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January 17, 2019

Mr. Steve Kahl
Interim Executive Secretary
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505

RE: Case No. PU-13-848
Tree and Shrub Mitigation Plan

Mr. Kahl,

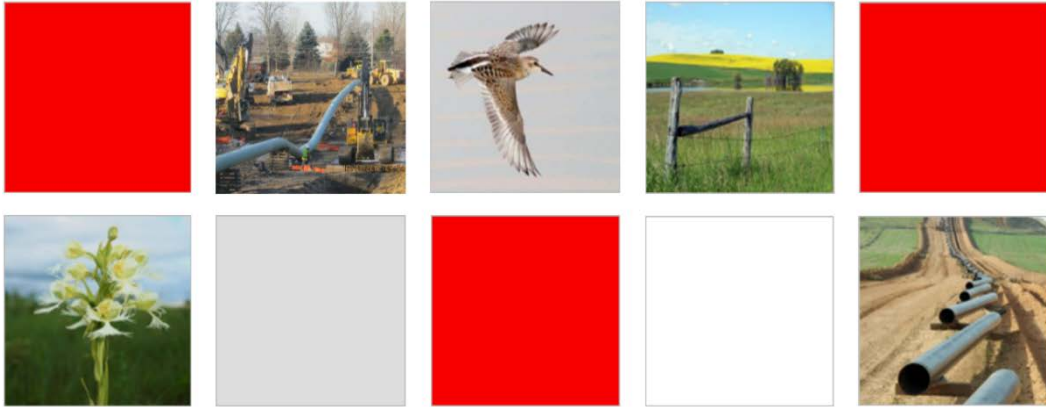
On behalf of North Dakota Pipeline Company, LLC, please find enclosed two (2) printed copies and a CD containing digital copies of the Sandpiper Pipeline Project Tree and Shrub Mitigation Plan.

Please contact me should you have any questions.

Sincerely,

Hannah Andrus
Regulatory Advisor

Cc: Patrick Fahn, ND PSC



**North Dakota Pipeline Company, LLC
Sandpiper Pipeline Project (PU-13-848)
Beaver Lodge and Stanley Pump Stations Expansion**

**North Dakota Public Service Commission
Tree and Shrub Mitigation Plan**

December 3, 2018



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Appendix C – Beaver Lodge and Stanley Stations: Tree and Shrub Impact Maps

1.0 INTRODUCTION

In association with its Sandpiper Pipeline Project (Project), North Dakota Pipeline Company, LLC (Enbridge) expanded its Beaver Lodge, Stanley, and Berthold Stations. The Project was authorized by the North Dakota Public Service Commission [NDPSC] Docket PU-13-848. The Project also involved the proposed construction of approximately 300 miles of new 24-inch-diameter pipe in North Dakota; however, construction of the pipeline did not occur due to unforeseen changes in market conditions.

Construction of the station expansions resulted in the permanent removal of trees and shrubs at Beaver Lodge and Stanley Stations. No trees or shrubs were impacted at Berthold Station. Enbridge plans to mitigate for the tree and shrub removals per the NDPSC “Tree and Shrub Mitigation Specifications” (Appendix A) which were issued in conjunction with the NDPSC Order for PU-13-848. Pre-construction tree and shrub inventories were conducted at the stations and will be used as a basis for mitigation. Mitigation of the permanently removed trees and shrubs will consist of in-kind tree and shrub plantings at a 2:1 ratio.

2.0 TREE AND SHRUB INVENTORY

Wenck Associates, Inc. (“Wenck”) conducted a tree and shrub inventory (Attachment B) of the Beaver Lodge and Stanley Stations in July 2014 and July 2016¹. All observed trees and shrubs were documented. Individuals were documented with individual points, and stands were documented with polygons. Eight tree and shrub species, consisting of 325 individuals, were identified within the Beaver Lodge Station pre-construction boundaries. Ten tree and shrub species, consisting of 218 individuals, were inventoried within the Stanley Station pre-construction boundaries.

3.0 TREE AND SHRUB IMPACTS

Expansion of the Beaver Lodge station impacted one individual tree and five stands of shrubs (Attachment C). The impacted species consisted of *Fraxinus pennsylvanica*, *Rosa arkansana*, and *Symphoricarpos occidentalis* (Table 3.0-1). All impacted trees and shrubs were identified in 2014.

Table 3.0-1: Beaver Lodge Station Tree and Shrub Impacts				
ID	Species	Growth Form	Natural Growth / Planted	Impact Count
WI002a	<i>Rosa arkansana</i>	Shrub	Natural Growth	1
WI002e	<i>Rosa arkansana</i>	Shrub	Natural Growth	4
WI002e	<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	4
WI002g	<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	9
WI002h	<i>Rosa arkansana</i>	Shrub	Natural Growth	4
WI002h	<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	4
WI002i	<i>Rosa arkansana</i>	Shrub	Natural Growth	5
WI002i	<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	5

¹ Tree and shrub inventories conducted in 2016 were associated with the proposed pipeline right-of-way; however a portion of these surveys did extend into the station boundaries. No trees or shrubs inventoried during the 2016 surveys were impacted by construction activities at the stations.

Table 3.0-1: Beaver Lodge Station Tree and Shrub Impacts				
ID	Species	Growth Form	Natural Growth / Planted	Impact Count
WI002_000e2	<i>Fraxinus Pennsylvanica</i>	Tree	Natural Growth	1
Total				37

Expansion of the Stanley Station impacted one stand of shrubs (Attachment C). The impacted species consisted of *Prunus virginiana* and *Symphoricarpos occidentalis* (Table 3.0-2). All impacted trees and shrubs were identified in 2014.

Table 3.0-2: Stanley Station Tree and Shrub Impacts				
ID	Species	Growth Form	Natural Growth / Planted	Impact Count
MO052_240c	<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	1
MO052_240c	<i>Prunus virginiana</i>	Shrub	Natural Growth	7
Total				8

4.0 TREE AND SHRUB REPLACEMENT

Trees and shrubs that were permanently removed at the Beaver Lodge and Stanley Stations will be mitigated for at a 2:1 ratio. Cumulatively, for the two stations, 90 trees and shrubs will be planted to mitigate for the removals at Beaver Lodge and Stanley Stations (Table 4.0-1).

