

Alexander Loop Pipeline Construction Inspection Report

Belle Fourche Pipeline Co.

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 construction inspection of the Alex Loop Pipeline, constructed in McKenzie County, ND by Belle Fourche Pipeline Company (Belle Fourche) in 2007 and 2008. The purpose of the construction inspection was to ensure the project was constructed in compliance with the siting laws and rules and the applicable PSC Order for the Project. Prior to the construction inspection, Wenck reviewed all Project documents to identify those which required site verification.

The Site was visually inspected on August 10, 2011 by Wenck, accompanied by a Belle Fourche representative. Overall, the Project was in satisfactory condition. It appeared to have been constructed as planned with efforts taken to minimize impacts. However, there were several issues that may need to be resolved for the Project to be considered complete and in full compliance. Wenck considers one issue to be critical, which is the repair of eroded areas within the pipeline right-of-way, including potentially unsafe holes and wash-outs. Less critical but important issues that Wenck recommends the PSC require include 1) written documentation of several particular aspects of project implementation identified during the document review, 2) review of topsoil segregation procedures, possible soil amelioration/reseeding of areas with inhibited revegetation, and 3) confirmation of one (of three) tree plantings which Wenck could not corroborate, as well as continued survival monitoring. Minor issues include 1) clarification of the policy on the setback of occupied homes added after construction, 2) verification of the as-built depth of the pipeline, 3) removal of loose fenceline at one location if determined to have been from pipeline construction, 4) clarification of construction timing restrictions on National Grasslands, and 5) submission of a clear, legible copy of the as-built drawings. The PSC will need to decide whether these recommendations are necessary to fulfill Project obligations. Wenck expects any follow-up action by Belle Fourche to address these issues could be corroborated in writing, though it may be suitable to complete another field check of repaired erosional areas, reseeded areas, and the tree and shrub planting which had not been corroborated.

1.0 Background

1.1 INTRODUCTION

The Alexander (Alex) Loop Pipeline (Project) was completed in 2008 in McKenzie County, North Dakota, extending from the Bowline Field north to a connection with an Enbridge Pipeline near the city of Alexander (**Figure 1**). The Project is operated by the Belle Fourche Pipeline Company (Belle Fourche). The portion of the Alex Loop Pipeline in North Dakota comprises a 32-mile long, 8-inch diameter liquid petroleum pipeline with associated facilities and pipeline interconnections. 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-07-596 on November 9, 2007, granting Certificate of Corridor Compatibility No. 98 and Route Permit No. 108, and an Order for an Amended Route Permit No. 108 on January 18, 2008 for the Project.

1.2 PURPOSE AND SCOPE OF INSPECTION

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. Post-construction inspections ensure the project is constructed in compliance with the siting laws and rules and the applicable Commission Findings of Fact, Conclusions of Law, and Order (Order).

The North Dakota PSC retained Wenck Associates, Inc. (Wenck) to complete a construction inspection of the Alex Loop Pipeline Project. The inspection process included a review of the Siting Plan, Order, and other applicable documents to determine Project-specific siting and construction requirements; a site visit and inspection of facilities; documentation of compliance;

and a report summarizing findings. This report includes, but is not limited to, documentation of site visit observations, documentation of compliance deficiencies, and a summary of issues that should be addressed for the Project to be considered complete and in full compliance.

2.0 Document Review

2.1 METHODS

Wenck reviewed North Dakota siting laws and rules, the Applications for the Certificate of Corridor Compatibility and Route Permit (Application), and the Order for the Project to identify what Project-specific documentation was required for compliance. Wenck then reviewed Project documents in the PSC Online Case Search (ND PSC 2011) to identify those siting laws and rules and Application and Order assertions that already had written verification, those which still required documentation, and those which required physical site verification.

2.2 FINDINGS

The following table includes a list of components of the Project that were asserted in the Application and Order which could be documented post-construction to verify compliance with siting laws and rules and the Order for the Project (**Table 1**), via either written documentation or physical site verification. If Wenck found written documentation in the online PSC files for a particular Project component, this is marked in the second column of the table. If physical site verification was possible, this was marked in the third column and that particular component was verified during the site inspection (Section 3.0).

Several components of the Project were asserted in the Application or proposed construction but have no written documentation showing that they were indeed implemented or constructed as planned, and physical site verification is not applicable. *This includes all items listed in Table 1 which have shaded boxes in the second column*, indicating written verification is possible and appropriate, but it is lacking from current files. The PSC should request written verification from Belle Fourche for these items, to show the Project is in full compliance.

Table 1. Alexander Loop Pipeline Project Document Review Summary

| Description of Project Component/Assertion | Written Verification in | |
|--|-------------------------|-------------------|
| | PSC Files* | Site Verification |
| Cultural resources avoided | X | X |
| Cultural resource report submitted to SHPO with concurrence | X | |
| No effect on historic properties | X | |
| No national or state historic sites, landmarks, wilderness, parks | X | |
| No national or state preserves, refuges, management areas | X | |
| USFS Special Use Permit obtained to cross National Grasslands | X | |
| Creek crossings avoided by boring underneath or Corps permit obtained before construction | X | X |
| No wetlands identified from NWI (National Wetlands Inventory) | X | X |
| Woodlands Avoided at Camp Creek and Charbonneau Creek, if possible | | X |
| Not located within 500ft of residences, schools, businesses | X | X |
| More than 1000ft from City of Alexander water supply wells | X | |
| No irrigated lands | X | |
| Compensation for crop losses, if applicable | | |
| Consultation with federal, state, and local agencies | X | |
| No endangered, threatened, or sensitive plants identified | X | X |
| Avoidance of prairie dog colonies and Dakota skipper butterfly habitat | X | X |
| Avoidance of sharp-tailed grouse and sage grouse leks | X | X |
| Avoidance of golden eagle nests | X | X |
| Use of environmental inspector during construction | | |
| Design, construction, and operation according to DOT regulations 49 CFR Part 195 – Transportation of Hazardous Liquids by Pipeline | | |
| Cathodic protection system installed | | |
| Post-construction monitoring reports | | |
| Proposed route amendments submitted and approved | X | |
| Compliance with “Tree and Shrub Mitigation Specifications” | X | X |
| Tree removal will be minimized and lost trees will be replaced | | X |
| Permits/Approvals from other agencies | X | |
| Pre-Construction conference record | X | |
| Intent to start and commencement of construction notices | X | |
| Weekly construction reports | some missing | |
| Construction according to Application and safety requirements | | |
| Pipeline buried to 48in (72in undeveloped section lines) | | |
| Pipeline bored under graded roads, unless permitted to open cut | | X |
| Woodland (Avoidance Area) crossing width reduced to 50ft | | X |
| Reports of presence of threatened, endangered species or bald or golden eagles, if applicable | | |
| Reports of cultural, archeological, historical resources found, if applicable | | |
| Topsoil removed, segregated, and replaced at 12in depth or depth of cultivation, according to landowners’ and PSC’s requirements | | X |
| Reclamation and clean-up continuous with construction | | |
| Restoration of pre-existing roads, lanes, temporary roads | | X |
| Reclamation/reseeding according to NRCS or landowner | | X |
| Repair/replace all fences and gates, if applicable | | X |
| As-built drawings and GIS within 3 months after construction | X | |
| Reclamation and maintenance throughout life of facility | | X |

*Note: Shaded boxes indicate documentation is lacking and site verification is not applicable.

3.0 Site Inspection

3.1 METHODS

Kevin Magstadt, P.E. and Sara Simmers of Wenck visited the Project area on August 10, 2011. Jory Boltz, Belle Fourche Supervisor, accompanied Wenck staff during the site visit and assisted with navigation, pointed out problem areas, and answered questions.

