consisted of good cover and vigorous growth of seeded grasses at 50-75% cover; however, annual weed cover of kochia and pigeongrass was between 10-50%. Wenck recommends one or two years of mowing in June prior to seed ripening. This would reduce the annual weed seed bank within a year or two and allow the grass cover to establish further.

3.2 TREAT NOXIOUS WEEDS

Caliber has been treating known locations of noxious weeds. Two locations of Canada thistle were observed within the ROW which should continue to be monitored and treated, along with any other locations along the ROW (**Observation Points 700, 703/Photo 1089**).

4.0 References

North Dakota Public Service Commission (ND PSC). 2019. Online Case Search. Available from: http://www.psc.nd.gov/database/company_case_list.php. Accessed October 2019.

Ray, David. Caliber representative. Personal Communication: discussion during site visit on August 7, 2019.

Skaare, Jeff. Caliber representative. Personal Communication: email exchange July-August 2018.

5.0 Signatures

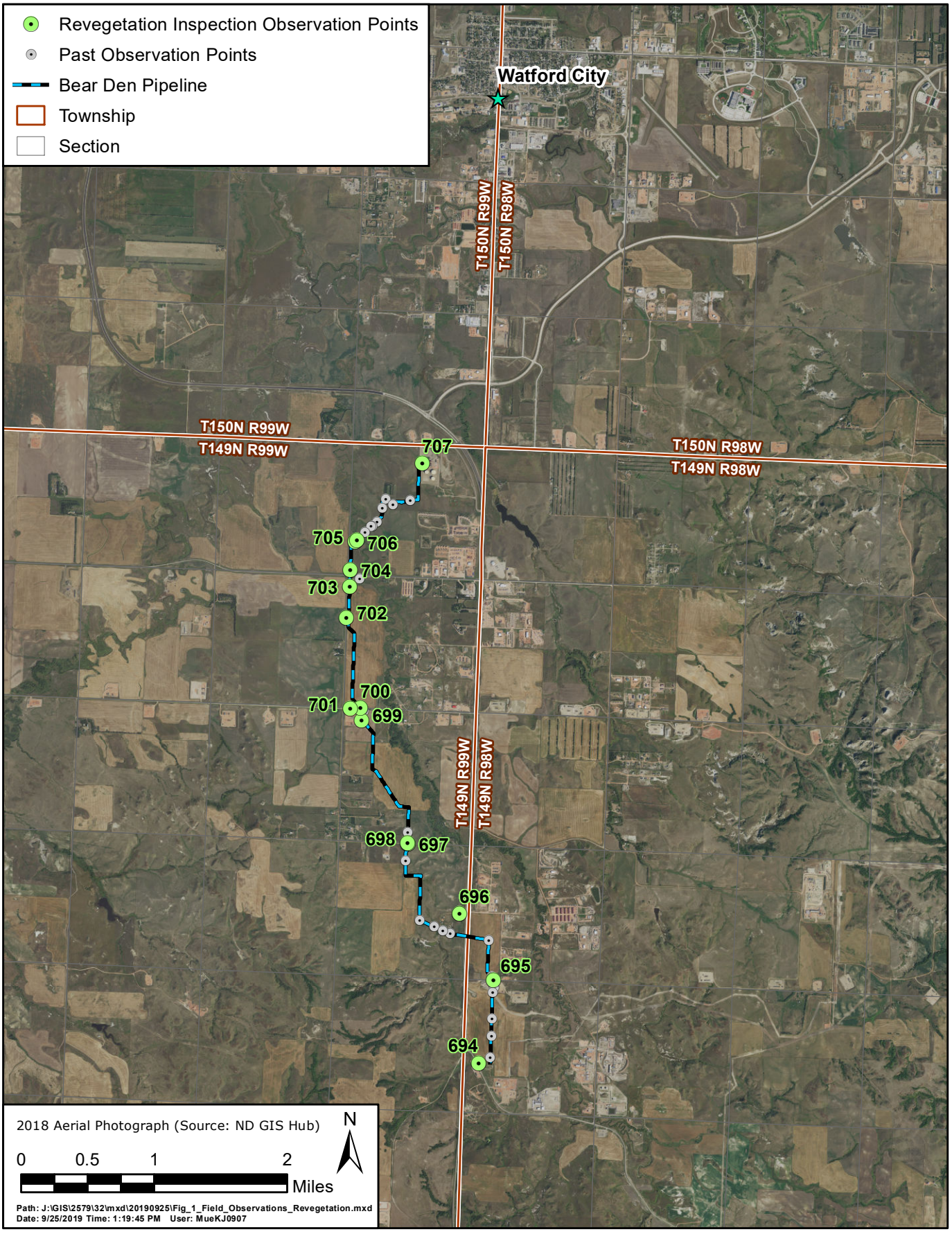
The services performed by Wenck staff for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints. Recommendations and findings contained in 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.