Table 4.0-1: Beaver Lodge and Stanley Stations - Cumulative Tree and Shrub Replacement					
Species	Growth Form	Natural Growth / Planted	Impact Count	Mitigation Ratio	Total Replacement
<i>Fraxinus Pennsylvanica</i>	Tree	Natural Growth	1	2	2
<i>Prunus virginiana</i>	Shrub	Natural Growth	7	2	14
<i>Rosa arkansana</i>	Shrub	Natural Growth	14	2	28
<i>Symphoricarpos occidentalis</i>	Shrub	Natural Growth	23	2	46
Total			45	2	90

4.1 MITIGATION PLAN AND PARTNERSHIP

Enbridge has contracted Minnesota Limited, a valued and long-standing construction and field-services partner, to conduct the plantings and provide the environmental professional services required of this plan. Minnesota Limited will sub-contract a competent environmental consulting firm to conduct the monitoring and file reports as required by the NDPSC. As required by the NDPSC Order, trees and shrubs of the same or similar species will be planted to replace the removed individuals.

To ensure success of the plantings, annual monitoring will occur every three years. A report documenting each year’s monitoring effort will be compiled and submitted to the NDPSC. Enbridge understands the NDPSC may require additional replacement plantings if the survival rate of the initial

replanting effort is less than 75%. Additional trees and shrubs will be planted during the initial planting effort to account for anticipated mortality.

APPENDIX A
NDPSC TREE AND SHRUB MITIGATION SPECIFICATIONS

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

**Enbridge Pipelines (North Dakota) LLC
24-Inch Crude Oil Pipeline – Sandpiper Project
Siting Application**

Case No. PU-13-848

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.

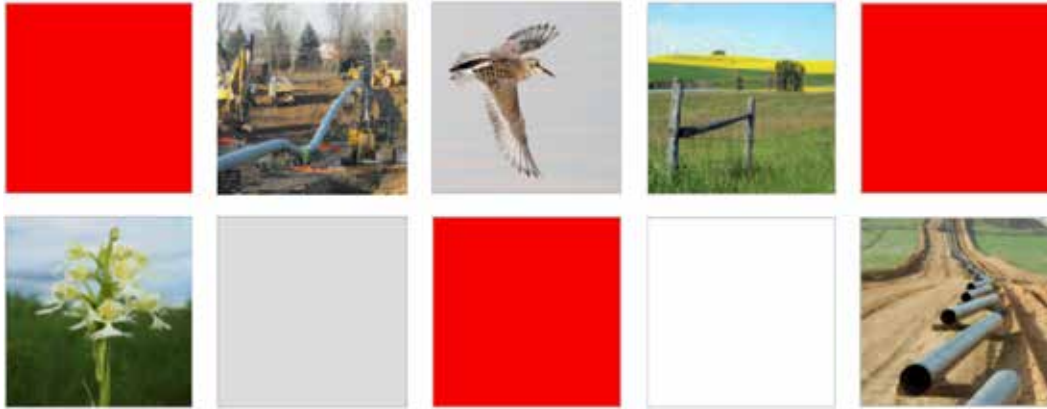
Replacement

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).

APPENDIX B
BEAVER LODGE AND STANLEY STATIONS
TREE AND SHRUB INVENTORY REPORTS



**North Dakota Pipeline Company, LLC
Sandpiper Pipeline Project (PU-13-848)
Beaver Lodge Station**

**North Dakota Public Service Commission
Tree and Shrub Inventory**

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- Attachment 1 – Tree and Shrub Inventory Map
- Attachment 2 – Tree and Shrub Inventory Plan – North Dakota
- Attachment 3 – Tree and Shrub Inventory Table

1.0 INTRODUCTION

On behalf of North Dakota Pipeline Company, LLC (Enbridge), Wenck Associates, Inc. (“Wenck”) inventoried trees and shrubs (Attachment 1) within the Beaver Lodge Station (“Station”) boundaries provided by Merjent, Inc. The inventory was conducted in July 2014 and July 2016.

2.0 METHODS

Trees and shrubs were inventoried in accordance with the North Dakota Public Service Commission (“NDPSC”) Tree and Shrub Mitigation Specifications. A NDPSC-approved *Tree and Shrub Inventory Plan - North Dakota* (Attachment 2) was utilized when conducting the inventory.

Each tree or shrub observation was assigned a unique identifier. Data were collected electronically for each observation. Collected data consisted of: location, county, ID, species, stem count, community/colony boundary (as necessary), date, and planted or natural growth. All trees that had a 1-inch or greater diameter breast height (“dbh”) and all individually growing shrubs were inventoried by stem count. High density tree or shrub communities made up of many individuals were inventoried using a representative sampling method based on stem count. High density colonies of a singular rhizomatous species, where stem count was not suitable, such as *Symphoricarpos occidentalis*, were inventoried using surface area. A single individual of a rhizomatous species is made up of many, densely growing stems connected beneath the ground’s surface¹. For rhizomatous species, an area with a 10-meter radius was used to determine the presence of one individual².

3.0 RESULTS

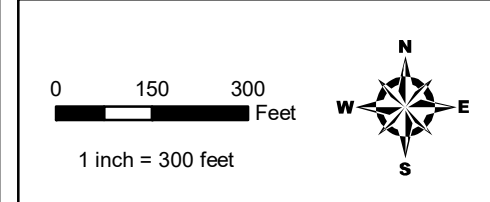
Eight tree and shrub species, consisting of 325 individuals, were inventoried (Attachment 3) within the Station boundaries. The growth form of the observed species was predominantly shrub and all observations were of natural growth (Table 3.0-1).






Species	Common Name	Count	Growth Form	Natural Growth / Planted
<i>Crataegus chrysoarpa</i>	Fireberry Hawthorn	2	Shrub	Natural Growth
<i>Fraxinus Pennsylvanica</i>	Green Ash	3	Tree	Natural Growth
<i>Populus deltoides</i>	Eastern Cottonwood	9	Tree	Natural Growth
<i>Prunus virginiana</i>	Chokechery	146	Shrub	Natural Growth
<i>Rosa arkansana</i>	Prairie Rose	81	Shrub	Natural Growth
<i>Salix amygdaloides</i>	Peachleaf Willow	8	Tree	Natural Growth
<i>Shepherdia argentea</i>	Silver Buffaloberry	6	Shrub	Natural Growth
<i>Symphoricarpos occidentalis</i>	Western Snowberry	70	Shrub	Natural Growth

¹ Pelton, John. “Studies of the Life History of *Symphoricarpos occidentalis* in Minnesota”. *Ecological Monographs*, vol. 23, no. 1, 1953.

