

Brian R. Bjella
400 East Broadway, Suite 600
P.O. Box 2798
Bismarck, ND 58502-2798
701.223.6585
bbjella@crowleyfleck.com

June 14, 2012

RECEIVED

JUN 15 2012

PUBLIC SERVICE COMMISSION

Mr. Darrell Nitschke
Executive Director
North Dakota Public
Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

Dear Mr. Nitschke:

RE: Enbridge Pipelines (North Dakota) LLC
Grenora Pump Station Upgrades
Docket No. PU-11-605
Our File No. 31-411-006

Enclosed herewith for filing are the original and ten copies of the Tree and Shrub Inventory Report for the Grenora Station Upgrade Project.

Please feel free to call should you have any questions.

Very truly yours,


Brian R. Bjella

bw
Enc.

TREE AND SHRUB INVENTORY REPORT

Grenora Station Upgrade Project
Project #3881

Prepared for:

Merjent
Mr. Paul Hartzheim
TractorWorks Building
800 Washington Avenue N., Suite 315
Minneapolis, MN 55401

May 17, 2012



2718 Gateway Avenue, Suite 101
Bismarck, ND 58503
Tel 701-255-1475
Fax 701-255-1477
www.carlsonmccain.com

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

TABLE OF CONTENTS

1.0 SCOPE OF WORK 1
2.0 PROCEDURES 2
3.0 RESULTS 3
4.0 RECOMMENDATIONS 4
5.0 REFERENCES 5

Appendix A Tree and Shrub Mitigation Specifications
Appendix B Tree and Shrub Inventory Plan
Appendix C Tree and Shrub Count Form
Appendix D Figure

1.0 SCOPE OF WORK

Carlson McCain, Inc. (Carlson McCain) inventoried trees and shrubs within the boundaries of the Grenora Station Upgrade Project (Project) for Enbridge Pipelines (North Dakota) LLC (Enbridge). The Project is located in Williams County approximately one mile south of Grenora, North Dakota. Grenora Station is approximately 152 acres in size and encompasses the northeast quarter of Section 14, T159N, R103W.

Trees and shrubs were inventoried in accordance with the North Dakota Public Service Commission (Commission) Tree and Shrub Mitigation Specifications (Specifications) for the Grenora Station Upgrade Project (Appendix A). Chad Tucker, Carlson McCain Biologist, conducted the tree and shrub inventory on March 23, 2012.

2.0 PROCEDURES

Carlson McCain utilized the Commission approved "Tree and Shrub Inventory Plan Enbridge Pipelines (North Dakota) LLC, Grenora Station Upgrade Project" (Inventory Plan) while conducting the tree and shrub inventory. Standard data forms were completed for each inventoried tree/shrub site. Each site was assigned a unique identification that consisted of the site's section, township, range, and identification number e.g. (14159103-01). Data collected at each site included, observer, date, site id, woodland type, tree/shrub species, tally, and total number. An example can be found in the Inventory Plan (Appendix B).

Trees and shrubs located in windbreaks, shelterbelts, other planted areas, and natural growth areas in the Project boundary were counted by direct stem count. Planted and natural growing trees that were ≥ 1 inch diameter breast height (DBH) were inventoried for mitigation replacement.

Colony forming shrubs, located in native growth areas were either counted by direct stem count or were delineated with a GPS unit or on aerial photography (depending on colony size and density) and sampled with the Commission approved Shrub Sampling Method. The Shrub Sampling Method is described in detail in the Inventory Plan (Appendix B).

3.0 RESULTS

The Project area primarily consists of agricultural cropland with limited shrub habitat in the west-central portion of the project, and one patch of hawthorn (*Crataegus rotundifolia*) was inventoried and was identified as site 14159103-01 (Figure 1). The inventoried site consisted of 12 hawthorn shrubs growing in a single patch. A Tree and Shrub Count Form is included in Appendix C.

4.0 RECOMMENDATIONS

Carlson McCain makes the following recommendations regarding mitigation:

- **Colony-forming Species.** Colony-forming and/or suckering species as described in Section 3 should be cut flush with the ground level where necessary to accommodate construction. These areas should then be allowed to regenerate naturally. Where complete removal is necessary, replacement should be made on a 1:4 basis with stem cuttings. A planting ratio of 1:2 is accurate in areas where moisture is not a limiting growth factor.

Enbridge will develop a tree/shrub mitigation plan for Commission's approval.

5.0 REFERENCES

Enbridge Pipelines (North Dakota) LLC. Tree and Shrub Inventory Plan. Enbridge Pipelines (North Dakota) LLC, Grenora Station Upgrade Project. Case No. PU-11-605. May 2012.