Lead Project Manager and Environmental Scientist, Sara Simmers, prepared the report.

_____ ___10/15/19_____

Sara Simmers, Environmental Scientist Date

Figures



NORTH DAKOTA PUBLIC SERVICE COMMISSION

Field Observation Map

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Figure 1

Appendix A

Observation Point Coordinates

Point #	Latitude	Longitude	Time Stamp
694	47.69432254	-103.2806968	07-AUG-19 9:20:39AM
695	47.70342914	-103.2788291	07-AUG-19 9:27:19AM
696	47.71046994	-103.2846941	07-AUG-19 9:34:44AM
697	47.7179031	-103.293339	07-AUG-19 9:46:12AM
698	47.71795196	-103.2934484	07-AUG-19 9:48:26AM
699	47.73117048	-103.3015322	07-AUG-19 10:00:06AM
700	47.73245995	-103.3017863	07-AUG-19 10:03:42AM
701	47.73235467	-103.303458	07-AUG-19 10:07:45AM
702	47.74223677	-103.3046392	07-AUG-19 10:11:37AM
703	47.74563504	-103.3042898	07-AUG-19 10:13:10AM
704	47.74744797	-103.3042499	07-AUG-19 10:20:38AM
705	47.75053024	-103.3036877	07-AUG-19 10:35:44AM
706	47.75071347	-103.3033695	07-AUG-19 10:37:38AM
707	47.75929394	-103.2932775	07-AUG-19 10:58:19AM

Appendix B

Photographs

	**Observation Point: 694** **Image #:1077** Date Taken: August 7, 2019 Direction Photo is Taken: East Photo Description: Start of interconnect pipeline at the interconnect valve site. Site was maintained in good condition.
	**Observation Point: 694** **Image #:1078** Date Taken: August 7, 2019 Direction Photo is Taken: North Photo Description: Route begins north from interconnect, though a wheat field. The ROW was not visually distinguishable in the field.
	**Observation Point: 695** **Image #:1079** Date Taken: August 7, 2019 Direction Photo is Taken: North Photo Description: ROW through fallow crop field. No visual difference within and outside of ROW. Pipeline marker in place.

	**Observation Point: 696** **Image #:1080** Date Taken: August 7, 2019 Direction Photo is Taken: South/southwest Photo Description: The Caliber ROW is routed from left to right of photo between a drainage between hillsides (indicated by red dashed line). A recently installed line is adjacent to the Caliber ROW which was seeded and mulched, overlapping with the width of previous disturbance from the Caliber line.
	**Observation Point: 698** **Image #:1083** Date Taken: August 7, 2019 Direction Photo is Taken: South Photo Description: Caliber ROW indicated by pipeline marker in the foreground. ROW goes through hayland visible on hill slope.
	**Observation Point: 697** **Image #:1081** Date Taken: August 7, 2019 Direction Photo is Taken: North Photo Description: Continuation of ROW across road (bored underneath) and through hayland. Caliber ROW is on left, recently seeded and mulched ROW is on right and partly overlaps with Caliber ROW. Reclaimed ROW consists of about 20% alfalfa, 20% seeded grasses, 20% Russian thistle, and 40% bare ground.

Observation Point: 699
Image #:1084
Date Taken: August 7, 2019
Direction Photo is Taken: Southeast

Photo Description: ROW diagonal across a field of harvested oats. Stubble density was visibly similar within and outside of ROW. A minor cover of annual weeds and a few areas of shallow subsidence were noticeable in the ROW.

Observation Point: 699
Image #:1085
Date Taken: August 7, 2019
Direction Photo is Taken: North

Photo Description: ROW turns straight north along edge of access road and well pad (on left of photo out of view). No concerns noted.