² Manske, Llewellyn L. “Western Snowberry Biology”. Dickinson Research Extension Center. North Dakota State University. 2006.

ATTACHMENT 1
TREE AND SHRUB INVENTORY MAP



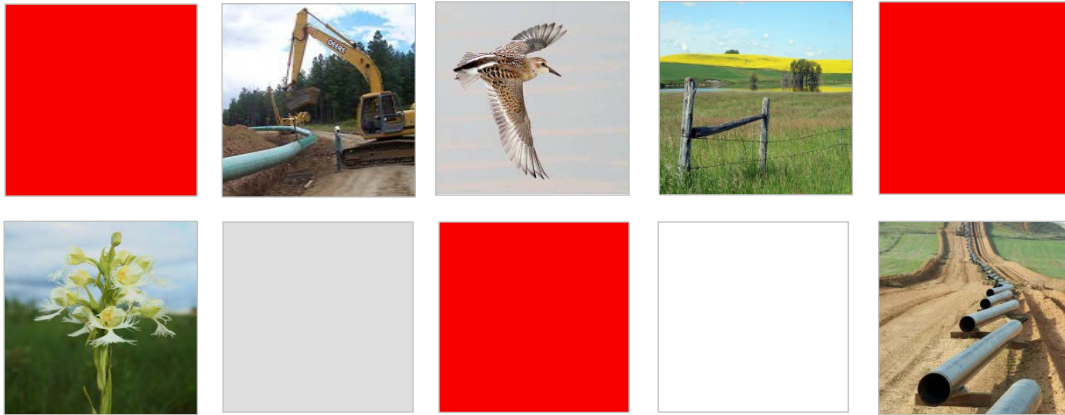
-  Beaver Lodge Station
-  Survey Corridor
-  Workspace
-  Tree/Shrub Sample Point - Individual
-  Tree/Shrub Boundary

Attachment 1
Enbridge
Beaver Lodge Station
Tree and Shrub Inventory
Williams County, North Dakota

Date: (8/8/2018) Source: Z:\Clients\LE\Technology\Sandpiper\ArcGIS\2018\ND_Tree_Shrub\ND_Tree_Shrub\Map_Inventory_Map.mxd

ATTACHMENT 2

TREE AND SHRUB INVENTORY PLAN – NORTH DAKOTA



North Dakota Pipeline Company LLC

Tree and Shrub Inventory Plan - North Dakota (Rev 0)

PRESENTED BY MERJENT, INC.
July 1, 2014



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Appendix B Tree and Shrub Count Form
Appendix C Shrub Sampling Method
Appendix D Tree Sampling Method

1.0 INTRODUCTION AND PROJECT DESCRIPTION

The North Dakota Public Service Commission (“ND PSC”) case number for the Project is PU-13-848. North Dakota Pipeline Company LLC (“NDPL”) will comply with the tree and shrub mitigation specifications as outlined in the Certification Relating to Order Provisions Transmission Facility Siting. Prior to construction, a tree and shrub inventory will be conducted within the construction right-of-way (to include the permanent easement, temporary workspace, additional temporary workspace and other extra workspaces identified by Construction Management). The ND PSC Tree and Shrub Mitigation Specifications are found in Appendix A of this Tree and Shrub Inventory Plan (“Plan”). Specifically, this Plan outlines the process for completing the tree and shrub inventory.

For the purpose of this Plan, clearing is defined as any removal/cutting of trees, and ground disturbance that fully removes the naturally occurring seed bank and root stock for trees and shrubs. Per the Tree and Shrub Mitigation Specification 5 (Appendix A), in native growth areas, 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.

2.0 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 (Appendix B). Trees that are 1 inch or greater in diameter at breast height (“DBH”) will be inventoried for replacement.

Shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are not cleared will not be counted by direct stem count. 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, a direct stem count of the disturbance area or estimate the number of stems cleared using an ND PSC-approved sampling estimate method (see Shrub Sampling Method, Appendix C) will be completed.

3.0 NATIVE GROWTH AREAS

In native growth areas, trees that have 1 inch or greater DBH will be inventoried for replacement. In high-density woodland areas, an ND PSC-approved sampling method may be used in place of individual counting (see Tree Sampling Method, Appendix D).

Shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are not cleared will not be counted by direct stem count. 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, a direct stem count of the disturbance area or estimate the number of stems cleared using an ND PSC-approved sampling estimate method (see Shrub Sampling Method, Appendix C) will be completed.

4.0 TREE SAMPLING METHOD

Per the ND PSC's Tree and Shrub Mitigation Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas the following sampling method will be utilized for the tree inventory. The dimensions of the entire woodland stand within the construction right-of-way 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 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 construction right-of-way will be calculated based on the average density from all sample locations within the woodland, weighted against the woodland size.

5.0 SHRUB SAMPLING METHOD

Per the ND PSC's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas the following sampling method will be utilized for the shrub inventory. The dimensions of the entire woodland stand within the construction right-of-way 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 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 construction right-of-way will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

Appendix A
ND PSC Tree and Shrub Mitigation Specifications

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

**Enbridge Pipelines (North Dakota) LLC
24-Inch Crude Oil Pipeline – Sandpiper Project
Siting Application**

Case No. PU-13-848

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).