The site was inspected visually along portions of the pipeline route by accessing as many points as feasible where the pipeline crossed roads. Some features were accessed by walking within the pipeline right-of-way to the crossing of the feature. The southern end of the pipeline route through the Little Missouri National Grasslands was checked by driving along the route with an ATV (all-terrain vehicle). Above-ground pipeline valves were also checked. The survey began at the north end of the pipeline northwest of Alexander, ND in Section 18, T152N, R101W and proceeded to the south end in the Bowline Field in Section 8 of T147N, R101W. Digital photographs (Canon Power Shot SD1300 IS, 12 megapixel) 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 System (GPS) (Garmin GPSMAP 60CSx; <10m accuracy; NAD83 datum) (**Figure 1; Appendix B**).

3.2 OBSERVATIONS & FINDINGS

3.2.1 Engineering/Construction/Design & Soils

The following aspects pertaining to engineering, construction, or design of Project infrastructure were inspected at the site.

- *500ft Setback from Occupied Residences, Schools, Businesses.* Wenck verified that at the time of pipeline construction there were no occupied residences within the 500ft setback from Project infrastructure. However, at some point after pipeline

construction, an occupied modular home had been moved to a location within 500ft of the pipeline right-of-way in the NE ¼ of the SW ¼ of Section 30, T152N, R101W.

- *Pipeline Buried to 48in (72in Undeveloped Section Lines).* The Route Application stated the pipeline would be installed at a minimum depth of 36in from the surface contour, and from 18-20in in rocky areas. The Environmental Mitigation Plan in the Application stated pipeline depth would be at 3ft (36in) and that for increased depth requirements a waiver would be sought. No waiver was included in the PSC files (ND PSC 2011) or discussed in the Order for the Project. Additionally, US Forest Service Stipulations, as part of the approved Special Use Permit for the portion of the pipeline on National Grasslands, stated pipeline depth be a minimum 4ft (48in), and at stream or creek crossings a minimum 8ft (96in). It is assumed that the pipeline is buried at these required depths.
- *Road Crossings Bored, Unless Permitted to Open Cut.* Road crossings for the Project included both horizontally bored and open cut crossings. For bored crossings, which included three paved roads (State Highway 200, State Highway 68, and County Route 16) and two gravel roads (County Route 20 and County Route 15), Wenck verified that the pipeline route was marked and that the vegetation appeared undisturbed (**Appendix A, Photos 2, 10-11, 23-24**). The ditches of State Highway 68 did have some erosional concerns, though this may not have been due to pipeline installation since this road was bored underneath (**Appendix A, Photo 24; Appendix B, Point 378**). According to the as-builts, there were also several other gravel roads that were horizontally bored, which did not appear to have any major concerns (**Appendix A, Photos 14 and 19**), though there was one ditch that had some settling around a block valve (**Appendix A, Photo 15; Appendix B, Point 361**) and at the crossing of FS Road 835 and Spring Creek there was erosion from runoff from the road surface into the ditch (**Appendix A, Photo 26; Appendix B, Points 382, 384**). For open cut crossings, Wenck verified that all soil had been replaced appropriately, that all road surfacing materials had been replaced, and that the vegetation in the ditch appeared to be similar to adjacent vegetation and had sufficient cover. Most open cut crossings

appeared to be in good condition, however a few had erosional problems, including some deep ruts on the sectionline road of 19th St NW and erosional channels extending from that road into adjacent fields (**Appendix A, Photos 21-22; Appendix B, Point 375**); and a depression on a two-track sectionline road where the pipeline crossed with a small washout into hayland downslope (**Appendix A, Photo 25; Appendix B, Point 379**).

- *Topsoil Removed, Segregated, Replaced at 12in Depth or Depth of Cultivation, According to Landowners' and PSC's Requirements.* The Environmental Mitigation Plan in the Application described topsoil segregation methods and depth of stripping at a minimum 12in in cropland, or to the maximum depth of topsoil, if less than 12in. The PSC requirement is at least 12in or to the depth of cultivation, whichever is greater. The Environmental Mitigation Plan also stated that topsoil segregation was not planned for wetlands or non-agricultural open areas. It is assumed that the PSC requires topsoil segregation across all land uses. Individual landowner requirements were unknown. Wenck observed that all topsoil appeared to have been removed and replaced to the required depth in cropland. Cropland that was disturbed during construction appeared the same as adjacent undisturbed cropland (**Appendix A, Photos 2, 10-11, 19-20**). This was a good indication that topsoil had been segregated and replaced appropriately. However, there were some fallow fields that showed erosional problems along the pipeline right-of-way (**Appendix A, Photos 16-17, 21-22; Appendix B, Points 363, 375**). Belle Fourche stated that these problems are regularly addressed through routine maintenance of the pipeline, and there was recent evidence of repair of erosional areas in one field (**Appendix A, Photo 14**). Wenck also excavated soil pits in cropland in two locations within the pipeline right-of-way. The first location was in a field south of Camp Creek in the SE ¼ of the SW ¼ of Section 6, T151N, R101W, just to the north of 35th St NW. The topsoil went to a depth of 6 in and had been plowed (**Appendix B, Point 350**). The second pit was in a hay field just to the south of the sectionline between Sections 3 and 10, T148N, R102W, in the NW ¼ of the NE ¼ of Section 10. The topsoil was 6-8 inches deep and had been plowed (**Appendix B, Point 380**). It was clear from the soil pits that

topsoil had been segregated and replaced above the subsoil, but was not at the required depth of 12in. However, in this region of the state topsoil is generally less than 12in deep, so it is evident the company fulfilled its requirements to the best of its ability using what topsoil was available. One area of concern regarding topsoil replacement is for portions of the pipeline in non-agricultural areas, particularly rangeland on the National Grasslands and other private pastures. It is not clear whether topsoil was segregated in these areas. Examples in non-cultivated areas tended to show zones of bare ground and vegetational differences between the pipeline right-of-way and adjacent, undisturbed grassland (**Appendix A, Photos 4-5, 7, 12-13, 23, 27, 31-32**). The vegetational differences were likely caused primarily by the different species that were planted compared to adjacent vegetation. However soils can also be a factor, particularly in this region of the state where subsoils have high clay and salt contents; if they are not segregated from the limited topsoils, it often causes long-term problems for revegetation. Wenck suggests the procedures of topsoil segregation and replacement should be clarified with Belle Fourche and a decision should be made whether follow-up topsoil replacement and re-seeding may be necessary. The main area of concern that showed extensive re-vegetation problems which may need to be addressed would be the portion of the pipeline that paralleled a FS Road and went across some small hills and buttes through the center of Section 35, T148N, R102W (**Appendix A, Photos 31-32; Appendix B, Points 393-395**).

- *Roads Restored to Previous Use.* There were no temporary roads constructed for the Project. Wenck noted that all two-track roads, county roads, and highways within the Project area appeared to be in good condition and properly maintained. It appeared that all efforts had been made to restore the roads to their previous use. However, there was one example of a horizontally bored crossing and a few examples of open cut road crossings with erosional problems, likely due to or facilitated by pipeline construction (**Appendix A, Photo 15, 21-22, 25-26**). Some of these erosional issues impaired traffic or were causing further problems in adjacent cropland. These problems areas should be repaired.

