



Enbridge Pipelines (North Dakota) LLC

Berthold Station Expansion Project

TREE & SHRUB RESTORATION PLAN

North Dakota Public Service Commission

Case No. PU-11-232

Prepared by:



February 2013

Enbridge Pipelines (North Dakota) LLC

Berthold Station Expansion Project

Tree & Shrub Restoration Plan

INTRODUCTION

On December 21, 2011 Enbridge Pipelines (North Dakota) LLC (Enbridge) filed an Application for Certificate of Corridor Compatibility and a Route Permit with the North Dakota Public Service Commission (Commission) to authorization and upgrade and expansion of its existing Berthold Station and Terminal Facility. The Berthold Station Expansion Project (Project) involves the construction new station facilities, pumping units, tankage and associated piping, and connectivity to a new rail transfer facility. The project is located approximately one mile west of the city of Berthold, Ward County, North Dakota. On May 30, 2012, the Commission issued its Findings of Facts, Conclusion of Law and Order (Order) regarding the case (Case No. PU-11-232). The portion of the project subject to the Commission's Order includes the "Berthold West" parcel (92 acres) and a 400 foot corridor associated centered on the pipeline route from the Berthold West parcel to the new rail transfer facility.

The majority of construction activities on the pipeline and facilities were completed in 2012. Restoration activities will continue in 2013 until final stabilization is achieved.

In accordance with the Tree and Shrub Mitigation Specifications identified in the Commission's Order (see Exhibit A), Enbridge is required to inventory and replace trees and shrubs that were removed during the Project. Cleared trees and shrubs are to be replaced on a two to one basis using the same or similar species. Invasive species will be replaced by a suitable native variety. Following replanting, inspection of the replaced trees and shrubs will be conducted annually for three years to document the condition and survival rate. Enbridge will submit annual reports to the Commission following these inspections. Enbridge understands that if the survival rate is less than 75% after three years from the planting, the Commission may order additional plantings.

The entire project area is owned in fee by Enbridge, who has elected for the required tree mitigation to occur at an off-site location. Enbridge is hereby submitting the results of its preconstruction tree and shrub inventory, planting procedures, and a timeline for replanting. Enbridge requests that the Commission review this plan for adequacy and approval.

TREE AND SHRUB INVENTORY

A preconstruction inventory of the Project area was conducted by Carlson McCain, Inc. (Carlson McCain) in March 2012, and is included as Exhibit B. Inventory was taken of planted and naturally growing trees greater than 1 inch in diameter at breast height (DBH), as well as trees and shrubs, regardless of size, located in windbreaks, shelterbelts, other planted areas, and natural growth areas within the construction right-of-way. Colony-forming shrubs located in native growth areas were sampled using the Commission-approved Shrub Sampling Method. Eight tree and shrub species were identified during the survey. Actual trees and shrubs removed during construction were recorded for mitigation purposes.

RESULTS OF LANDOWNER DISCUSSIONS

The Commission's Order states that trees and shrubs are to be replaced at a 2:1 ratio. Enbridge owns the entire project area in fee, and has elected to perform the required tree mitigation at an off-site, alternate location (Contact Record/Waiver included as Exhibit C).

REPLANTING PROCEDURES TO BE IMPLEMENTED

A total of 13 trees requiring mitigation were removed during construction of the Project. Per the Commission’s Order and Tree Mitigation Specifications (Exhibit A), Enbridge is responsible for planting 26 trees. Table 1 below provides a summary of the mitigation requirements; a more detailed account of the location, type, and quantity of trees and shrubs is provided in Table 3 (Exhibit D).

Project/Segment	Trees to Be Planted on Landowner’s Property	Shrubs to be Planted on Landowner’s Property	Trees to be Planted on Alt Location	Shrubs to be Planted on Alt Location	Total Trees	Total Shrubs
Berthold Station Expansion Project	0	0	26		26	0

Enbridge has been in recent contact with the North Dakota Forest Service (NDFS), who has indicated an interest in partnering with Enbridge on the tree mitigation effort for this and other active Enbridge projects requiring mitigation. In a January 15, 2013 conference call, NDFS State Forester Larry Kotchman provided details regarding the state’s “Trees for North Dakota” program¹, and stated that NDFS has successfully partnered with other utility companies in North Dakota on similar projects requiring tree mitigation.