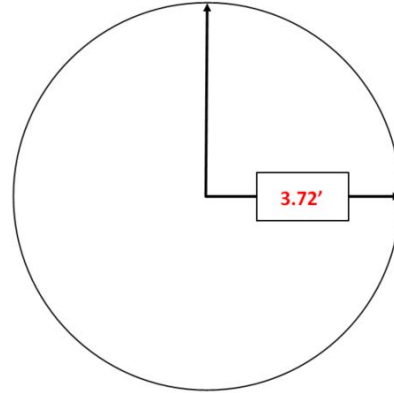
Appendix B
Tree and Shrub Count Form

Appendix C
Shrub Sampling Method

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

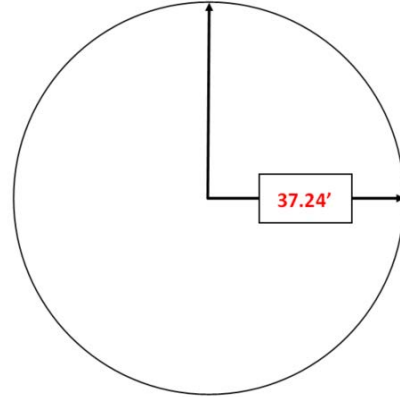
- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.01 acre
 - Converted to a per acre basis (average times 100)
 - Total number per woodland determined by multiplying average number per acre with woodland size
-

Appendix D
Tree Sampling Method

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 worksheet 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 x 10)
 - Total number per woodland determined by multiplying average number per acre with woodland size
-

ATTACHMENT 3
TREE AND SHRUB INVENTORY TABLE

Attachment 3 - Tree and Shrub Inventory Table

ID	Species	Count	Growth Form	Type	Natural Growth / Planted	Survey Date
WI002a	Rosa arkansana	23	Shrub	Community	Natural Growth	July 2014
WI002ab	Prunus virginiana	56	Shrub	Community	Natural Growth	July 2016
WI002ac	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2016
WI002b	Rosa arkansana	1	Shrub	Community	Natural Growth	July 2014
WI002b	Symphoricarpos occidentalis	2	Shrub	Community	Natural Growth	July 2014
WI002c	Prunus virginiana	6	Shrub	Community	Natural Growth	July 2014
WI002c	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2014
WI002d	Crataegus chrysoarpa	1	Shrub	Community	Natural Growth	July 2014
WI002d	Rosa arkansana	9	Shrub	Community	Natural Growth	July 2014
WI002d	Symphoricarpos occidentalis	9	Shrub	Community	Natural Growth	July 2014
WI002e	Rosa arkansana	7	Shrub	Community	Natural Growth	July 2014
WI002e	Symphoricarpos occidentalis	7	Shrub	Community	Natural Growth	July 2014
WI002f	Rosa arkansana	4	Shrub	Community	Natural Growth	July 2014
WI002g	Symphoricarpos occidentalis	9	Shrub	Community	Natural Growth	July 2014
WI002h	Rosa arkansana	4	Shrub	Community	Natural Growth	July 2014
WI002h	Symphoricarpos occidentalis	4	Shrub	Community	Natural Growth	July 2014
WI002i	Rosa arkansana	7	Shrub	Community	Natural Growth	July 2014
WI002i	Symphoricarpos occidentalis	7	Shrub	Community	Natural Growth	July 2014
WI002j	Prunus virginiana	16	Shrub	Community	Natural Growth	July 2014
WI002j	Rosa arkansana	6	Shrub	Community	Natural Growth	July 2014
WI002j	Symphoricarpos occidentalis	6	Shrub	Community	Natural Growth	July 2014
WI003a	Prunus virginiana	6	Shrub	Community	Natural Growth	July 2014
WI003a	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2014
WI003b	Crataegus chrysoarpa	1	Shrub	Community	Natural Growth	July 2014
WI003b	Prunus virginiana	17	Shrub	Community	Natural Growth	July 2014
WI003b	Rosa arkansana	20	Shrub	Community	Natural Growth	July 2014
WI003b	Symphoricarpos occidentalis	20	Shrub	Community	Natural Growth	July 2014
WI003c	Prunus virginiana	23	Shrub	Community	Natural Growth	July 2014
WI003c	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2014
WI003d	Prunus virginiana	13	Shrub	Community	Natural Growth	July 2014
WI003e	Prunus virginiana	9	Shrub	Community	Natural Growth	July 2014
WI003e	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2014
WI005a	Symphoricarpos occidentalis	1	Shrub	Community	Natural Growth	July 2014
WI002_000d10	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d11	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d12	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d13	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d14	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d15	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d16	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d17	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d18	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d19	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d2	Shepherdia argentea	6	Shrub	Individual	Natural Growth	July 2014
WI002_000d3	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d4	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d5	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d6	Populus deltoides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d7	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d8	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000d9	Salix amygdaloides	1	Tree	Individual	Natural Growth	July 2014
WI002_000e2	Fraxinus Pennsylvanica	1	Tree	Individual	Natural Growth	July 2014
WI003_000b3	Fraxinus Pennsylvanica	1	Tree	Individual	Natural Growth	July 2014
WI003_000b4	Fraxinus Pennsylvanica	1	Tree	Individual	Natural Growth	July 2014



**North Dakota Pipeline Company, LLC
Sandpiper Pipeline Project (PU-13-848)
Stanley Station**

**North Dakota Public Service Commission
Tree and Shrub Inventory**

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- Attachment 1 – Tree and Shrub Inventory Map
- Attachment 2 – Tree and Shrub Inventory Plan – North Dakota
- Attachment 3 – Tree and Shrub Inventory Table

1.0 INTRODUCTION

On behalf of North Dakota Pipeline Company, LLC (Enbridge), Wenck Associates, Inc. (“Wenck”) inventoried trees and shrubs (Attachment 1) within the Stanley Station (“Station”) boundaries provided by Merjent, Inc. The inventory was conducted in July 2014 and July 2016.

2.0 METHODS

Trees and shrubs were inventoried in accordance with the North Dakota Public Service Commission (“NDPSC”) Tree and Shrub Mitigation Specifications. A NDPSC-approved *Tree and Shrub Inventory Plan - North Dakota* (Attachment 2) was utilized when conducting the inventory.

Each tree or shrub observation was assigned a unique identifier. Data were collected electronically for each observation. Collected data consisted of: location, county, ID, species, stem count, community/colony boundary (as necessary), date, and planted or natural growth. All trees that had a 1-inch or greater diameter breast height (“dbh”) and all individually growing shrubs were inventoried by stem count. High density tree or shrub communities made up of many individuals were inventoried using a representative sampling method based on stem count. High density colonies of a singular rhizomatous species, where stem count was not suitable, such as *Symphoricarpos occidentalis*, were inventoried using surface area. A single individual of a rhizomatous species is made up of many, densely growing stems connected beneath the ground’s surface¹. For rhizomatous species, an area with a 10-meter radius was used to determine the presence of one individual².

