

**BASIN ELECTRIC
POWER COOPERATIVE**

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May 18, 2011

RECEIVED

MAY 18 2011

Darrell Nitschke, Executive Secretary
North Dakota Public Service Commission
600 East Boulevard Avenue, Dept. 408
Bismarck, ND 58505

PUBLIC SERVICE COMMISSION

Re: Submission and request for approval of Tree/Shrub Replacement Plan for ND PSC Case No. PU-07-671 (Basin Electric Power Cooperative – Williston to Tioga 230-kV Transmission Line).

Dear Mr. Nitschke:

Basin Electric Power Cooperative (Basin Electric) constructed an electrical transmission line in western North Dakota, in Mountrail and Williams counties. Basin Electric contracted with Western EcoSystems Technologies (WEST) to inventory trees and shrubs that may be potentially cleared, grubbed, cut or otherwise removed so that mitigation could occur according to the Public Service Commission's Tree and Shrub Mitigation Specifications (Case No. PU-07-671). WEST, along with Basin Electric Right-of-Way personnel, conducted post-construction inspections to verify/validate the tree and shrub inventory.

Trees and Shrubs Removed

Approximately 273 trees and 77 shrubs were removed during construction of the transmission line. The attached WEST report provides details on species and locations of the trees and shrubs affected by construction. Forty-five landowners were contacted by mail and given the choice of having the replacement trees or shrubs planted off the right-of-way on their property or waiving the replanting in writing and allowing those replacement trees or shrubs to be planted in an alternate location. Thirteen landowners indicated they wanted replacement trees and shrubs while five landowners waived the replacement trees and shrubs in writing. The remaining landowners did not respond; accordingly, those trees and shrubs are assumed to be declined by the landowners.

Replacement Plan

Item number 11 of the Tree and Shrub Mitigation Specifications in Case No. PU-07-671 states that both trees and shrubs shall be replaced on a two for one basis; therefore, approximately 546 trees and 154 shrubs are needed as replacements. In many cases, landowners requested tree and shrub species other than those removed. Based on landowner requests, Basin Electric's proposed replacement plan includes 314 Ponderosa pine, 246 American elm, 22 American plum, and 18 Boxelder for a total of 600 trees. Proposed shrub replacement includes 155 Siberian peashrub (caragana), 185 lilac, and 122 chokecherry bushes, for a total of 462 shrubs.

90 **PU-07-671** Filed: 5/18/2011 Pages: 17
Tree and Shrub Replacement Plan

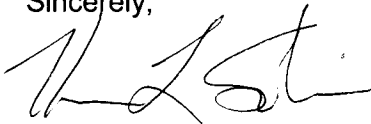
May 18, 2011

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Tree and shrub planting will occur in spring, 2011. Basin Electric contracted with the Natural Resources Conservation Service (NRCS) to supply and plant the trees and shrubs. NRCS will work with individual landowners as to the locations of the plantings. NRCS will provide locations of the newly planted trees and shrubs to Basin Electric once planting is complete. The plantings will be inspected once a year for three years with reports due to the North Dakota Public Service Commission before October 1st of each year.

Basin Electric requests the PSC consider and approve the Tree/Shrub Replacement Plan for Case No. PU-07-671. Please contact me if you have any questions, comments or concerns regarding this submittal.

Sincerely,

A handwritten signature in black ink, appearing to read "K. Solie", written in a cursive style.

Kevin L. Solie
Senior Environmental Analyst

/gmj

Williston-Tioga Transmission Project - Tree And Shrub Inventory and Replacement Plan

Prepared for:

Basin Electric Power Cooperative
1717 East Interstate Ave
Bismarck, North Dakota 58503

Prepared by:

Clayton Derby and Ann Dahl
Western EcoSystems Technology, Inc.
4007 State Street, Suite 109
Bismarck, North Dakota



November 1, 2010

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INTRODUCTION

Basin Electric Power Cooperative (Basin) constructed an approximately 97.9 kilometer (60.8 miles) electrical transmission line in Williams and Mountrail Counties in northwestern North Dakota.

In the course of construction, trees and shrubs were cut and/or destroyed. Basin contracted with Western EcoSystems Technology, Inc. (WEST) to document the species, number, and location of impacted trees and shrubs and to develop a replacement plan for trees and shrubs according to the Public Service Commission's Tree and Shrub Mitigation Specifications (Case No. PU-07-671; Appendix A).