- *Fences/Gates Repaired/Replaced.* Wenck did not observe any gates which would have been impacted by construction. There were numerous fencelines crossed along the length of the pipeline, and it appeared all had been replaced properly (**Appendix A, Photos 2-3, 10, 18-20, 24-25, 32-33**). There was some loose fencing wire in the pipeline right-of-way in a pasture on the south side of Camp Creek (**Appendix A, Photo 6; Appendix B, Point 345**). It was unclear whether this was left by the landowner or from pipeline construction.
- *On-going Reclamation and Maintenance.* The Route Application for the Project described detailed on-going maintenance for the pipeline and right-of-way, and Belle Fourche stated they have a routine maintenance system in place (Jory Boltz, pers. comm. 2011), as evidenced by recent blading of an erosional area in cropland (**Appendix A, Photo 14**). Wenck did not observe any areas of intentionally exposed soil remaining from construction activity or areas that were in need of initial reclamation. Above-ground valves were observed and appeared to be in working condition (**Appendix A, Photos 15 and 33**). However, there were several examples of erosional problems on roads, in cropland/fields, in pastures and rangeland (all described previously), and within the pipeline route generally on steep slopes near drainage channels. Erosion near the drainage channels or on steep slopes was the most urgent problem. Large holes or deep wash-outs were found in several locations, presumably caused by piping of water along the pipeline (**Appendix A, Photos 8-9, 26, 29-30; Appendix B, Points 346, 347, 349, 382, 384, 387, 390, 391, 400**). The company should provide information to the PSC about how these erosion problems are being addressed and what measures are being taken to prevent them from being a continuous problem.
- *As-built Drawings and GIS Files.* Belle Fourche had submitted as-built drawings and GIS files to the PSC as required within 90 days after construction of the Project. The as-builts were signed and sealed by a registered engineer. Wenck verified during the inspection that the Project had been constructed according to the as-built drawings. Wenck suggests that the PSC request a more legible and clear copy of the as-builts

from the company, if available. The submitted copy is out of focus and very difficult to read which limits its utility.

3.2.2 Natural Resources (Wildlife, Wetlands, Vegetation)

The following requirements pertaining to natural resources, including wildlife, wetlands, and vegetation, were inspected at the Project site.

- *Creek Crossing Avoided by Horizontal Drilling or Corps Permit Obtained.* A Corps Permit (Nationwide Permit No. 12) was obtained for the Project in November 2007, which stipulates the following: that activity does not result in the loss of >0.5 acres of waters of the United States; no change in pre-construction contours; replacement of trench excavation material in less than 3 months; no placement of excavated material in flow of current; and stabilization of slopes and banks. Requests from other agencies were that no creeks be permanently drained or filled and that construction take place outside of fish migration and spawning between April 15 and June 1. The Environmental Mitigation Plan for the Project described erosion and sediment flow control measures and alignment of crossings perpendicular to the axis of the stream channel to minimize crossing length. It appeared during the site visit that the above stipulations and measures were followed. Additionally, a letter from Belle Fourche in the PSC project files indicated Project construction was complete as of May 22, 2008 (ND PSC 2011, Docket #65), which avoided the fish spawning period. Though the Corps Permit allowed all stream channels to be open cut, according to the as-built drawings there were several crossings which had been horizontally drilled underneath. Examples of these crossings included Lonesome Creek (**Photo 13**), Charbonneau Creek (**Photo 20**), and Spring Creek (**Photo 26**). The vegetation appeared to be in generally good condition along the banks. Only Spring Creek was marked on both sides. Examples of crossings that were open cut, according to the as-builts, included Camp Creek, (**Appendix A, Photo 9**), unnamed drainages (**Photos 4 and 23**), Antelope Creek (**Photo 18**), and another Spring Creek drainage (**Photo 28**). These crossings were not marked, but generally had satisfactory revegetation and soil stabilization on the banks.

- *No Wetlands Identified from NWI.* The Project Application referenced a field survey in August 2007 to identify wetlands other than stream crossings which found none. No depressional wetlands were observed by Wenck along the route during the site visit. There was however an excavated wetland in the ditch of the Burlington Northern Railroad line in the S ½ of the S ½ of Section 6, T150N, R101W, just to the north of County Route 20 (**Appendix B, Observation Point 358**). This wetland was not identified in the original Application material (ND PSC 2011, Late-filed Exhibit 6.4, Docket #23) since it was not crossed by the original proposed route. Nor was it identified in the Request for Route Change letter and justification submitted to the PSC (ND PSC 2011, Docket #43). This waterway was connected to the drainage of Lonesome Creek. There was also a small, unnamed intermittent drainage in the NW ¼ of the NE ¼ of Section 30, T150N, R101W which would probably be considered hydric but was not identified in the 2007 field survey (**Appendix B, Observation Point 365**). It is assumed construction through these potential wetland areas was covered under the Nationwide Corps Permit. Wenck confirmed that there were no surface facilities installed in wetlands along the route and there were no permanently drained or filled wetlands.
- *Woodlands Avoided at Camp Creek and Charbonneau Creek, if possible.* Wenck confirmed that woody vegetation was avoided along Camp and Charbonneau Creeks during pipeline installation (**Appendix A, Photos 9 and 20**). The as-builts indicated Charbonneau Creek had been horizontally bored underneath.
- *No Endangered, Threatened, or Sensitive Plants Identified.* The Project Application referenced a botany field survey in August 2007 done to identify potential habitat for listed plants. There were no known populations of listed plants within the Project area and no populations were found during the 2007 survey. There was one rare plant (though not listed) that has been historically documented near the Project area, the fern smooth cliffbrake (*Pellaea glabella*), which inhabits limestone cliffs and ledges. However, potential habitat for this plant along the route was not observed during the 2007 survey and this was confirmed by Wenck. It seemed unlikely the location of the

historical record was accurate. As stated in the Application, the project right-of-way did contain potential habitat for several listed sensitive plants, however the actual route of the pipeline was immediately parallel to an existing pipeline for the majority of its length through the National Grasslands. This previously disturbed corridor did not provide habitat for the sensitive plants and thus the Project should have had little impact to these species.

- *Avoidance of Prairie Dog Colonies and Dakota Skipper Butterfly Habitat.* The Project Application stated there were no known prairie dog colonies within the Project area (which provide habitat for the endangered black-footed ferret), though there was potential habitat in flat, expansive grassland areas. These assertions were confirmed by Wenck during the site visit. The Application also provided justification for minimal impact to the Dakota skipper butterfly due to the following: the project location being outside the typical range of this species in McKenzie County; the pipeline route crossing areas already disturbed, though likely habitat was nearby; and the timing of construction avoiding the flight period of the species. Wenck confirmed these statements during the site visit. It appeared diverse, high quality prairie required for this species was uncommon along the route; however there were marginally potential areas present in the National Grasslands, which, if they had been impacted, would have impacted the butterfly even if construction timing prevented direct mortality to individual Dakota skippers. It appeared these areas had been avoided.
- *Avoidance of Sharp-tailed and Sage Grouse Leks.* No sage grouse leks are currently present in McKenzie County. The Project Application presented information from the USFS for sharp-tailed grouse lek locations. The pipeline route was not within the 0.25 mile No Surface Occupancy zone surrounding the nearest leks. However the route was within one mile of four leks, so timing restrictions on construction would apply from March 1 – June 15 (**Figure 1**; note the fourth lek listed in the Application was not available on the GIS file used to produce Figure 1, so only three are shown within one mile). Since project construction began November 19, 2007 and ended

May 22, 2008 (ND PSC 2011, Docket #34 and #65), there would have been overlap with the lek timing restriction. However, since construction began at the south end of the pipeline within the National Grasslands, construction activities may have been complete in the areas near the leks before March 1. This should be confirmed with the Belle Fourche and clarified to prevent any future oversights in this regulation.