3.0 RESULTS

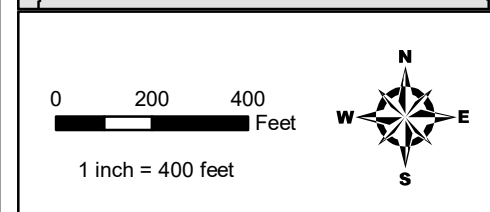
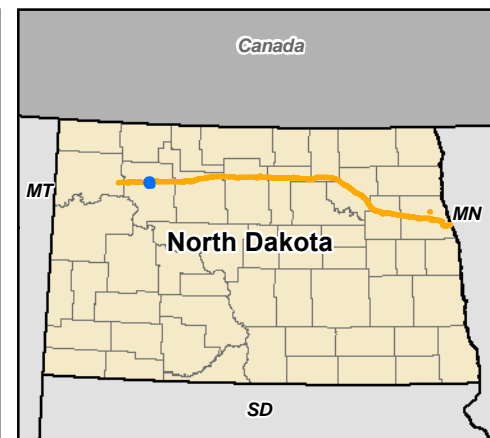
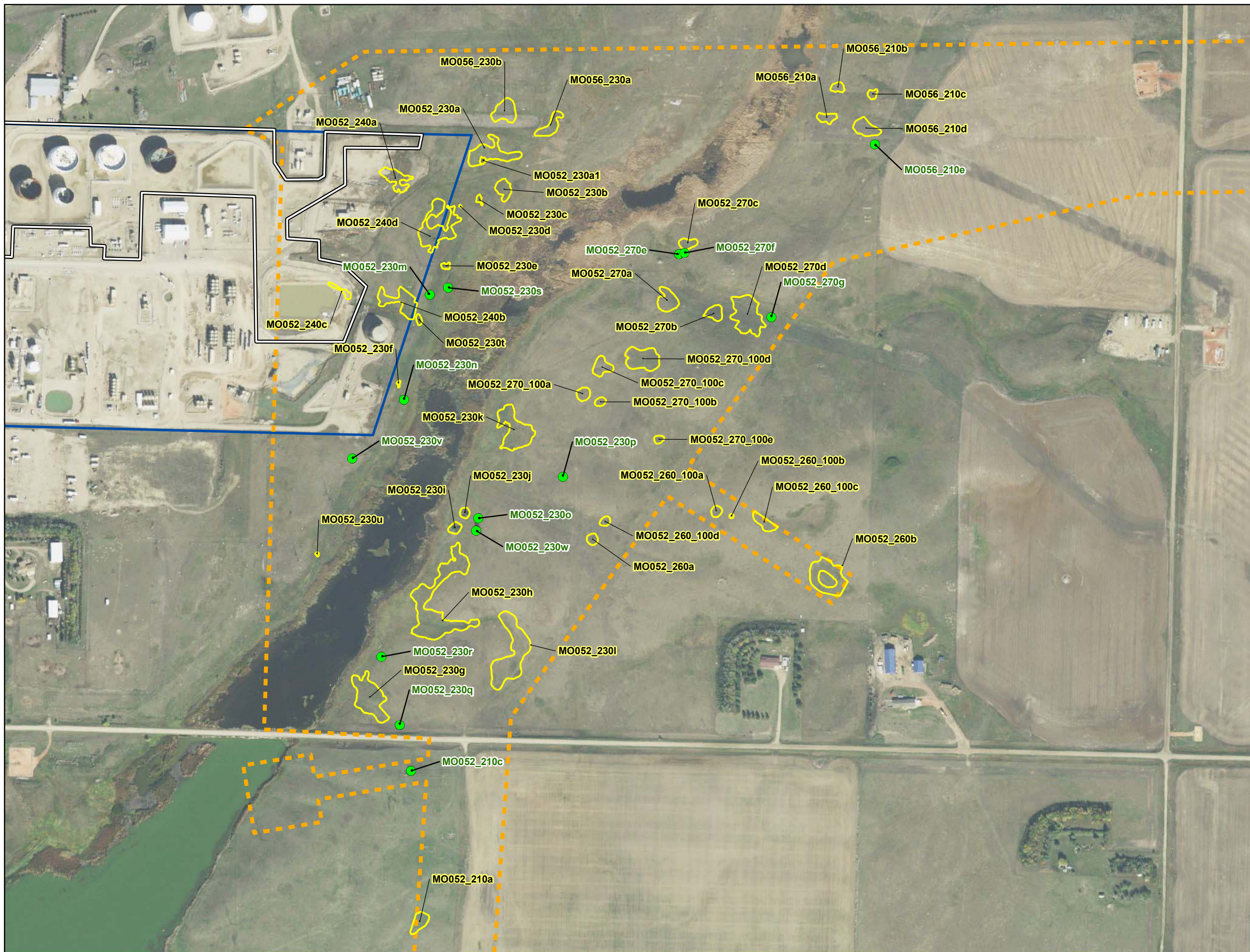
Ten tree and shrub species, consisting of 218 individuals, were inventoried (Attachment 3) within the Station boundaries. The growth form of the observed species was predominantly shrub and all observations were of natural growth (Table 3.0-1).






Species	Common Name	Count	Growth Form	Natural Growth /Planted
<i>Crataegus chrysoarpa</i>	Fireberry Hawthorn	6	Shrub	Natural Growth
<i>Elaeagnus angustifolia</i>	Russian Olive	3	Tree	Natural Growth
<i>Elaeagnus commutata</i>	Silverberry	23	Shrub	Natural Growth
<i>Fraxinus pennsylvanica</i>	Green Ash	3	Tree	Natural Growth
<i>Prunus virginiana</i>	Chokecherry	65	Shrub	Natural Growth
<i>Rosa arkansana</i>	Prairie Rose	8	Shrub	Natural Growth
<i>Salix amygdaloides</i>	Peachleaf Willow	1	Tree	Natural Growth
<i>Shepherdia argentea</i>	Silver Buffaloberry	10	Tree	Natural Growth
<i>Symphoricarpos occidentalis</i>	Western Snowberry	98	Shrub	Natural Growth
<i>Ulmus pumila</i>	Siberian Elm	1	Tree	Natural Growth

¹ Pelton, John. “Studies of the Life History of *Symphoricarpos occidentalis* in Minnesota”. *Ecological Monographs*, vol. 23, no. 1, 1953.


² Manske, Llewellyn L. “Western Snowberry Biology”. Dickinson Research Extension Center. North Dakota State University. 2006.