STUDY AREA

The transmission line project begins approximately 5 miles west of Williston, North Dakota, and continues to the north-northeast to about 3.5 miles east of Tioga, North Dakota (Figure 1). Cultivated agriculture is the dominate landcover type; however, grasslands occur along the route. There are also scattered areas of trees and shrubs.

This transmission project used above-ground structures and lines. Equipment and materials were transported along the route via temporary roads/trails that were not graded before or after travel. Trees within the project right-of-way were cut, trees and shrubs at tower structure locations were removed, and some shrubs in the temporary roads/trails were driven over.

METHODS

Tree and Shrub Inventory

Trees and shrubs were inventoried by WEST botanists on foot or from a vehicle on May 12, 13, 26, and July 13, 2010. The area inventoried for shrubs included 6 feet on either side (12 foot total width) of the estimated best driving path between structures and a 125 ft by 125 ft area centered on each structure location. Trees were inventoried if they were within 62.5 ft of the transmission line (125 ft total temporary right of way). Tree/shrub locations of individuals or clusters, species, number of individuals and stems, and height were recorded.

Impact to Trees and Shrubs

In a similar evaluation of transmission line construction and impacts to trees and shrubs, WEST personnel visually inspected areas of disturbance along a transmission line in southwest North Dakota to estimate the number of trees and shrub removed during construction (Derby 2010, Derby and Thorn 2010). Three general categories of disturbance were found: around angle points, along the line structures, and along the estimated best driving path between structures. It was determined that in general all trees within the 125 ft right of way were removed. Shrubs were impacted within 35 ft of angle points and within 25 ft of structures. Shrubs were not found to be permanently impacted along the best driving path as the roots remained intact and shrubs were readily regrowing. These parameters, along with the GPS location of inventoried trees and shrubs, were used in a GIS to determine location and number of impacted trees and shrubs.

RESULTS

Inventory

A total of 3,234 individual trees and shrubs were inventory within the survey boundary. About 39% of all individual trees and shrubs were western snowberry/wolfberry and 32% were buffaloberry (Table 1).

Table 1. Results of tree and shrub inventory by common name and number of stems and individual plants for the Williston-Tioga transmission.

Tree or Shrub Common Name	Number of Stems	Number of Individuals
Trees		
American Elm		141
Boxelder		13
Hawthorn		4
Plains Cottonwood		4
Ponderosa Pine		97
Russian Olive		14
Subtotal		273
Shrubs		
American Plum	82	59
Buffaloberry	5,240	1,019
Canada Gooseberry		20
Chokecherry	341	67
Common Juniper		1
Creeping Juniper	24	5
Prickly Rose	27,582	332
Service berry	111	62
Siberian peashrub	132	79
Silverberry	2000	51
Unknown shrub		1
Western Snowberry/Wolfberry	231,578	1,265
Subtotal	267,090	2,961
Total	267,090	3,234

Impact to Trees and Shrubs

Trees

Approximately 273 trees, representing six species were within the 125 foot right-of-way and therefore likely removed during construction of the transmission line (Table 2). Nineteen different landowners were affected (Table 2; Appendix B).

Shrubs

Approximately 77 shrubs, representing five species were considered destroyed during construction of the transmission line (Table 2). Thirteen landowners were affected (Table 2; Appendix B).

Table 2. Landowner and estimated number of trees or shrubs destroyed due to construction of the Williston-Tioga transmission line.

Landowner		Estimated Number of Individuals Destroyed
Common Name	Scientific Name	
City of Ray, c/o Kim Steffan		3
Russian Olive	<i>Elaeagnus angustifolia</i>	1
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
Daryle Holte, Vernell L. Holte		
Linda Faye Raan		12
American Elm	<i>Ulmus americana</i>	12
David & Ronda Davidson		7
American Plum	<i>Prunus americana</i>	3
Chokecherry	<i>Prunus virginiana</i>	1
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	3
David Davidson		8
American Elm	<i>Ulmus americana</i>	1
American Plum	<i>Prunus americana</i>	1
Chokecherry	<i>Prunus virginiana</i>	3
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	3
Donald & Connie Bergstrom		14
American Elm	<i>Ulmus americana</i>	6
Siberian peashrub	<i>Caragana arborescens</i>	6
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
Donald A. & Betty M. Christopherson		5
Boxelder	<i>Acer negundo</i>	4
Siberian peashrub	<i>Caragana arborescens</i>	1
Donald L. & Barbara A. Kaldahl		2
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
George Moe, Janice Moe Mattern, Julius Moe, Arvid Moe, Willie Moe, Adell Moe Johnson		21
American Elm	<i>Ulmus americana</i>	21
Great Northern Railway Company		12
American Elm	<i>Ulmus americana</i>	8
Boxelder	<i>Acer negundo</i>	4
Isabelle M. Hughes		7
Boxelder	<i>Acer negundo</i>	5
Hawthorn	<i>Crataegus chrysoarpa</i>	2
James E. & Colleen A. Weyrauch		5
American Elm	<i>Ulmus americana</i>	5
James E. Weyrauch		12
American Elm	<i>Ulmus americana</i>	12