- *Avoidance of Golden Eagle Nests.* According to the Application, there were four golden eagle nest records at about 0.5 miles from the Project, which is the minimum distance for the USFS No Surface Occupancy restriction (**Figure 1**). The justification for no impact of the Project was that topography prevented a line-of-sight to the nests and that construction would not occur during the February 1 – July 31 nesting period. The Special Use Permit issued by the USFS stipulates that construction within the National Grasslands must be completed by February 2008, or if not, that a raptor nest survey be completed at that time and if nests found, that the project be delayed until July 2008. Since project construction began November 19, 2007 and ended May 22, 2008 (ND PSC 2011, Docket #34 and #65), there would have been overlap with the timing restriction from February to May. There was no documentation of a raptor nest survey along the route. However, since construction began at the south end of the pipeline within the National Grasslands, construction activities may have been complete in the areas near the nests before February 1. This should be confirmed with Belle Fourche and clarified to prevent any future oversights in this regulation. Wenck did not observe any raptors during the site visit and no golden eagle nests were seen in the immediate area of the route within the National Grasslands.
- *Compliance with “Tree and Shrub Mitigation Specifications”.* A tree removal inventory was submitted January 2008. Tree/shrub planting plans were submitted May 2009. A planting report was submitted June 2009 with counts and types of trees planted at three planting locations. An update was submitted September 2010 indicating the Watford City planting and the planting in Section 30 of T150N, R101W had good survival. The report indicated the planting in Section 7, T150N, R101W was unsuccessful so an alternate planting site was proposed to plant 170 blue

spruce in Section 18, T153N, R102W. This plan was approved March 2011 (ND PSC 2011, Docket #79). Wenck contacted the contractor for the tree plantings, Cindy Geiger, to confirm trees had been planted for the Project. She stated she had handled the initial plantings in Section 30, T150N, 101W and Section 7, T150N, R101W and the alternate planting in what was actually Section 18, T153N, 100W (not R102W as stated in the Belle Fourche report) (Cindy Geiger, pers. comm., 2011). The Section 30 planting was the only planting where the landowner requested trees and it consisted of shrubs being planted in an upland drainage (**Appendix A, Photos 34-36**). The Section 18 alternate planting consisted of blue spruce trees being planted on an upland flat near a new residence (**Appendix A, Photos 37-38**). Both of these sites were also visited by Wenck to confirm the plantings. Wenck could not confirm the plantings of 74 ash, elm, and cottonwood trees reportedly completed within Watford City. Discussion with several city employees implied that no trees have been given or donated to the city within the past several years by an oil company (Watford City employees, pers. comm., 2011). Wenck suggests that the PSC require Belle Fourche to look into this matter further to determine if trees were planted within Watford City on their behalf and to obtain records to demonstrate this. Otherwise, Belle Fourche had followed all tree and shrub mitigation specifications in a timely and complete manner. The plantings will still require three years of survival monitoring and associated reports, until 2013 (Section 30 and possibly Watford City plantings) and 2014 (Section 18 planting), for the mitigation to be considered complete.

- *Tree Removal Minimized, Lost Trees Replaced, Woodland Crossing Width Reduced to 50ft.* Natural woodlands within the Project area were concentrated along streams or drainages. Some of these woodlands had been avoided by directionally boring underneath the drainage or by the choice of the location of the crossing point (**Appendix A, Photos 9, 13, 18, and 20**). There was one crossing of a Spring Creek tributary drainage that, according to the as-builts, had been open cut, with trees removed at a total width less than 50ft, as required (**Appendix A, Photo 28**). There were also locations where the route went through mature planted tree rows and trees had been removed, but Wenck verified the width of impact was less than 50ft

(**Appendix A, Photo 19**). Tree replacement for trees removed due to the Project is discussed above.

- *Reclamation/Reseeding According to NRCS or Landowner, if applicable.* It is assumed the measures described in the Environmental Mitigation Plan related to reclamation/reseeding such as erosion control structures and mulching were installed; no remnants of these materials were seen during the site visit. Records indicated reseeding took place in the summer and fall 2008 (ND PSC 2011, Docket #66). The majority of the Project area, about 70%, was within cropland, which does not require reseeding after construction. Areas of natural vegetation which did require reseeding was typically along streams and drainages, in pastures, and in open rangeland of the National Grasslands (**Appendix A, Photos 4-5, 7, 12-13, 23, 27-28, 31-32**). There were also hayfields which had presumably been reseeded to the appropriate type of hay crop (**Appendix A, Photos 11, 19, and 25**). The non-cultivated, reclaimed areas tended to have areas of bare ground and the vegetation was clearly different between what was planted in the right-of-way and adjacent, undisturbed grassland. It appeared non-native species such as smooth brome grass and crested wheatgrass had been included in seed mixes, though there might have also been carry-over from reclamation of adjacent pipeline routes. There were also native species that appeared to have been planted, such as green needlegrass and slender wheatgrass. The success of revegetation may have also been limited by the disturbed soils of the right-of-way, as discussed above (Section 3.2.1). The main area of concern that showed extensive revegetation problems which may need to be addressed would be the portion of the pipeline that paralleled a FS Road and went across some small hills and buttes through the center of Section 35, T148N, R102W (**Appendix A, Photos 31-32; Appendix B; Points 393-395**). There were a couple of areas noted with Canada thistle (*Cirsium arvense*) infestations, considered a noxious weed in North Dakota (**Appendix A, Photo 13; Appendix B, Points 348, 358, 359**); however there were similar abundances outside of the pipeline route so it did not appear to be a problem caused or amplified by the pipeline disturbance.

3.2.3 Cultural Resources

The following aspects pertaining to cultural resources were inspected at the Project site.

- *Cultural Resources Avoided.* Two cultural resource sites were identified during cultural studies for the Project within the pipeline corridor. However they were not eligible for listing and did not require avoidance. Concurrence of this evaluation was obtained from ND SHPO for the original proposed route and subsequent re-routes.

4.0 Issues to Resolve and Recommendations

4.1 WRITTEN VERIFICATION OF PROJECT IMPLEMENTATION

As noted in Section 2.0, several components of the Project were asserted in the plans or proposed during construction, but have not been documented with the PSC. Many of these components could be verified easily with copies of final construction reports or ongoing reports from the local operations office – any type of written documentation showing that the Project was indeed implemented or constructed as planned, or that particular impacts have not occurred. Wenck recommends that the PSC requests from Belle Fourche the list of items which, according to our review of the PSC files, have not been documented in writing. This would include all items listed in Table 1 which have gray boxes in the second column (Section 2.0). The PSC may be able to verify some of the items/issues from other records it has available.

4.2 EROSION WITHIN PIPELINE RIGHT-OF-WAY

Erosion was the most significant problem noted during the site visit (Section 3.2.1). Examples included ruts and depressions on roads; channels, settling, and cracking in agricultural fields and non-cultivated pastures and grasslands; and deep holes and washouts on steep slopes typically near drainage channels. Though it was confirmed that Belle Fourche has routine maintenance in place, many of these erosion and sedimentation problems need to be addressed as soon as possible, with solutions that prevent long-term issues. Wenck recommends the company provide a maintenance/follow-up reclamation plan to be implemented this spring or summer 2011.

4.3 TOPSOIL SEGREGATION AND REVEGETATION IN NON-CROPLAND

Non-cultivated areas that had been reclaimed and reseeded, such as streambanks and open grasslands, tended to have areas of bare soils and vegetation differences on the pipeline route compared to adjacent vegetation (Sections 3.2.1 and 3.2.2). Consideration should be given to

ameliorating topsoils and/or reseeded for any of these areas that were extensive, particularly a portion of the route that paralleled a FS Road through the center of Section 35, T148N, R102W. Wenck also recommends that the policy on topsoil segregation and replacement be clarified between what was stated in the company's Environmental Mitigation Plan for non-agricultural open areas and the PSC requirements. In the region of the Project area, Wenck feels topsoil segregation would be critical to revegetation success because topsoil is so limited and subsoils have properties which could hinder restoration.

4.4 TREE & SHRUB REPLACEMENT

Wenck confirmed that trees and shrubs were replaced at two of the three locations which were described in Belle Fourche's Tree and Shrub Mitigation Plan. However, the planting in Watford City could not be corroborated. Wenck recommends that the PSC require Belle Fourche to obtain records to demonstrate the Watford City tree planting was installed and survival is satisfactory thus far. All plantings still require survival monitoring for three years following planting for fulfillment of the Order.