ATTACHMENT 1
TREE AND SHRUB INVENTORY MAP



-  Stanley Station
-  Survey Corridor
-  Workspace
-  Tree/Shrub Sample Point - Individual
-  Tree/Shrub Boundary

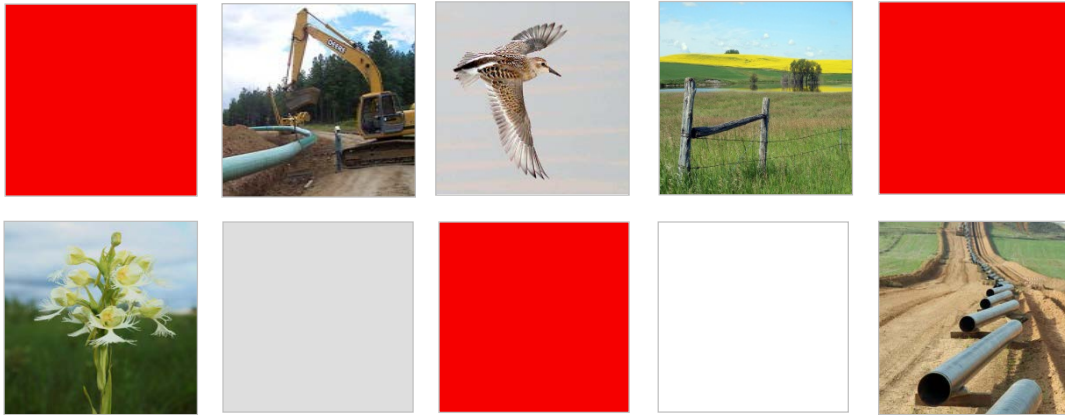
Attachment 1
Enbridge
Stanley Station
Tree and Shrub Inventory
Mountrail County, North Dakota



For Environmental Review Purposes Only

Date: (8/8/2018) Source: Z:\Clients\LE\Technology\Sandpiper\ArcGIS\2018\ND_Tree_Shrub\ND_Tree_Shrub\Inventory_Map.mxd

ATTACHMENT 2
TREE AND SHRUB INVENTORY PLAN – NORTH DAKOTA



North Dakota Pipeline Company LLC

Tree and Shrub Inventory Plan - North Dakota (Rev 0)

PRESENTED BY MERJENT, INC.
July 1, 2014



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3.0 NATIVE GROWTH AREAS.....1
4.0 TREE SAMPLING METHOD.....2
5.0 SHRUB SAMPLING METHOD.....2

APPENDICES

Appendix A ND PSC Tree and Shrub Mitigation Specifications
Appendix B Tree and Shrub Count Form
Appendix C Shrub Sampling Method
Appendix D Tree Sampling Method

1.0 INTRODUCTION AND PROJECT DESCRIPTION

The North Dakota Public Service Commission (“ND PSC”) case number for the Project is PU-13-848. North Dakota Pipeline Company LLC (“NDPL”) will comply with the tree and shrub mitigation specifications as outlined in the Certification Relating to Order Provisions Transmission Facility Siting. Prior to construction, a tree and shrub inventory will be conducted within the construction right-of-way (to include the permanent easement, temporary workspace, additional temporary workspace and other extra workspaces identified by Construction Management). The ND PSC Tree and Shrub Mitigation Specifications are found in Appendix A of this Tree and Shrub Inventory Plan (“Plan”). Specifically, this Plan outlines the process for completing the tree and shrub inventory.

For the purpose of this Plan, clearing is defined as any removal/cutting of trees, and ground disturbance that fully removes the naturally occurring seed bank and root stock for trees and shrubs. Per the Tree and Shrub Mitigation Specification 5 (Appendix A), in native growth areas, 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.

2.0 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 (Appendix B). Trees that are 1 inch or greater in diameter at breast height (“DBH”) will be inventoried for replacement.

Shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are not cleared will not be counted by direct stem count. 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, a direct stem count of the disturbance area or estimate the number of stems cleared using an ND PSC-approved sampling estimate method (see Shrub Sampling Method, Appendix C) will be completed.

3.0 NATIVE GROWTH AREAS

In native growth areas, trees that have 1 inch or greater DBH will be inventoried for replacement. In high-density woodland areas, an ND PSC-approved sampling method may be used in place of individual counting (see Tree Sampling Method, Appendix D).

Shrubs that form colonies (such as buffalo currant, chokecherry, dogwood, plum, pussy willow, sandbar willow, western snowberry, and Woods rose) and that are not cleared will not be counted by direct stem count. 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, a direct stem count of the disturbance area or estimate the number of stems cleared using an ND PSC-approved sampling estimate method (see Shrub Sampling Method, Appendix C) will be completed.

4.0 TREE SAMPLING METHOD

Per the ND PSC's Tree and Shrub Mitigation Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas the following sampling method will be utilized for the tree inventory. The dimensions of the entire woodland stand within the construction right-of-way 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 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 construction right-of-way will be calculated based on the average density from all sample locations within the woodland, weighted against the woodland size.

5.0 SHRUB SAMPLING METHOD

Per the ND PSC's Tree and Shrub Inventory Specifications (Inventory Specification No. 6 in Appendix A), in high-density woodland areas the following sampling method will be utilized for the shrub inventory. The dimensions of the entire woodland stand within the construction right-of-way 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 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 construction right-of-way will be calculated based on the average density from all of the sample locations within the woodland, weighted against the woodland size.

Appendix A
ND PSC Tree and Shrub Mitigation Specifications

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Enbridge Pipelines (North Dakota) LLC
24-Inch Crude Oil Pipeline – Sandpiper Project
Siting Application

Case No. PU-13-848

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).