Table 2. Landowner and estimated number of trees or shrubs destroyed due to construction of the Williston-Tioga transmission line.

Landowner Common Name	Scientific Name	Estimated Number of Individuals Destroyed
JoAnn M. Becker		13
American Elm	<i>Ulmus americana</i>	9
Siberian peashrub	<i>Caragana arborescens</i>	4
Kelly & Sandra Booke		2
Hawthorn	<i>Crataegus chrysocarpa</i>	2
Laurel Wehr		26
American Elm	<i>Ulmus americana</i>	11
Siberian peashrub	<i>Caragana arborescens</i>	13
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
LeAnn Hersel		1
Buffaloberry	<i>Shepherdia canadensis</i>	1
Orville M. Erickson		51
American Elm	<i>Ulmus americana</i>	51
Restated Family Trust, Arlene M. Stone, Trustee, Arlene M. Kontos, Individually, Kathleen M. Neset, PR, Roy C. Neset Estate		10
Buffaloberry	<i>Elaeagnus angustifolia</i>	10
Robert A. & Cleo M. Erickson		110
Ponderosa Pine	<i>Pinus ponderosa</i>	97
Russian Olive	<i>Elaeagnus angustifolia</i>	13
Robert Brian Rieder		2
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
Rodger Lloyd Nelson, Bryan Lloyd Nelson		1
American Elm	<i>Ulmus americana</i>	1
Ronald E. Viall		1
American Elm	<i>Ulmus americana</i>	1
Vernon Herfindahl, Ronald Herfindahl, Sandra Shepherd		7
American Elm	<i>Ulmus americana</i>	3
Plains Cottonwood	<i>Populus deltoides</i>	4
Vernon L. Nelson		12
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	12
W. Thomas Joyce, Michael Joyce, Mary Ellen Kirn, Daniel Joyce, Timothy Joyce, Edith Ann Joyce		6
Chokecherry	<i>Prunus virginiana</i>	4
Western Snowberry/Wolfberry	<i>Symphoricarpos occidentalis</i>	2
Tree Total		273

Table 2. Landowner and estimated number of trees or shrubs destroyed due to construction of the Williston-Tioga transmission line.

Landowner		Estimated
Common Name	Scientific Name	Number of
		Individuals
		Destroyed
Shrub Total		77

TREE AND SHRUB REPLACEMENT PLAN

Basin contacted the US Forest Service regarding tree to determine a list of tree and shrub species suitable for planting in a separate western North Dakota transmission line project. This same information will be used to identify species that will be planted if existing species are not replanted on the respective landowners' parcels. Landowners will be contacted and given the choice of having the replacement trees or shrubs planted off the right-of-way on their property or waiving this choice in writing and allowing those replacement trees or shrubs to be planted in an alternate location. Tree and shrub planting will occur in spring 2011 and plantings will be inspected once a year for three years with reports due to the North Dakota Public Service Commission before October 1st of each year.

Item number 11 in Case No. PU-07-671 (Appendix A) states that both trees and shrubs shall be replaced on a two for one basis. Therefore, approximately 546 trees and 154 shrubs should be planted based on the pre-construction inventory and GIS analysis. It is understood that Basin personnel were keeping close track of tree removal by property owner and the number of actual trees removed may vary slightly – higher or lower – than this estimated number.

REFERENCES

Derby, C. 2010. Technical Memorandum Regarding Belfield- Rhame Transmission Line Tree and Shrub Clearing. Prepared for K. Solie, Basin Electric Power Cooperative, Bismarck, North Dakota. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. July 2, 2010.

Derby, C. and T. Thorn. 2010. Basin Electric Belfield-to-Rhame Transmission Project - Tree and Shrub Replacement Plan. Prepared for Basin Electric Power Cooperative, Bismarck, North Dakota. Prepared by Western EcoSystems Technology, Inc. (WEST), Bismarck, North Dakota. August 20, 2010.