North Dakota Tree Handbook. North Dakota Tree Information Center. North Dakota State University. ND Forest Service. <http://www.ag.ndsu.edu/trees/handbook/ndhand-1.htm>
Accessed March 2012.

North Dakota Public Service Commission. North Dakota Public Service Commission Certification Relating to Order Provisions Transmission Facility Siting. Tree and Shrub Mitigation Specifications. 3p.

APPENDIX A

Tree and Shrub Mitigation Specifications

Case No. PU-11-605

Tree and Shrub Mitigation Specifications

Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g.*, *Caragana arborescens*, *Elaeagnus angustifolia*, *Rhamnus cathartica*, *Tamarix chinensis*, *T. parviflora*, *T. ramosissima*, *Ulmus pumila*), shall be inventoried before cutting. The inventory shall record the location, number, and species of trees and shrubs.
2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, shall be inventoried for replacement.
3. In native growth areas, trees anticipated to be cleared that are 1-inch diameter at breast height ("dbh") or greater shall be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way shall be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs shall be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil shall be preserved and replaced after construction. Shrubs shall be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared shall be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction shall define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots shall be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

Clearing for Construction

7. Trees and shrubs shall be selectively cleared, leaving mature trees and shrubs intact where practical.
8. The width of clear cuts through windbreaks, shelterbelts and all other wooded areas shall be limited to 50 feet or less unless otherwise approved by the NDPSC.
9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced shall be noted on the inventory.

Replacement

10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Two 2-year-old saplings shall be planted for every one tree removed. Two shrubs (stem cuttings) shall be planted for every one shrub removed.
12. Except in the case of invasive or noxious species, trees and shrubs shall be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service. Invasive or noxious species shall be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.
13. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowner's property or waiving that requirement in writing and allowing those replacement trees/shrubs to be planted at alternative locations.
14. At the conclusion of the project, documentation identifying the actual number, variety, type, location, and date of the replacement plantings shall be filed with the NDPSC.
15. Tree/shrub replacements shall be inspected once a year for three years, on about the anniversary of the plantings, and, on or shortly before October 1 of each year, a report shall be submitted to the NDPSC documenting the condition of replacement planting and any woodlands work completed. If after three years from the anniversary of the plantings the survival rate is less than 75%, the NDPSC may order additional planting(s).

APPENDIX B

Tree and Shrub Inventory Plan

Tree and Shrub Inventory Plan

Enbridge Pipelines (North Dakota) LLC
Grenora Station Upgrade Project

Case No. PU-11-605

Prepared for:

Enbridge Pipelines (North Dakota) LLC

May 2012

Introduction

Enbridge Pipelines (North Dakota) LLC proposes to further develop and upgrade Grenora Station located in Williams County, North Dakota. The case number for the Grenora Station Upgrade Project is PU-11-605. Enbridge Pipelines (North Dakota) LLC will comply with the tree and shrub mitigation specifications as outlined in the North Dakota Public Service Commission (Commission) Certification Relating to Order Provisions Transmission Facility Siting. Enbridge Pipelines (North Dakota) LLC proposes to contract Carlson McCain, Inc. for the tree and shrub inventory. The tree and shrub mitigation specifications are found in Appendix A of this Tree and Shrub Inventory Plan. Specifically, this Plan outlines the process for completing the tree and shrub inventory.

Inventory Methods

Enbridge Pipelines (North Dakota) LLC will inventory trees and shrubs, including those considered invasive species, within the boundaries of the Grenora Station Upgrade Project. Inventories will be documented on standard forms and will include the inventory location, species present, and number of trees and shrubs in the location. An example form is found in Appendix B.

Windbreaks, Shelterbelts, and Other Planted Areas

In windbreaks, shelterbelts, and other planted areas, trees and shrubs anticipated to be cleared regardless of size will be counted by direct stem count. Trees that are one-inch or greater diameter at breast height (DBH) will be inventoried for replacement.

In windbreaks, shelterbelts, and other planted areas, shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are cut flush with the ground surface and not cleared, so as to leave the naturally occurring seed bank and root stock intact will not be direct stem counted. Instead, the area will be delineated on an aerial photo and indicated on construction drawings to not be cleared or have the ground disturbed. If ground disturbance occurs, Enbridge Pipelines (North Dakota) LLC will conduct a direct stem count of the disturbance area or estimate the number of stems cleared using a Commission approved sampling estimate method (see Shrub Sampling Method, Appendix C).

Native Growth Areas

In native growth areas, trees that are one-inch or greater diameter at breast height (DBH) will be inventoried for replacement.

In high-density woodland areas, a Commission approved sampling method may be used in place of individual counting (see Tree Sampling Method, Appendix D).