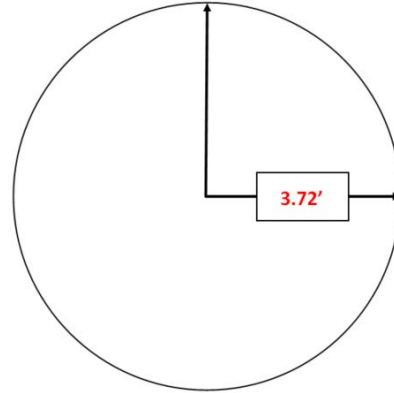
Appendix B
Tree and Shrub Count Form

Appendix C
Shrub Sampling Method

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

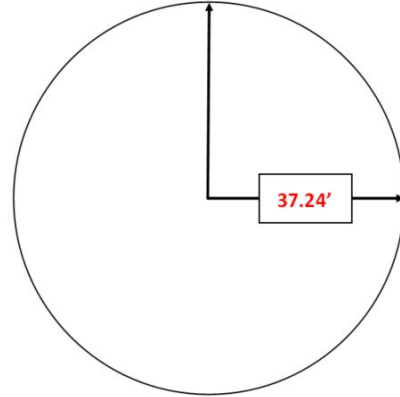
- Average determined from all plots sampled in a woodland area or area is equivalent to stems/0.01 acre
 - Converted to a per acre basis (average times 100)
 - Total number per woodland determined by multiplying average number per acre with woodland size
-

Appendix D
Tree Sampling Method

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 worksheet 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 x 10)
 - Total number per woodland determined by multiplying average number per acre with woodland size
-

ATTACHMENT 3
TREE AND SHRUB INVENTORY TABLE

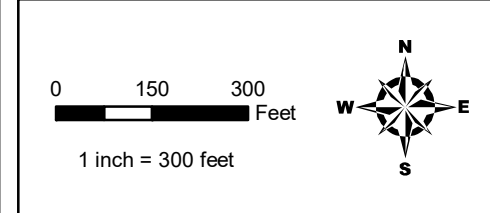
Attachment 3 - Tree and Shrub Inventory Table

ID	Species	Count	Growth Form	Type	Natural Growth / Planted	Survey Date
MO052_210a	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_230a	<i>Symphoricarpos occidentalis</i>	4	Shrub	Community	Natural Growth	July 2014
MO052_230a1	<i>Crataegus chrysoarpa</i>	6	Shrub	Community	Natural Growth	July 2014
MO052_230a1	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230b	<i>Rosa arkansana</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_230b	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_230c	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230d	<i>Prunus virginiana</i>	9	Shrub	Community	Natural Growth	July 2014
MO052_230e	<i>Prunus virginiana</i>	7	Shrub	Community	Natural Growth	July 2014
MO052_230e	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230f	<i>Prunus virginiana</i>	12	Shrub	Community	Natural Growth	July 2014
MO052_230f	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230g	<i>Symphoricarpos occidentalis</i>	6	Shrub	Community	Natural Growth	July 2014
MO052_230h	<i>Symphoricarpos occidentalis</i>	12	Shrub	Community	Natural Growth	July 2014
MO052_230i	<i>Shepherdia argentea</i>	4	Shrub	Community	Natural Growth	July 2014
MO052_230i	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230j	<i>Shepherdia argentea</i>	3	Shrub	Community	Natural Growth	July 2014
MO052_230j	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230k	<i>Symphoricarpos occidentalis</i>	6	Shrub	Community	Natural Growth	July 2014
MO052_230l	<i>Symphoricarpos occidentalis</i>	8	Shrub	Community	Natural Growth	July 2014
MO052_230t	<i>Prunus virginiana</i>	5	Shrub	Community	Natural Growth	July 2014
MO052_230t	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_230u	<i>Prunus virginiana</i>	4	Shrub	Community	Natural Growth	July 2014
MO052_240a	<i>Symphoricarpos occidentalis</i>	3	Shrub	Community	Natural Growth	July 2014
MO052_240b	<i>Symphoricarpos occidentalis</i>	4	Shrub	Community	Natural Growth	July 2014
MO052_240c	<i>Prunus virginiana</i>	7	Shrub	Community	Natural Growth	July 2014
MO052_240c	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_240d	<i>Symphoricarpos occidentalis</i>	6	Shrub	Community	Natural Growth	July 2014
MO052_260_100a	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260_100b	<i>Rosa arkansana</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260_100c	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_260_100d	<i>Rosa arkansana</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260_100d	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260a	<i>Rosa arkansana</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260a	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_260b	<i>Symphoricarpos occidentalis</i>	5	Shrub	Community	Natural Growth	July 2014
MO052_270_100a	<i>Rosa arkansana</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_270_100a	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_270_100b	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_270_100c	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_270_100d	<i>Symphoricarpos occidentalis</i>	4	Shrub	Community	Natural Growth	July 2014
MO052_270_100e	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_270a	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_270b	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO052_270c	<i>Symphoricarpos occidentalis</i>	1	Shrub	Community	Natural Growth	July 2014
MO052_270d	<i>Symphoricarpos occidentalis</i>	6	Shrub	Community	Natural Growth	July 2014
MO056_210a	<i>Elaeagnus commutata</i>	5	Shrub	Community	Natural Growth	July 2014
MO056_210b	<i>Elaeagnus commutata</i>	3	Shrub	Community	Natural Growth	July 2014
MO056_210c	<i>Elaeagnus commutata</i>	6	Shrub	Community	Natural Growth	July 2014
MO056_210d	<i>Elaeagnus commutata</i>	9	Shrub	Community	Natural Growth	July 2014
MO056_210d	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO056_230a	<i>Rosa arkansana</i>	2	Shrub	Community	Natural Growth	July 2014
MO056_230a	<i>Symphoricarpos occidentalis</i>	2	Shrub	Community	Natural Growth	July 2014
MO056_230b	<i>Symphoricarpos occidentalis</i>	3	Shrub	Community	Natural Growth	July 2014
MO052_210c	<i>Fraxinus pennsylvani</i>	3	Tree	Individual	Natural Growth	July 2016

Attachment 3 - Tree and Shrub Inventory Table

MO052_230m	<i>Prunus virginiana</i>	2	Tree	Individual	Natural Growth	July 2014
MO052_230n	<i>Prunus virginiana</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230o	<i>Shepherdia argentea</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230p	<i>Shepherdia argentea</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230q	<i>Prunus virginiana</i>	11	Tree	Individual	Natural Growth	July 2014
MO052_230r	<i>Elaeagnus angustifolia</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230s	<i>Salix amygdaloides</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230v	<i>Ulmus pumila</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_230w	<i>Elaeagnus angustifolia</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_270e	<i>Shepherdia argentea</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_270f	<i>Elaeagnus angustifolia</i>	1	Tree	Individual	Natural Growth	July 2014
MO052_270g	<i>Prunus virginiana</i>	6	Tree	Individual	Natural Growth	July 2014
MO056_210e	<i>Prunus virginiana</i>	1	Tree	Individual	Natural Growth	July 2014