In addition to the Berthold Station Expansion Project, Enbridge has several other ongoing projects in the state which require tree/shrub mitigation per Orders from the Commission. As a result of the Enbridge Project Case No. PU-10-612, PU-10-613, PU-11-232, and PU-11-606, the NDFS is proposing to plant 1,353 trees and shrubs to satisfy the mitigation requirements for these projects (See Table 2).

¹ North Dakota Code 4-21.2
Berthold Station Expansion Project
Tree & Shrub Restoration Plan

Table 2 Bakken Program Mitigation Overview			
PSC Order	Project/Segment	Total Trees	Total Shrubs
Case No. PU-10-612	Bakken Pipeline Project US	24	72
Case No. PU-10-613	Beaver Lodge Loop Project (BLLP) East	66	10
	BLLP West	774	372
	BLLP - Stanley Station	24	10
Case No. PU-11-232	Berthold Station Expansion Project	26	0
Case No. PU-11-606	Little Muddy Station Connection Project	0	12
Total Mitigation Requirement		914	476
<i>Total to be Mitigated by BLLP Landowner Directly</i>		160	
<i>Total to be Mitigated by the NDFS</i>		754	476
Combined Total to be Mitigated by the NDFS		1,230	
Additional NDFS-Recommended Planting to Offset mortality		123	
Total to be Planted by NDFS		1,353	

Enbridge is planning to work in partnership with NDFS to complete the tree and shrub replantings and monitoring for the active projects listed in Table 2. The NDFS will coordinate with local Soil Conservation Districts (SCDs) to plant/replace trees and shrubs on impacted landowner's property, where requested. Trees and shrubs targeted for planting at alternative locations will also be administered through NDFS. A copy of the cover letter that summarizes the partnership is included as Exhibit E.

Highlights of the partnership include:

- The *Trees for North Dakota Trust Fund*² will be used as a vehicle to orchestrate tree and shrub replantings on private property owners, as well as to make tree planting grants available to public and private landowners. Legislative oversight provides security and assurances that the funds are used for intended tree planting purposes. The program will include funds for site preparation, tree stock, tree planting services, and weed control. Funding for the program will be provided by Enbridge, based on a cost estimate to be provided by the NDFS.
- NDFS staff and/or local SCDs will conduct annual monitoring of the replanted trees/shrubs, and will prepare an annual report detailing the replanting effort and survival rates. Using this data, Enbridge will submit annual reports to the Commission per Tree and Shrub Mitigation Specification #15.

TIMELINE FOR REPLANTINGS

Mechanical planting will generally be utilized where a large number of plantings are required and hand planting will be employed where there are fewer plantings. Per discussions with NDFS staff, plantings generally occur between late April and June 1. It is anticipated that replanting areas may

² established by North Dakota Code 4-21.2-02

require site preparation prior to the plantings, as such, some sites may not be suitable for planting until Spring 2014. .

REPLACEMENT MONITORING

On Enbridge's behalf, NDFS and/or local SCDs will inspect tree and shrub replacements once a year for three years, on the anniversary of the plantings, and complete a report documenting the status and condition of plantings on or shortly before October 1 of each year. This report will be submitted to the Commission. Survival success rates will be determined by monitoring replacement plantings only and on a species-by-species basis. Enbridge understands the Commission may order additional plantings if survival rates are less than 75%. Based on discussions with NDFS, more trees/shrubs than required are typically planted to account for some anticipated mortality.

EXHIBIT A

**North Dakota Public Service Commission's
Tree and Shrub Mitigation Specifications**

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

**Enbridge Pipelines (North Dakota) LLC
Berthold Station Expansion Project – Ward County
Siting Application**

Case No. PU-11-232

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*), must be inventoried before cutting. The inventory must 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, must 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 must be inventoried for replacement.
4. In native growth areas, shrubs anticipated to be cleared in the permanent right-of-way must be inventoried for replacement.
5. In native growth areas outside the permanent right-of-way, shrubs must 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 must be preserved and replaced after construction. Shrubs must 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 must be inventoried for replacement.
6. In native growth areas, trees and shrubs may be inventoried by actual count or by a 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 must define the sampling method to be used for trees, for tall shrubs and for low shrubs. The data from the sample plots must 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 must be selectively cleared, leaving mature trees and shrubs intact where practical.