In native growth areas, shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are cut flush with the ground surface and not cleared, so as to leave the naturally occurring seed bank and root stock intact will not be direct stem counted. Instead, the area will be delineated on an aerial photo and indicated on construction drawings to not be cleared or have the ground disturbed. If ground disturbance occurs, Enbridge Pipelines (North Dakota) LLC will conduct a direct stem count of the disturbance area or estimate the number of stems cleared using a Commission approved sampling estimate method (see Shrub Sampling Method, Appendix C).

Tree Sampling Method

Per the Commission's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas, Enbridge Pipelines (North Dakota) LLC proposes the following sampling method for the tree inventory. The dimensions of the entire woodland stand within the ROW will be delineated to determine the area of the woodland. Tree and shrub counts will be made in representative sample site areas within the woodland. Transects will be developed and the circular sample sites placed along the transect. The number of sample sites within a woodland stand will be dependent on woodland size and uniformity. A smaller, more uniform woodland stand would require fewer sample sites than a larger, less uniform woodland stand.

The sample sites will be 0.10 acre (37.42-foot radius circles). A rope 37.42 feet in length will be attached to a central stake and rotated in a circle (Appendix D). Trees and shrubs within the circle will be counted. Tree and shrub density for the entire woodland area within the Project boundary will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

Shrub Sampling Method

Per the Commission's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas, Enbridge Pipelines (North Dakota) LLC proposes the following sampling method for the shrub inventory. The dimensions of the entire woodland stand within the Project boundary will be delineated to determine the area of the woodland. Shrub counts will be made in representative sample site areas within the woodland. Transects will be developed and the circular sample sites placed along the transect. The number of sample sites within a woodland stand will be dependent on woodland size and uniformity. A smaller, more uniform woodland stand would require fewer sample sites than a larger, less uniform woodland stand.

The sample sites will be 0.01 acre (3.72-foot radius circles). A rope 3.72 feet in length will be attached to a central stake and rotated in a circle (Appendix C). Shrubs within the circle will be counted. Tree and shrub density for the entire woodland area within the Project boundary will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

Appendix A

Case No. PU-11-605

Tree and Shrub Mitigation Specifications

Inventory

1. Trees and shrubs anticipated to be cleared, including those that are considered invasive species or noxious weeds (*e.g.*, *Caragana arborescens*, *Elaeagnus angustifolia*, *Rhamnus cathartica*, *Tamarix chinensis*, *T. parviflora*, *T. ramosissima*, *Ulmus pumila*), shall be inventoried before cutting. The inventory shall record the location, number, and species of trees and shrubs.
2. In windbreaks, shelterbelts and other planted areas, trees or shrubs anticipated to be cleared, regardless of size, shall be inventoried for replacement.
3. In native growth areas, trees anticipated to be cleared that are 1-inch diameter at breast height ("dbh") or greater shall be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way shall be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs shall be cut flush with the surface of the ground, taking care to leave the naturally occurring seed bank and root stock intact. If soil disturbance is necessary, the native topsoil shall be preserved and replaced after construction. Shrubs shall be allowed to regenerate naturally where native topsoil is preserved and replaced. Where native topsoil is not preserved and replaced, shrubs anticipated to be cleared shall be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by sampling method that will properly represent the woody vegetation population. A sampling plan developed by the company, filed with the North Dakota Public Service Commission (Commission) and approved prior to the start of construction shall define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots shall be extrapolated to the total acreage of the wooded area to be cleared to determine the species and quantity of trees and shrubs to be replaced.

Clearing for Construction

7. Trees and shrubs shall be selectively cleared, leaving mature trees and shrubs intact where practical.
8. The width of clear cuts through windbreaks, shelterbelts and all other wooded areas shall be limited to 50 feet or less unless otherwise approved by the NDPSC.
9. If the area of trees or shrubs actually cleared differs from the area inventoried, the difference in number of trees and shrubs to be replaced shall be noted on the inventory.