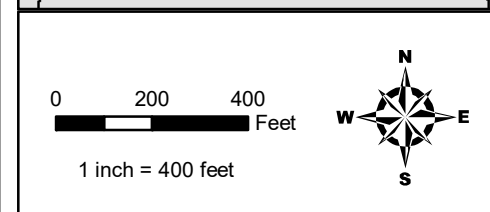
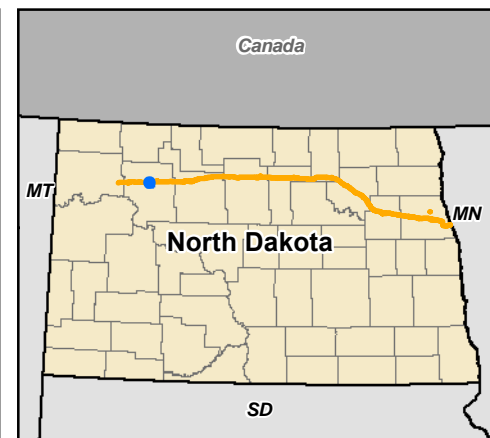
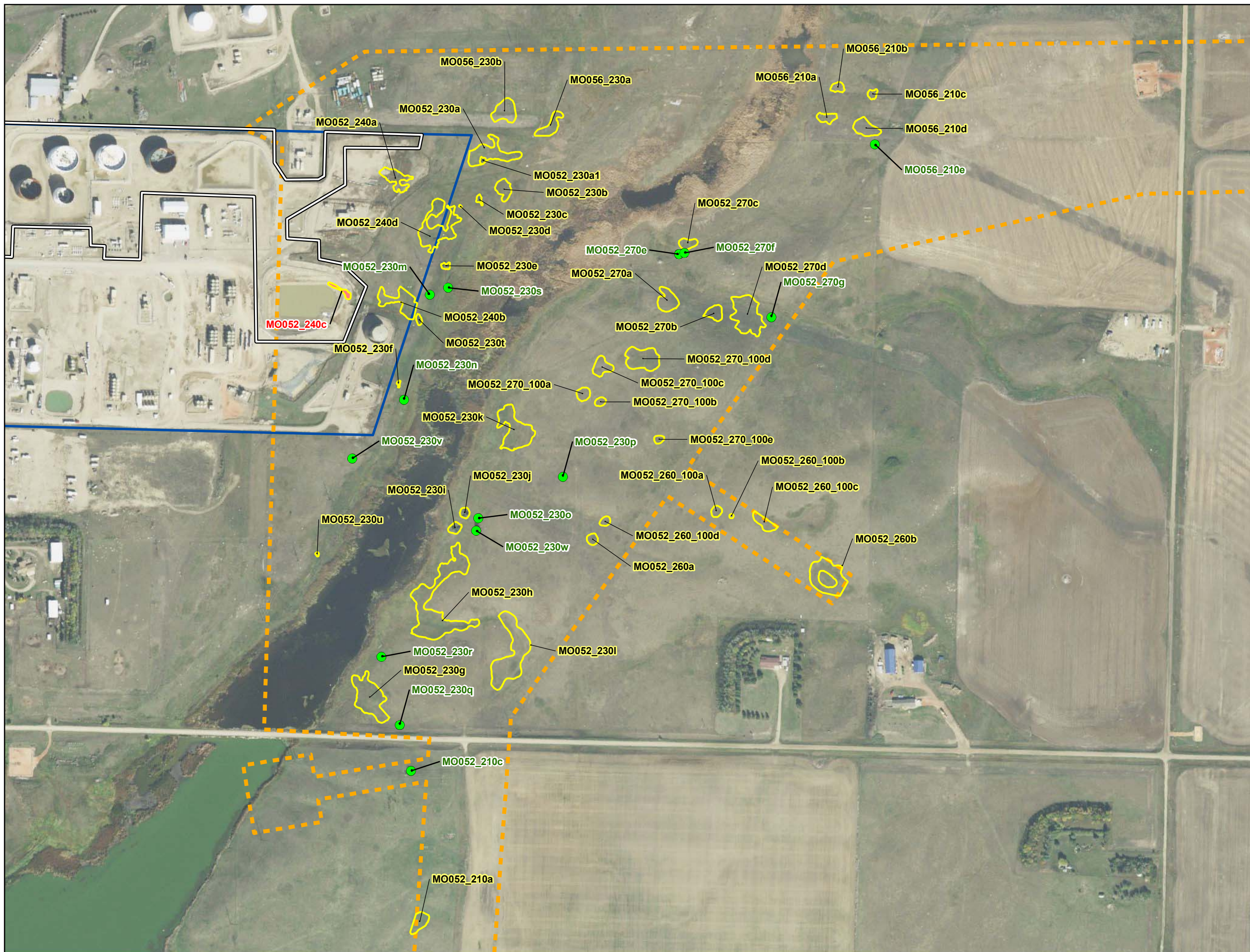
APPENDIX C
BEAVER LODGE AND STANLEY STATIONS TREE AND
SHRUB IMPACT MAPS









- Beaver Lodge Station
- Survey Corridor
- Workspace
- Tree/Shrub Sample Point - Individual
- Tree Individual Impact
- Tree/Shrub Boundary
- Shrub Colony Impact


Appendix C
Enbridge
Beaver Lodge Station
Tree and Shrub Impacts
Williams County, North Dakota

Date: (8/10/2018) Source: Z:\Clients\IE_F\Enbridge\Sandpiper\ArcGIS\2018\ND_Tree_Shrub\ND_Tree_Shrub\Map\Map.mxd



-  Stanley Station
-  Survey Corridor
-  Workspace
-  Tree/Shrub Sample Point - Individual
-  Tree/Shrub Boundary
-  Shrub Colony Impact

Appendix C
Enbridge
Stanley Station
Tree and Shrub Impacts
Mountrail County, North Dakota



For Environmental Review Purposes Only

Date: (8/10/2018) Source: Z:\Clients\IE_F\Enbridge\Sandpiper\ArcGIS\2018\ND_Tree_Shrub\ND_Tree_Shrub\Map.mxd