8. The maximum width of clear cuts through windbreaks, shelterbelts and all other wooded areas is 50 feet, unless otherwise approved by the Commission.
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 must be noted on the inventory.

Replacement

10. Prior to tree and shrub replacement, documentation identifying the number and variety of trees and shrubs removed, as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings, must be filed with the Commission for approval.
11. Two 2-year-old saplings must be planted for every one tree removed. Two shrubs (stem cuttings) must be planted for every one shrub removed.
12. Except in the case of invasive or noxious species, trees and shrubs must 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 must 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. Tree and shrub replacement must not be conducted within a 20 to 30 foot wide path over the pipeline to facilitate visual inspections of the right-of-way in accordance with U.S. Department of Transportation safety regulations.
14. Landowners must be given the option of having replacement trees and shrubs planted on the landowner's property, either on or off the right-of-way. The landowner must also be given the opportunity to waive those options in writing in order to have replacement trees and shrubs planted off the landowner's property.
15. At the conclusion of the project, documentation identifying the actual number, variety, type, location and date of the replacement plantings must be filed with the Commission.
16. Tree and shrub replacements must be inspected annually, in September, for three years. The first annual inspection must be at least one year from the anniversary date of the original plantings. A report of each annual inspection must be submitted to the Commission by October 1 of each year, documenting the condition of plantings and any woodlands work completed as of September of each year. If after the third annual report the survival rate is less than 75%, the Commission may order additional planting(s).

EXHIBIT B

Tree and Shrub Inventory Report (Carlson McCain)

TREE AND SHRUB INVENTORY REPORT

Berthold Station Expansion Project

Project #3866

Prepared for:

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

May 29, 2012



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

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1.0 SCOPE OF WORK

Carlson McCain, Inc. (Carlson McCain) inventoried trees and shrubs within the Berthold Station Expansion Project (Project) for Enbridge Pipelines (North Dakota) LLC (Enbridge). The Project Area is located near Berthold, North Dakota. The Project Area is approximately 445 acres in size and consists of portions of Sections 20 and 21, T156N, R86W, in Ward County, North Dakota.

Trees and shrubs were inventoried in accordance with the North Dakota Public Service Commission (Commission) Tree and Shrub Mitigation Specifications (Specifications) for the Berthold Station Expansion Project. The inventory was conducted within the property boundary of the Project Area. Carlson McCain biologists Miranda Meehan and Chad Tucker conducted the tree and shrub inventory March 23, 2012.

2.0 PROCEDURES

Carlson McCain utilized the Commission approved “Tree and Shrub Inventory Plan Enbridge Pipelines (North Dakota) LLC, Berthold Station Expansion 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. (20156086-01). 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 natural growth areas in the Project were counted by direct stem count. Natural growing trees that were ≥ 1 inch diameter breast height (DBH) and all shrubs were inventoried for mitigation replacement.

3.0 RESULTS

Natural growth trees and shrubs were inventoried at thirteen individual sites within the Project. Eight tree and shrub species were identified within the Project (Tables 1 and 2). Naturally growing tree and shrub areas were found near wetland areas.

Cottonwood was the primary naturally growing tree species found within the Project Area. Inventoried shrubs within the Project Area included chokecherry, northern hawthorn, and sandbar willow. Invasive species, Siberian elm and Russian olive are present in limited numbers within the Project Area. Tree and Shrub Count Forms are included in Appendix C.

Table 1. Summary of Tree and Shrub Inventory

Species	Common Name	Growth Form	Reproduction	Invasive or Nonnative	Natural Growth	Overall Total
					≥1"	
<i>Crateagus rotundifolia</i>	Northern Hawthorn	tree/shrub	suckering	No	5	5
<i>Elaeagnus angustifolia</i>	Russian olive	tree	seed	Yes	1	1
<i>Populus deltoides</i>	Cottonwood	tree	seed/suckering	No	21	21
<i>Populus tremuloides</i>	Aspen	tree	seed/suckering	No	2	2
<i>Prunus virginiana</i>	Chokecherry	shrub	seed/suckering	No	16	16
<i>Salix amygdaloides</i>	Willow (Peachleaf)	tree	rhizomatous, colony forming	No	6	6
<i>Salix exigua</i>	Willow (Sandbar)	shrub	rhizomatous, colony forming	No	36	36
<i>Ulmus pumila</i>	Elm (Siberian)	tree	seed	Yes	1	1