Replacement

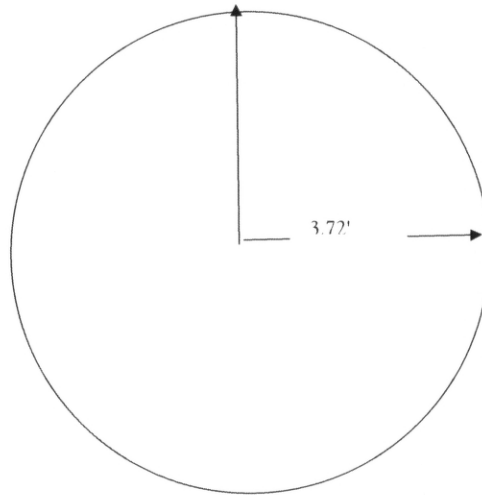
10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Two 2-year-old saplings shall be planted for every one tree removed. Two shrubs (stem cuttings) shall be planted for every one shrub removed.
12. Except in the case of invasive or noxious species, trees and shrubs shall be replaced by the same species or similar species, suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service. Invasive or noxious species shall be replaced by similar non-invasive or non-noxious species suitable for North Dakota growing conditions as recommended by the North Dakota Forest Service.
13. Landowners shall be given the option of having replacement trees/shrubs planted off the right-of-way on the landowner's property or waiving that requirement in writing and allowing those replacement trees/shrubs to be planted at alternative locations.
14. At the conclusion of the project, documentation identifying the actual number, variety, type, location, and date of the replacement plantings shall be filed with the NDPSC.
15. Tree/shrub replacements shall be inspected once a year for three years, on about the anniversary of the plantings, and, on or shortly before October 1 of each year, a report shall be submitted to the NDPSC documenting the condition of replacement planting and any woodlands work completed. If after three years from the anniversary of the plantings the survival rate is less than 75%, the NDPSC may order additional planting(s).

Appendix C

Shrub Sampling Method

Sample Plot

- Circular sample plots with a radius of 3.72 feet, or area equivalent to 0.01 acres created with a central stake and rope.
- The rope, 3.72 feet in length, anchored to the central stake and rotated in a circle



Shrub Counts

- Direct stem counts from each plot
- Talled on work sheet by species

Woodland size

- GPS points taken in the field around boundary
- GIS used to calculate acreage

Calculations

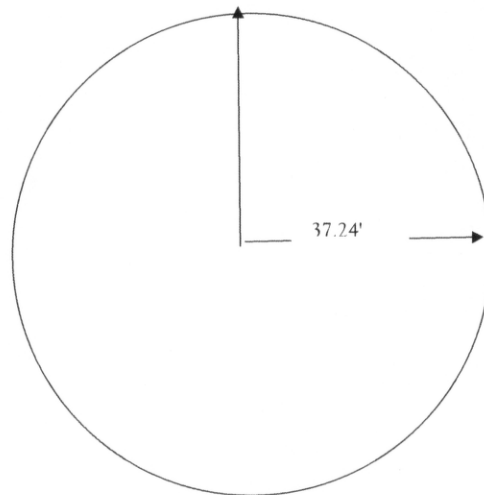
- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.01 acre
- Converted to a per acre basis (average times 100)
- Total number per woodland determined by multiplying average number per acre with woodland size

Appendix D

Tree Sampling Method

Sample Plot

- Circular sample plots with a radius of 37.24 feet, or area equivalent to 0.10 acres created with a central stake and rope.
- The rope, 37.24 feet in length, anchored to the central stake and rotated in a circle



Tree Counts

- Direct stem counts from each sample site
- Talled on work sheet by species

Woodland size

- GPS points taken in the field around boundary
- GIS used to calculate acreage

Calculations

- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.10 acre
- Converted to a per acre basis (average times 10)
- Total number per woodland determined by multiplying average number per acre with woodland size

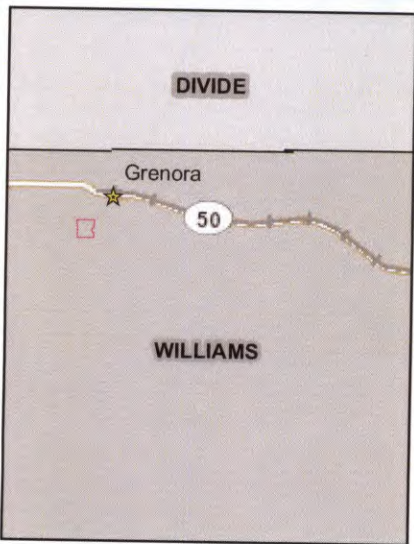
APPENDIX C

Tree and Shrub Count Form

APPENDIX D

Figure

E:\Projects\ENB\3881-Grenora Station Tree & Shrub Inventory\Figures\Grenora Station TreeShrub.mxd
June 2012



Legend

- Enbridge Grenora Station Property
- Hawthorn Patch

1:6,000
1 inch = 500 feet
0 125 250 500 Feet
Basemap: NAIP Orthophoto 2010
Williams County, North Dakota



**Carlson
McCain**
ENVIRONMENTAL • ENGINEERING • SURVEYING
2718 Gateway Avenue, #101, Bismarck, North Dakota 58503
www.carlsonmccain.com

Figure 1
Tree and Shrub Location
Grenora Station Upgrade Project
Enbridge Pipelines (North Dakota)
LLC