4.5 SETBACK FOR NEW RESIDENCES

Since construction of the pipeline, an occupied modular home has been moved within the 500ft setback of the pipeline in Section 30, T152N, R101W. Wenck is uncertain of the policy for residences added after construction of a transmission facility, but the PSC should determine if this is a problem and whether a waiver needs to be obtained from the homeowner.

4.6 PIPELINE DEPTH

The depth of the buried pipeline is unknown. Because no waiver is included in the PSC files or discussed in the Order for the Project, Wenck assumes the required depth of 48in, and 96in under stream and creek crossings on National Grasslands, was followed. However, Wenck

recommends the PSC obtain written verification of the as-built depth of the pipeline along the entire route for their records.

4.7 FENCELINE DEBRIS

Though a very minor issue, there was a loose piece of fenceline wire noted within the pipeline right-of-way in the NE ¼ of the SW ¼ of Section 6, T151N, R101W. Wenck suggests the pipeline company clarify if the debris was left by the landowner or from pipeline construction and if so, to take responsibility for removing it.

4.8 TIMING RESTRICTIONS

Records indicated pipeline construction took place from November 19, 2007 to May 22, 2008, which would have overlapped timing restrictions for golden eagle nests (beginning February 1) and sharp-tailed grouse leks (beginning March 1) in the vicinity of the portion of the Project on National Grasslands. However it is possible pipeline construction within the National Grasslands was complete before the start of the timing restrictions. This should be confirmed and clarified with the Belle Fourche to prevent future oversights in this regulation.

4.9 AS-BUILTS

As-built drawings were submitted by Belle Fourche as required by the Order, but Wenck recommends the PSC request a clear, legible copy for their records.

5.0 Conclusion

Overall, the Project appeared to have been constructed as designed with minimal impacts to the surrounding natural or human environment. The Project site was regularly maintained and in satisfactory condition overall. However, Wenck observed several issues that may need to be resolved before the Project is considered complete and in full compliance. This includes, in order of importance, repair of erosion within pipeline right-of-way, review of topsoil segregation procedures and possible follow-up reclamation work and reseeding in extensive bare areas, confirmation of the Watford City tree planting and continued tree/shrub survival monitoring, and provision of written documentation for particular aspects of project implementation. There were also several minor issues which should be addressed, including clarification of the policy on the setback of occupied homes within 500ft of the pipeline added after construction, verification of the as-built depth of the pipeline along the entire route, removal of loose fenceline at one location (if from pipeline construction), clarification of construction timing restrictions on National Grasslands, and submission of a clear, legible copy of the as-built drawings. These issues should be reviewed by the PSC to determine what the company should comply with. It should be noted that the Belle Fourche representative was very easy to work with during the construction inspection process. He was fully transparent and answered any questions we had during the survey.

6.0 References

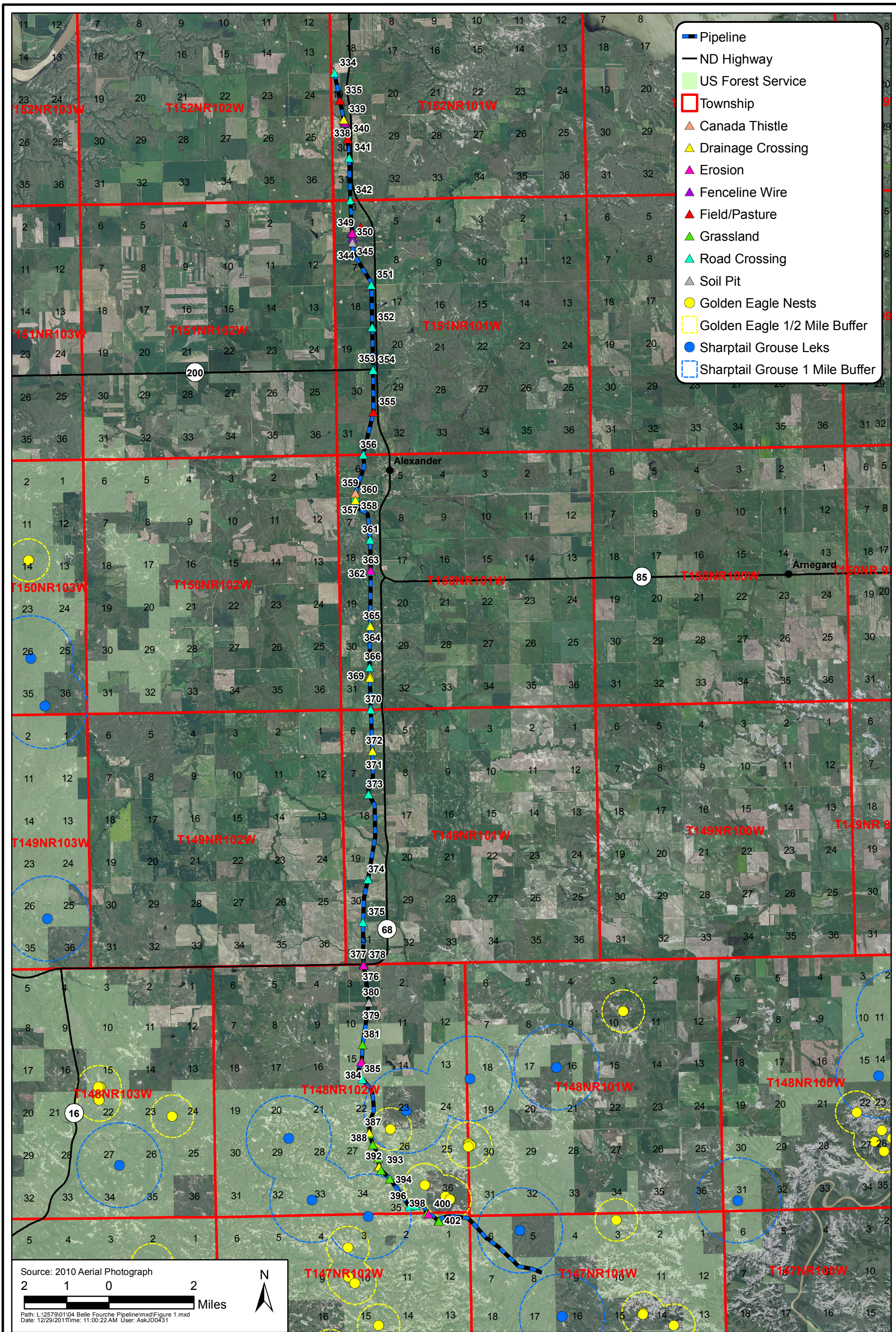
Boltz, Jory. 2011. Belle Fourche Pipeline Company Supervisor, Dickinson, ND office. Personal Communication: discussion during site visit.

Geiger, Cindy. 2011. Private tree/shrub planting contractor. Personal Communication: phone conversation and subsequent email August 16, 2011.

North Dakota Public Service Commission (ND PSC). 2011. Online Case Search. Available from: http://www.psc.nd.gov/database/company_case_list.php. Accessed December 1, 2011.

Watford City Employees. 2011. Watford City, ND employees including Robyn Arndt, Parks and Recreation Supervisor, and another individual that was a member of the Park Board and the City Auditor. Personal Communication: various phone conversations, August 2011.

Figures



North Dakota Public Service Commission

Field Observations Map



Engineers - Scientists
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Figure 1

Appendix A



Photo 1. Direction: North. North end of pipeline route (denoted by yellow markers in ditch) looking toward oil service facility, which the pipeline tied into at the south end of the SW ¼ of Section 18, T152N, R101W, McKenzie County, ND.



Photo 2. Direction: South. North end of pipeline route. The pipeline was bored underneath County Route 16, shown in the foreground, and went southwest, then south, through cropland. The ditches of the road appeared to be undisturbed and had mainly smooth brome grass (*Bromus inermis*) and yellow sweetclover (*Melilotus officinalis*). The cropland was in good condition with no problems resulting from the pipeline installation.