Table 2. Summary of Tree and Shrub Inventory Sites

Inventory Site	Species	Common Name	Natural Growth	Overall Total
			≥1"	
20156086-01	<i>Populus tremuloides</i>	Aspen	2	2
20156086-02	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-03	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-04	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-05	<i>Populus deltoides</i>	Cottonwood	13	13
20156086-06	<i>Salix exigua</i>	Willow (Sandbar)	9	9
20156086-07	<i>Prunus virginiana</i>	Chokecherry	10	10

Tree and Shrub Inventory Report / Berthold Station Expansion Project

Inventory Site	Species	Common Name	Natural Growth	Overall Total
			≥1"	
20156086-08	<i>Salix amygdaloides</i>	Willow (Peachleaf)	5	5
	<i>Populus deltoides</i>	Cottonwood	1	1
20156086-09	<i>Salix amygdaloides</i>	Willow (Peachleaf)	1	1
20156086-10	<i>Crateagus rotundifolia</i>	Northern Hawthorn	5	5
21156086-01	<i>Populus deltoides</i>	Cottonwood	3	3
21156086-02	<i>Prunus virginiana</i>	Chokecherry	6	6
	<i>Populus deltoides</i>	Cottonwood	1	1
21156086-03	<i>Salix exigua</i>	Willow (Sandbar)	25	25
	<i>Ulmus pumila</i>	Elm (Siberian)	1	1
	<i>Elaeagnus angustifolia</i>	Russian olive	6	6

4.0 RECOMMENDATIONS

Carlson McCain makes the following recommendations regarding mitigation:

- **Invasive Species.** Invasive species should be replaced with non-invasive native tree/shrub of similar height and canopy suitable for the mitigation area.
- **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, Berthold Station Expansion Project. Case No. PU-11-232. 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 April 2012.

North Dakota Public Service Commission. North Dakota Public Service Commission Certification Relating to Order Provisions Transmission Facility Siting. Case Number PU-11-232 Tree and Shrub Mitigation Specifications. 3p.

APPENDIX A

Tree and Shrub Mitigation Specifications

Case No. PU-11-232

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
Berthold Station Expansion Project

Case No. PU-11-232

Prepared for:

Enbridge Pipelines (North Dakota) LLC

May 2012

Introduction

Enbridge Pipelines (North Dakota) LLC proposes to develop the Berthold Station Expansion Project located in portions of Sections 20 and 21, T156N, R86W, in Ward County, North Dakota. The case number for the Berthold Station Expansion Project (Project) is PU-11-232. 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.

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 Project 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 circle). 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 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 ROW 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 circle). 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 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-11-232

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.
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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.
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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.
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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

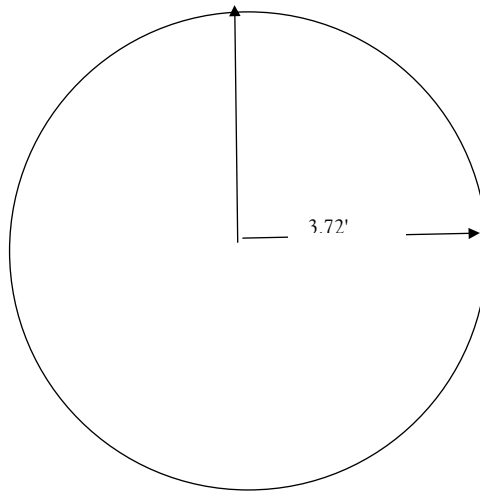
10. Prior to tree/shrub replacement, documentation identifying the number and variety of trees removed as well as the mitigation plan for the proposed number, variety, type, location and date of replacement plantings shall be filed with the NSPSC for approval.
11. Two 2-year-old saplings shall be planted 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