Observation Point: 700
Image #:1086
Date Taken: August 7, 2019
Direction Photo is Taken: Northwest

Photo Description: Short diagonal through wheat field which appeared to have similar crop growth within and outside of the ROW. Pipeline marker in place. Crossing was bored under gravel road on south edge of field shown in photo. Canada thistle was noted on the field edge within the ROW.

	**Observation Point: 701** **Image #:1087** Date Taken: August 7, 2019 Direction Photo is Taken: North Photo Description: ROW runs straight north through wheat field with no noticeable concerns. Bare soil in foreground is associated with another project.
	**Observation Point: 703** **Image #:1088** Date Taken: August 7, 2019 Direction Photo is Taken: South Photo Description: North end of wheat field shown in Photo 1087. At this point the ROW runs between the gravel road on right of photo and a recently installed ROW on left of photo. Wheat stand had variable heights within the ROW.
	**Observation Point: 703** **Image #:1089** Date Taken: August 7, 2019 Direction Photo is Taken: East/northeast Photo Description: Dense Canada thistle patches noted around the edge of the wheat field and surrounding a valve site/interconnect fence.

Observation Point: 704
Image #:1091
Date Taken: August 7, 2019
Direction Photo is Taken: North

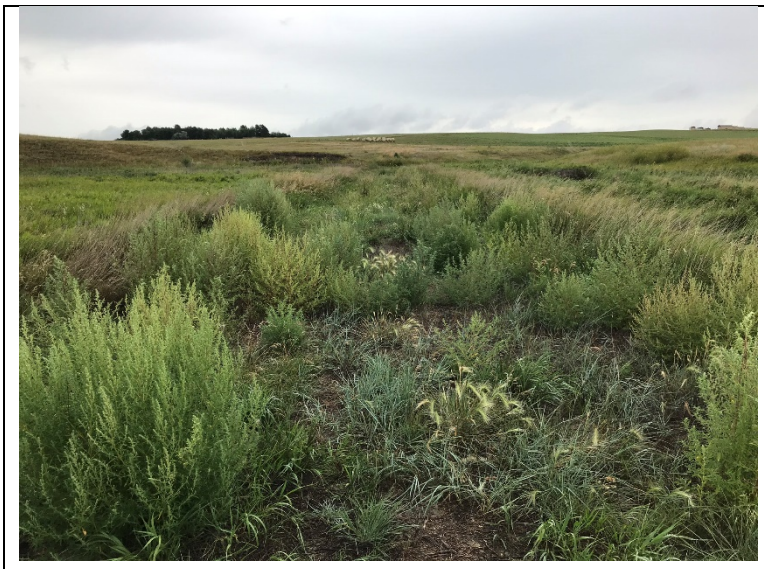
Photo Description: ROW through parcel of hayland or CRP land comprised of Kentucky bluegrass, crested wheatgrass, and smooth brome. No grazing or haying had occurred this season. The ROW vegetation consisted of about 50% cover of the annual weeds kochia and pigeongrass; with about 50-75% cover underneath the weed cover of vigorous seeded grass growth. Grasses included western wheatgrass, crested wheatgrass, slender wheatgrass, green needlegrass, and quackgrass.

Observation Point: 706
Image #:1094
Date Taken: August 7, 2019
Direction Photo is Taken: Northeast

Photo Description: ROW continues past fence separating hayland/CRP in Photo 1091 with the adjacent parcel of land that appeared to be used as rangeland, though had not been grazed this season. The ROW vegetation consisted of about 10% kochia, and about 90% cover of the grasses smooth brome, western wheatgrass, slender wheatgrass, and Kentucky bluegrass.

Observation Point: 706
Image #:1095
Date Taken: August 7, 2019
Direction Photo is Taken: Northeast

Photo Description: Crossing of intermittent stream in distance of photo. Pipeline route is indicated by marker in foreground. Pipeline was bored underneath stream, and the adjacent ROW was necked down to a narrow width. The surface of the necked down ROW had been disturbed during construction and used for access, despite the pipeline itself being bored, according to the Caliber representative.

	**Observation Point: 706** **Image #:1096** Date Taken: August 7, 2019 Direction Photo is Taken: Northeast Photo Description: View of vegetation within the necked down portion of the stream crossing. Vegetation consisted of about 10% kochia, 50-60% grasses, and 30-40% bare ground.
	**Observation Point: 707** **Image #:1097** Date Taken: August 7, 2019 Direction Photo is Taken: N/A Photo Description: View of valve setting where the Caliber line interconnects with the Dakota Access Pipeline.

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