Photo 3. Direction: Northeast. Looking toward yellow pipeline marker at end of field in the SW ¼ of Section 19, T152N, R101W. The pipeline continued to the south of the field into unplowed pasture/rangeland, where it appeared smooth brome (*Bromus inermis*) had been planted in the pipeline right-of-way because it was dense.



Photo 4. Direction: Northwest. Hill within pasture/rangeland on pipeline route in the NE ¼ of the NW ¼ of Section 30, T152N, R101W, leading into an unnamed drainage. There were minor areas of erosion and bare soils within the pipeline right-of-way on the upper slopes. The native vegetation of the surrounding pasture was spreading into the reclaimed route.



Photo 5. Direction: South/Southeast. Pipeline route continued to the south in the E ½ of the NW ¼ of Section 30. The vegetation on the pipeline route was visibly different from the adjacent pasture. Slender wheatgrass (*Agropyron caninum*), green needle grass (*Stipa viridula*), and smooth brome (*Bromus inermis*) were dominant in the pipeline right-of-way.



Photo 6. Direction: Northeast. In a pasture in the NE ¼ of the SW ¼ of Section 6, T151N, R101W on the south side of Camp Creek. There was some loose fencing wire in the pipeline right-of-way (at approximately pipeline distance 1460ft). It was unclear whether this was left by the landowner or from pipeline construction.



Photo 7. Direction: North. Revegetation within pipeline right-of-way on hill leading down toward Camp Creek in the NE ¼ of the SW ¼ of Section 6, T151N, R101W. Dominant plants were green needlegrass (*Stipa viridula*), slender wheatgrass (*Agropyron caninum*), and yellow sweetclover (*Melilotus officinalis*), curlycup gumweed (*Grindelia squarrosa*), with minor amounts of Japanese brome (*Bromus japonicus*).



Photo 8. Direction: North. Eroded trench on north Bank of Camp Creek (NE ¼ of the SW ¼ of Section 6, T151N, R101W, at approximately pipeline distance 1463ft). The erosion was within the pipeline right-of-way and appeared to be due to settling and water erosion around the pipeline. At its deepest, the trench was four to five feet deep and had large rocks in the bottom.



Photo 9. Direction: South. View of eroded trench from north to south looking towards Camp Creek (dark green vegetation visible in distance). As-built drawings indicated it had been open cut. The channel of Camp Creek itself appeared to be in good condition with no erosion problems and complete revegetation. Tree and shrub patches were avoided.



Photo 10. Direction: North. View of cropland in good condition in the SE ¼ of the SE ¼ of Section 19, T151N, R101W. Pipeline markers are in the ditch of Highway 200 and indicate the horizontal drill used to cross the road, which runs east-west between Sections 19 and 20. The ditch vegetation had good cover except for a few insignificant bare spots.

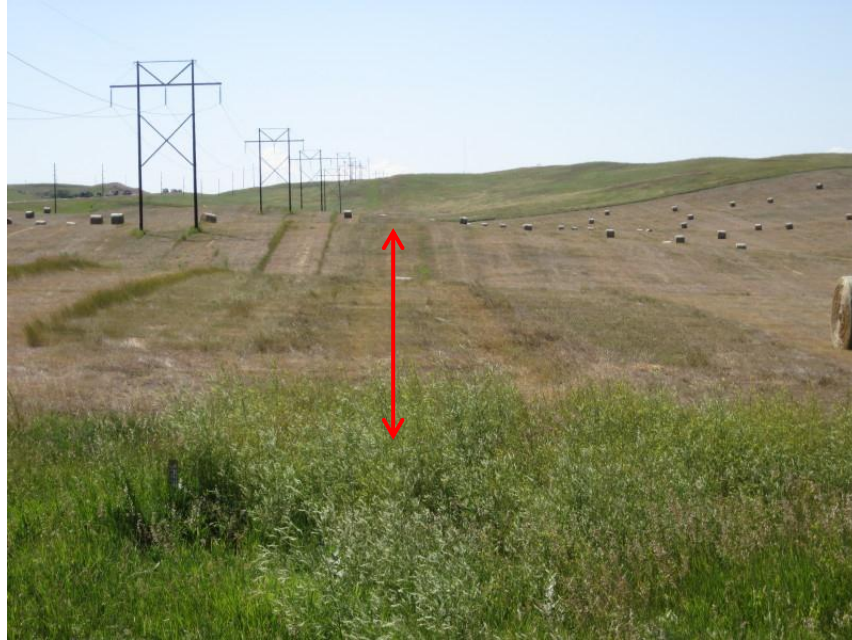


Photo 11. Direction: South. To the south of Highway 200 showing pipeline right-of-way going straight south through a hay field and then into pasture on the E ½ of the E ½ of Section 30, T151N, R101W. The route parallels the above-ground utility line. The hay field and pasture had revegetated well.



Photo 12. Direction: North. Pipeline right-of-way in pasture in the SE ¼ of the SE ¼ of Section 30, T151N, R101W, paralleling the above-ground utility line (on right). The reclaimed route of the pipeline had good vegetation cover, though the species composition was visibly different. It was nearly a pure stand of smooth brome grass (*Bromus inermis*).



Photo 13. Direction: Southeast. Crossing of Lonesome Creek in the NE ¼ of the NE ¼ of Section 7, T150N, R101W (at approximately pipeline distance 1117ft). The creek was directionally bored underneath. There were no markers on either bank to denote the pipeline route. The revegetation on the banks was dense with yellow sweetclover (*Melilotus officinalis*) and crested wheatgrass (*Agropyron cristatum*). There was a patch of Canada thistle (*Cirsium arvense*) on the east bank, though it extended beyond the pipeline route and was likely not a new population caused by pipeline disturbance.



Photo 14. Direction: North. Pipeline right-of-way recently bladed to repair low areas upon landowner request. Photo taken from private east-west gravel road between Sections 7 and 18, T150N, R101W, which had been bored underneath, according to the as-built drawings. The stubble field was in the SE ¼ of Section 7.



Photo 15. Direction: Northeast. Block valves for the pipeline along the gravel road between Sections 7 and 18. There was some settling around the valves and through the middle of the ditch, which was dense with yellow sweetclover (*Melilotus officinalis*).



Photo 16. Direction: Northeast. Cracking in soil on pipeline right-of-way. This was on the edge of a stubble field to the north of County Route 15, which went east-west through the center of the SE ¼ of Section 18, T150N, R101W.



Photo 17. Direction: Northeast. Trenches/settling in pipeline right-of-way in stubble field to the north of County Route 15. There was a shallow coulee/drainageway in this portion of the field where water runs across the right-of-way during precipitation events and probably contributes to the settling in this location.



Photo 18. Direction: South. Pipeline crossing of Antelope Creek in the NE ¼ of Section 31, T150N, R101W. As-builts indicated this crossing was open cut. Revegetation of the creek appeared satisfactory. Native plants had colonized the right-of-way including prairie cordgrass (*Spartina pectinata*), Nuttall's alkali grass (*Puccinellia nuttalliana*), and dock (*Rumex* sp.). There were no trees or shrubs along the creek. The cropland to the south appeared to be in good condition. Note the fenceline in the foreground which was new and had been replaced after pipeline construction. Markers were not present.



Photo 19. Direction: North. From 22nd St NW between Sections 7 and 18, T149N, R101W to the north showing the pipeline route through hay fields. Trees were cut down from the tree rows in the fields at a width less than 50 feet for the pipeline right-of-way. The road had been bored underneath, according to the as-built drawings, and was in good condition, as were the hay fields to the north and the south.



Photo 20. Direction: Northeast. Pipeline right-of-way through fields in the E ½ of Section 19, T149N, R101W. It ran in a northeast-southwest direction. The cropland to the north and south of this point appeared to be in good condition. Charbonneau Creek is visible in the distance as the dense line of trees. This waterway was crossed by directionally boring underneath which avoided disturbance of the creek and trees. Beyond the creek in the distance the pipeline crossed hills of unplowed pasture/rangeland. There appeared to be no erosion problems, but the route was visible from differences in vegetation.