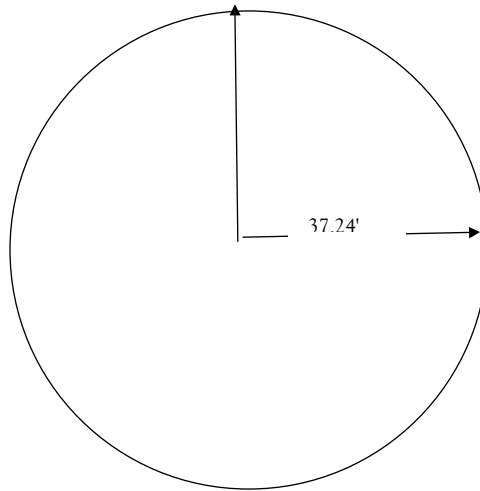
- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.01 acre
- Converted to a per acre basis (average times 100)
- Total number per woodland determined by multiplying average number per acre with woodland size

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

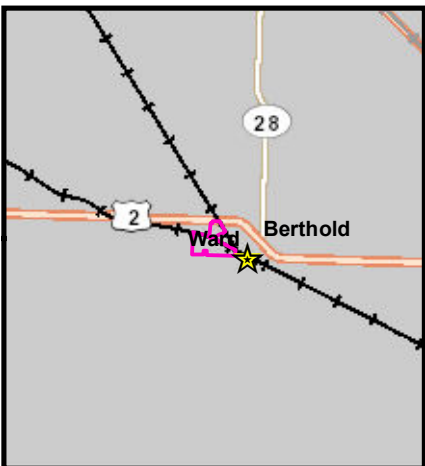
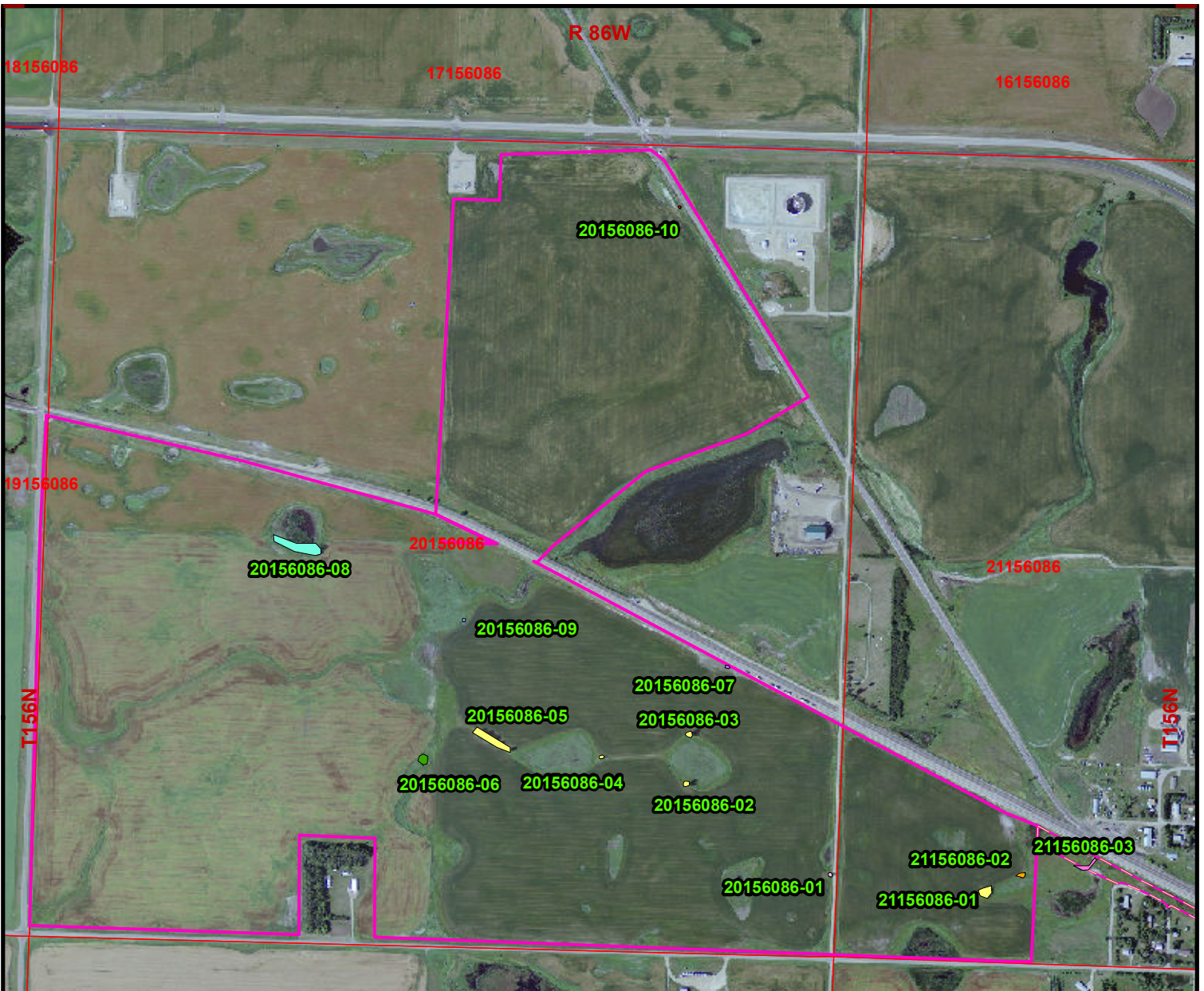
Tree and Shrub Count Forms

TREE/SHRUB INVENTORY

Project Name: <u>Berthold Station Expansion</u>				
Sampled by: <u>CT, MM</u>			Date: <u>3/23/12</u>	
Location / Site ID: <u>20156086</u>				
Woodland Type (circle): <u>Native</u> Planted			Plot Size (circle): <u>3.72 ft</u> <u>37.2 ft</u>	
SPECIES	Planted	Native		TOTAL
	All trees shrubs	Trees >1"	All shrubs	
<u>20156086-01</u> <u>Pop tre</u>		<u>2</u>		<u>2</u>
<u>20156086-02</u> <u>Pop del</u>		<u>1</u>		<u>1</u>
<u>20156086-03</u> <u>Pop del</u>		<u>1</u>		<u>1</u>
<u>20156086-04</u> <u>Pop del</u>		<u>1</u>		<u>1</u>
<u>20156086-05</u> <u>Pop del</u>		<u>13</u>		<u>13</u>
<u>20156086-06</u> <u>Sal exi</u>			<u>9</u>	<u>9</u>
<u>20156086-07</u> <u>Pro vir</u>			<u>10</u>	<u>10</u>
<u>20156086-08</u> <u>Sal amy</u>		<u>5</u>		<u>5</u>
<u>Pop del</u>		<u>1</u>		<u>1</u>

APPENDIX D

Figure



- Legend**
- Berthold Station Expansion Area
 - Berthold East
 - Aspen
 - Chokecherry
 - Chokecherry - cottonwood
 - Cottonwood
 - Hawthorn
 - Peachleaf willow
 - Peachleaf willow - cottonwood
 - Sandbar willow
 - Sandbar willow - Siberian elm - Russian olive
 - Sections

1:12,000
 1 inch = 1,000 feet
 0 250 500 1,000 Feet
 Basemap: NAIP Orthphoto 2010
 Barnes County, North Dakota




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 www.carlsonmccain.com

Figure 1
 Tree / Shrub Inventory
 Berthold Station Expansion Project
 Enbridge Pipelines (North Dakota)
 LLC

EXHIBIT C

Landowner Waiver (Enbridge)

**Enbridge Pipelines (North Dakota) LLC (Enbridge)
Beaver Station Expansion Project
Tree Mitigation Waiver (Case No. PU-11-232)**

Date 1/25/13

Landowner Name Enbridge Pipelines (North Dakota) LLC - Berthold South

Description of tree/shrub mitigation activities _____

Under the North Dakota Public Service Commission (Case No. PU-11-232) Tree and Shrub Mitigation Specifications, landowners are 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.

I Trevor Seely am the landowner of Berthold South _____ and I hereby waive the requirement of having replacement trees/shrubs planted off the right-of-way on my property.

I acknowledge that I understand the waiver described in this document. Waiver is made to the maximum extent permissible under applicable law. I acknowledge that I have signed this document under my own free will.