Photo 21. Direction: South. At intersection of pipeline with 19th St NW, a sectionline trail which ran east-west between Sections 30 and 31, T149N, R101W. Markers were present which indicated the pipeline right-of-way. This road had been open cut, according to the as-built drawings. There was an extensive area of erosion about ¼ mile north and ½ mile south of this point in fallow fields. The road had deep ruts and erosion 12-18 inches deep and the fields had ruts 6-12 inches deep.



Photo 22. Direction: North. Another view of erosion in fields to north of 19th St NW. There appeared to be a natural spring or a plugged culvert just to the east of the pipeline intersection along the road. There were very deep ruts in the road in that area. This was outside the pipeline right-of-way but the water accumulation was contributing to the erosion problems.



Photo 23. Direction: North. Pipeline right-of-way through pasture in the E ½ of the SW ¼ of Section 31, T149N, R101W. There was a visible difference in vegetation on the pipeline route (note red arrow). The pipeline crossed an unnamed drainage in the pasture. The marker in the foreground indicated the intersection with State Highway 68, which ran east-west between Section 31 and Section 3, T148N, R102W. The as-builts indicated the highway had been bored underneath.



Photo 24. Direction: South. South ditch of State Highway 68 showing erosion of clay soils within pipeline right-of-way. The highway had apparently been bored underneath, so the erosion may not have been due to the pipeline. High amounts of spring runoff this year may have prompted the particularly deep erosion channels.



Photo 25. Direction: North. Pipeline intersection at sectionline between Sections 3 and 10, T148N, R102W, with markers. There was a field to the north and hayland to the south which both appeared to be revegetated, except that the hayland had noticeably higher proportions of annual weeds within the pipeline route. The two-track road on the section line had a depression where the pipeline crossed (open cut), with a small washout of soils and scoria into the hayland downslope to the south.



Photo 26. Direction: Northwest. Erosion from runoff in ditch of Forest Service Road 835 in the N ½ of Section 15, T148N, R102W, at the point where the pipeline crossed. Markers were in place on both sides of the road. The pipeline also intersected Spring Creek at this point. The as-built drawings were unclear and difficult to distinguish but appeared that Spring Creek and the road had been bored underneath.



Photo 27. Direction: Southwest. Pipeline right-of-way to the south of Spring Creek in the S ½ of Section 15, T148N, R102W upslope toward a gas plant in the SW ¼. The revegetation of the route was good overall, but with a few bare areas.



Photo 28. Direction: North. Pipeline right-of-way across steep banks of a drainage flowing into Spring Creek in the NW ¼ of the NE ¼ of Section 27, T148N, R102W. Vegetation cover was good. It appeared there were several trees removed from the drainage, though at less than 50 feet width. The as-builts indicated the drainage had been open cut.



Photo 29. Direction: Southwest. Close-up of narrow, but deep, channels of erosion on the steep banks of the drainage in Photo 28. The drainage channel itself was in good condition with no erosion or sediment control problems.



Photo 30. Close-up of a hole to a depth of 5 to 6 feet within pipeline right-of-way leading up to the north edge of another tributary drainage of Spring Creek in the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 27, T148N, R102W. The hole was likely caused by piping of water, in which flow is concentrated along the buried pipeline and begins to erode the recently reclaimed loose soils, eventually reaching the surface and forming a hole.



Photo 31. Direction: South/Southwest. Looking perpendicular to pipeline route as it paralleled an unnamed Forest Service Road diagonally through the center of Section 35, T148N, R102W. Re-vegetation of the right-of-way in this area was sparse and inadequate, with a significant amount of bare clay soils.



Photo 32. Direction: Southeast. Hillslope on pipeline route in the extreme northeast corner of Section 2, T147N, R102W. Re-vegetation was sparse, with clumps of grasses and bare soils in between.



Photo 33. Direction: Southeast. Above-ground valve setting along pipeline route in the N ½ of the NW ¼ of Section 1, T147N, R102W.



Photo 34. Direction: Southwest. Overview of drainage where about 95 chokeberry or chokecherry shrubs were planted in the NW ¼ of Section 30, T150N, 101W.



Photo 35. Close-up of shrub seedling planted in the drainage in the NW ¼ of Section 30, T150N, 101W. Photo taken by Cindy Geiger, tree/shrub planting contractor, in early spring 2011, about one year after planting.



Photo 36. Close-up of another shrub seedling planted in the drainage in the NW ¼ of Section 30, T150N, 101W. Photo taken by Cindy Geiger, tree/shrub planting contractor, in early spring 2011, about one year after planting.



Photo 37. Direction: East. Alternate planting of 170 blue spruce trees in the NW ¼ of Section 18, T153N, 100W as a replacement for a failed planting of chokecherry and buffaloberry shrubs in Section 7, T150N, R101W. Photo taken by Cindy Geiger, tree/shrub planting contractor, in early spring 2011, shortly after planting.



Photo 38. Direction: East/Southeast. View of tree planting in the NW ¼ of Section 18, T153N, 100W in late summer 2011.

Appendix B

Appendix B. Field Observation Points (GPS Coordinates)