Signature  Date 1/25/13

Printed Name Trevor Seely Sr. Lands & ROW Specialist Phone 715-398-4546

Street Address 1409 Hammond Ave, Superior, WI Zip ~~54880~~ 54880

**Enbridge Pipelines (North Dakota) LLC (Enbridge)
Beaver Station Expansion Project
Tree Mitigation Waiver (Case No. PU-11-232)**

Date 1/25/13

Landowner Name Enbridge Pipelines (North Dakota) LLC - Berthold West

Description of tree/shrub mitigation activities _____

Under the North Dakota Public Service Commission (Case No. PU-11-232) Tree and Shrub Mitigation Specifications, landowners are 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.

I Trevor Seely am the landowner of Berthold West _____ and I hereby waive the requirement of having replacement trees/shrubs planted off the right-of-way on my property.

I acknowledge that I understand the waiver described in this document. Waiver is made to the maximum extent permissible under applicable law. I acknowledge that I have signed this document under my own free will.

Signature  Date 1/25/13

Printed Name Trevor Seely SR. Lands & Resources Specialist Phone 715-398-4546

Street Address 1409 Hammond Ave, Superior, WI Zip 54880

EXHIBIT D

Landowner Approval and Tree/Shrub Mitigation Plans

**Table 2
Landowner Approval and Tree/Shrub Mitigation Plans**

Tract	Trees/Shrubs Removed ¹	Invasive Species	Mitigation Requirement ²	Trees/Shrubs Mitigation Plan Planting Requirements ³	Location (Tract or Alt. Location) ⁴
Berthold South Parcel (within 400 foot Corridor under PSC' Jurisdiction) ⁵	13 Cottonwood trees	No	2:1 Replacement	26 Cottonwood Trees	Alternate

¹ Does not include shrubs that will regenerate naturally (i.e., Native Topsoil Preserved and Replaced (see item no. 5 in ND PSC Tree and Shrub Mitigation Specifications, Case No. PU-11-232)).

² Tree replacement shall be on a 2 to 1 basis with 2-year-old saplings. Shrub replacement shall be on a 2 to 1 basis with stem cuttings (see item no. 11 in ND PSC Tree and Shrub Mitigation Specifications, Case No. PU-11-232).

³ Replacement species should be non-invasive native tree/shrub of similar height and canopy (or as approved by the NDFS) suitable for the mitigation area (see Section 4.0 of Tree and Shrub Inventory Reports included as Exhibit B).

⁴ 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 (see item no. 14 in ND PSC Tree and Shrub Mitigation Specifications, Case No. PU-11-232).

⁵ Inventory Site 20156086-09 in Tree and Shrub Inventory Report (Exhibit B).

EXHIBIT E

Letter from the North Dakota Forest Service - February 1, 2013



NORTH DAKOTA FOREST SERVICE

"To care for, protect and improve forest and natural resources to enhance the quality of life for present and future generations."

February 1, 2013

Angela Ronayne, PE
Merjent, Tractor Works Building
800 Washington Avenue North
Suite 315
Minneapolis, MN 55401

Dear Ms. Ronayne,

Attached for your consideration is a draft program concept outline for the North Dakota Mitigation Tree Planting Partnership Program between the North Dakota Forest Service and Enbridge. The January 29, 2013, document outlines a proposed program to replace trees and shrubs to comply with the North Dakota Public Service Commission mitigation requirements. This three-year program would be financed through an award from Enbridge to the North Dakota Forest Service. The project ending date is anticipated to be December 31, 2015. The estimated number of trees/shrubs to be planted is 1,529 including all the anticipated plantings, as well as additional stock to offset mortality.

The award to finance this program would be deposited in the Trees for North Dakota Trust Fund, a special fund in the state treasury. The award would be designated for this Mitigation Tree Planting Partnership Program and managed by the North Dakota Forest Service. The proposed program cost per tree/shrub is \$9.00. The program would be initiated by the North Dakota Forest Service and its natural resource partners and private vendors upon the receipt of the tree planting mitigation payment.

Thank you for the opportunity to assist Enbridge with its mitigation tree planting obligations set forth by the North Dakota Public Service Commission. We look forward to discussing the draft program concept outline with you, your staff and environmental consultants. Please do not hesitate to contact our office if you need further assistance or information. Thank you again for considering our services.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry A. Kotchman".

Larry A. Kotchman
State Forester

Enclosure