| Point | Feature | Northing (m)* | Easting (m)* | Observation Notes |
|--------------|-------------------|----------------------|---------------------|--|
| 334 | Road Crossing | 5324474.58 | 151763.48 | Boring under County Rd. 16. Ditch vegetation good with smooth brome, yellow sweetclover. |
| 335 | Field/Pasture | 5323416.62 | 151895.76 | Pipeline ROW between cropland and pasture. Smooth brome in ROW in pasture. |
| 336 | Erosion | 5322573.41 | 152040.12 | Slight depressions in ROW approximately 10-15ft x 1-2ft. |
| 337 | Erosion | 5322611.61 | 152020.75 | Slumping/grooves in ROW where water runs on hill - start point. |
| 338 | Erosion | 5322660.62 | 151996.04 | Slumping/grooves in ROW where water runs on hill - end point. |
| 339 | Drainage Crossing | 5322688.29 | 151981.18 | Drainage/intermittent stream. Open cut. Revegetation good. Native plants colonized. |
| 340 | Field/Pasture | 5321945.08 | 152068.16 | ROW at end of fallow field. |
| 341 | Road Crossing | 5321223.03 | 152069.30 | Bored gravel road (according to as-builts), 37th St NW. Road, ditch vegetation good condition. |
| 342 | Road Crossing | 5319615.45 | 151997.31 | Bored gravel road (according to as-builts), 36th St NW. Road, ditch vegetation good condition. |
| 343 | Field/Pasture | 5318576.65 | 152308.90 | Whiting oil well pad. ROW to west through cropland. |
| 344 | Road Crossing | 5318007.66 | 151952.29 | Bored gravel road (according to as-builts), 35th St NW. Road, ditch vegetation good condition. |
| 345 | Fenceline Wire | 5318164.15 | 151967.43 | Loose piece of fenceline wire possibly not removed after construction. |
| 346 | Erosion | 5318360.63 | 151948.34 | Deep, eroded gully/trench on north bank of Camp Creek - south extent. |
| 347 | Erosion | 5318384.43 | 151937.99 | Deep, eroded gully/trench on north bank of Camp Creek - north extent. |
| 348 | Canada Thistle | 5318359.22 | 151955.06 | Canada thistle patch. |
| 349 | Erosion | 5318368.52 | 151963.35 | Eroded gully on north bank of Camp Creek - possibly natural. Not clearly in ROW. |
| 350 | Soil Pit | 5318013.90 | 151952.37 | Soil pit location. Topsoil 6 in. |
| 351 | Road Crossing | 5316351.14 | 152541.03 | Bored gravel road (according to as-builts), 34th St NW. Road, ditch vegetation good condition. |
| 352 | Road Crossing | 5314745.87 | 152446.29 | Bored gravel road (according to as-builts), 33th St NW. Road, ditch vegetation good condition. Markers present. |
| 353 | Road Crossing | 5313166.62 | 152351.95 | Boring under State Hwy 200, north ditch. Vegetation good, few minor spots of bare soil. |
| 354 | Road Crossing | 5313128.93 | 152349.88 | Boring under State Hwy 200, south ditch. Vegetation good. |
| 355 | Field/Pasture | 5311534.92 | 152241.78 | ROW in pasture. |
| 356 | Road Crossing | 5309951.78 | 151728.62 | Open cut private, unnamed, two-track road. Road reclamation, ditch revegetation good condition. |
| 357 | Road Crossing | 5308365.92 | 151307.42 | Boring under County Rd. 20, gravel. Ditch vegetatation good. |
| 358 | Drainage Crossing | 5308494.86 | 151313.92 | Old railroad line, excavated wetland, Canada thistle. |
| 359 | Canada Thistle | 5308525.05 | 151321.45 | Canada thistle patches. Vegetation dense on route: yellow sweetclover, tall wheatgrass, alfalfa |
| 360 | Drainage Crossing | 5308257.21 | 151307.18 | Lonesome Creek, bored underneath. Revegetation dense on both banks: yellow sweetclover, crested wheatgrass. |
| 361 | Road Crossing | 5306715.84 | 151737.69 | Bored gravel road (according to as-builts), 28th St NW. Road, ditch vegetation good condition. Some erosion in ditch. |
| 362 | Road Crossing | 5305516.65 | 151675.24 | Boring under County Rd. 15, gravel. Ditch vegetatation good. |
| 363 | Erosion | 5305550.68 | 151672.82 | Slumping, cracking on edge of field in ROW. |
| 364 | Road Crossing | 5303507.46 | 151495.76 | Open cut two-track road/sectionline, 26th St NW. Reclamation, ditch revegetation good condition. |
| 365 | Drainage Crossing | 5303447.81 | 151496.52 | Shallow drainage, open cut according to as-builts. Revegetation is good: curly dock, reed canarygrass, giant ragweed. |
| 366 | Road Crossing | 5301901.53 | 151338.57 | Open cut two-track road/sectionline, 25th St NW. Reclamation, revegetation good condition. |
| 367 | Drainage Crossing | 5301579.54 | 151333.72 | Wet depression associated with Antelope Creek. |
| 368 | Drainage Crossing | 5301556.45 | 151338.12 | Saline flat associated with Antelope Creek. Naturally revegetated after disturbance: alkali grass dense. |
| 369 | Drainage Crossing | 5301490.91 | 151327.33 | Antelope Creek, open cut. Native plants have revegetated banks: curly dock, prairie cordgrass, alkali grass |
| 370 | Road Crossing | 5300291.45 | 151263.96 | Bored gravel road (according to as-builts), 24th St NW. Road, ditch vegetation good condition. New scoria. |
| 371 | Road Crossing | 5298688.73 | 151210.93 | Open cut two-track road/sectionline, 23rd St NW. Road reclamation, ditch revegetation good condition. |
| 372 | Drainage Crossing | 5298725.87 | 151212.63 | Shallow upland drainage of dense smooth brome. |
| 373 | Road Crossing | 5297087.18 | 150928.80 | Bored gravel road (according to as-builts), 22nd St NW. Road, ditch vegetation good condition. Markers present. |
| 374 | Road Crossing | 5293877.45 | 150659.91 | Bored gravel road (according to as-builts), 20th St NW. Road, ditch vegetation good condition. |
| 375 | Road Crossing | 5292278.83 | 150344.55 | Open cut two-track road/sectionline, 19th St NW. Road reclamation poor condition, deep ruts, erosion extends into fields. Markers present. |
| 376 | Road Crossing | 5290701.22 | 150240.06 | Boring under State Hwy 68, north ditch. Vegetation fair. |
| 377 | Road Crossing | 5290665.27 | 150245.13 | Boring under State Hwy 68, south ditch. Vegetation poor. |
| 378 | Erosion | 5290643.95 | 150242.55 | Bare soils and cracks in clay soils in south ditch of Hwy 68. |
| 379 | Road Crossing | 5289230.17 | 150336.97 | Open cut two-track road/sectionline, private unnamed. Reclamation, revegetation good. Slight depression on road and minor erosion. |

| Point | Feature | Northing (m)* | Easting (m)* | Observation Notes |
|-------|-------------------|---------------|--------------|--|
| 380 | Soil Pit | 5289209.34 | 150333.10 | Soil pit location. Topsoil 6-8 in. |
| 381 | Grassland | 5287636.77 | 149977.91 | Repaired fenceline on sectionline. Revegetation good on ROW. Natives have colonized. Some annual weeds but not concerning. |
| 382 | Erosion | 5287022.34 | 149886.67 | Wash-out from runoff into ditch of FS Road 835. |
| 383 | Drainage Crossing | 5286997.71 | 149889.90 | Spring Creek, bored underneath. Markers present. |
| 384 | Erosion | 5286979.46 | 149869.13 | Minor erosion in ditch of FS Road 835, west side. |
| 385 | Road Crossing | 5286332.73 | 149856.59 | Bored gravel road, FS Road 835. Ditch vegetation and revegetation of ROW good condition. |
| 386 | Grassland | 5284237.19 | 149959.87 | Pipeline ROW marker, block valve. Revegetation is in good condition: slender wheatgrass, green needlegrass. |
| 387 | Drainage Crossing | 5284293.32 | 149961.71 | Spring Creek tributary, open cut according to as-builts. Erosion on steep banks along channel. Trees removed. |
| 388 | Grassland | 5283829.81 | 150067.37 | Pipeline ROW marker. Rolling grassland. Revegetation good condition: wheatgrass, green needlegrass, dense sweetclover. |
| 389 | Grassland | 5283292.36 | 150230.55 | Pipeline ROW marker. Rolling grassland. Revegetation good condition: wheatgrass, green needlegrass, dense sweetclover. |
| 390 | Erosion | 5283008.68 | 150234.37 | Eroded hole on ROW, 5-6ft deep. |
| 391 | Erosion | 5282997.30 | 150235.28 | Eroded gullies early stages on ROW. |
| 392 | Drainage Crossing | 5282981.02 | 150234.49 | Spring Creek tributary, appeared trenched through, but as-builts indicated it was bored underneath. |
| 393 | Grassland | 5282824.08 | 150306.23 | Pipeline ROW marker. Rolling grassland. Revegetation fair to good condition. |
| 394 | Grassland | 5282488.81 | 150604.44 | Pipeline ROW marker. Badlands/rolling grassland. Revegetation fair to poor condition. |
| 395 | Grassland | 5281832.47 | 150988.90 | Pipeline ROW marker. Badlands/rolling grassland. Revegetation fair to poor condition. |
| 396 | Road Crossing | 5281387.30 | 151270.34 | Bored gravel road (according to as-builts), FS Road 835. Road good condition. Ditch vegetation fair to poor condition. |
| 397 | Road Crossing | 5281404.94 | 151493.93 | Bored gravel road (according to as-builts), oil lease access road. Road good condition. Ditch vegetation fair to poor condition. |
| 398 | Grassland | 5281058.03 | 151902.12 | Pipeline ROW marker. Badlands/rolling grassland. Revegetation fair to poor condition. |
| 400 | Erosion | 5281030.26 | 151970.76 | Eroded deep hole on ROW. |
| 401 | Grassland | 5280752.91 | 152330.68 | Pipeline ROW marker. Rolling grassland. Revegetation fair condition. |
| 402 | Grassland | 5280738.81 | 152335.82 | Above-ground valve setting on ROW. |

*Northing/Easting are in Universal Transverse Mercator Coordinate System.