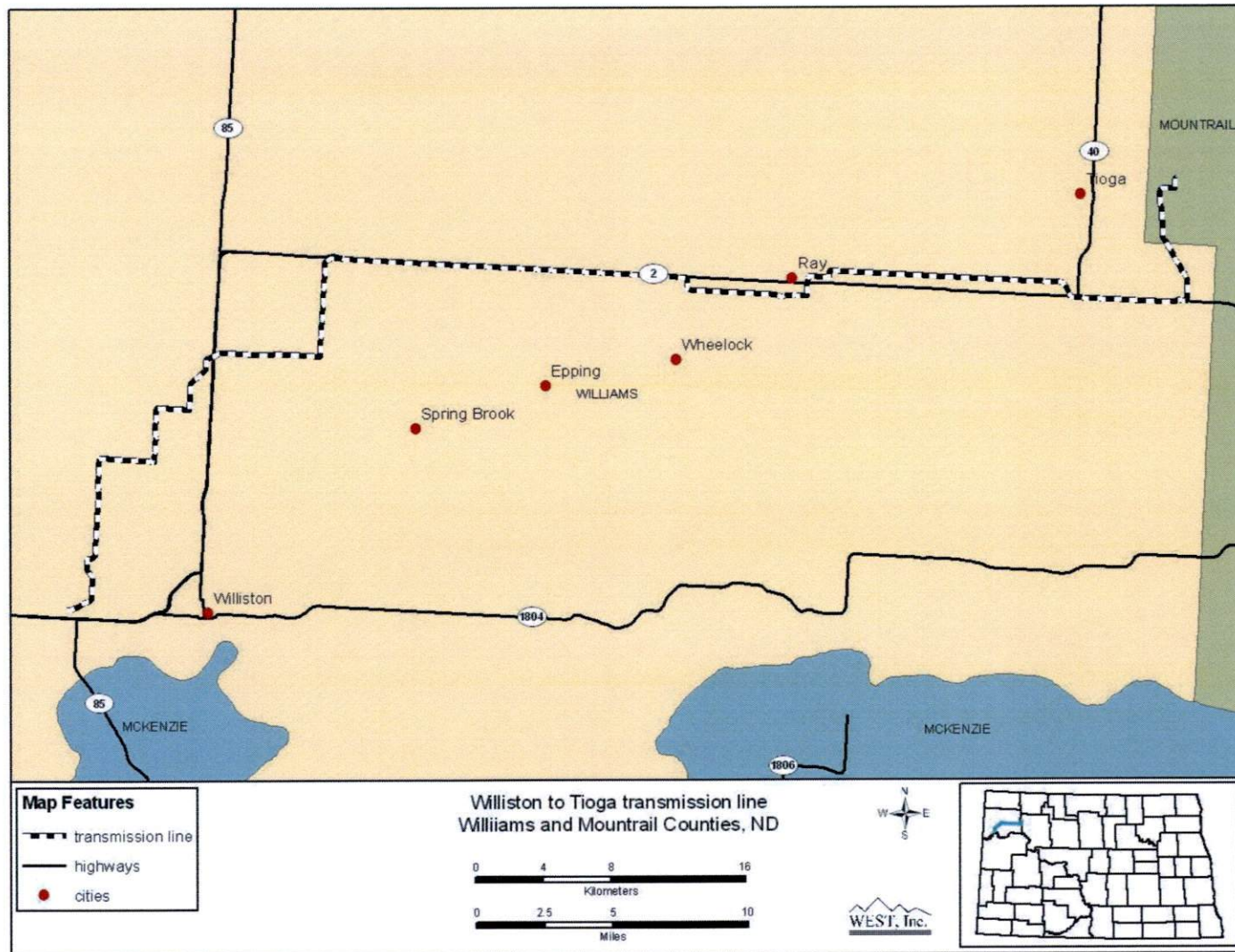


Figure 1. Location of the Williston-Tioga transmission line in northwest North Dakota.

Appendix A: North Dakota Public Service Commission's Tree and Shrub Mitigation Specifications (Case No. PU-07-671).

Case No. PU-07-169

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 (NDPSC) 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. 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.
12. 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.
13. Tree and shrub replacement shall 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 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.
15. 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.
16. 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: Landowner name, parcel number, and location of property

Appendix B. Landowner name, parcel number, and location of property.

Owner	Parcel Nos.	County	Township	Range	Section	Legal Description
City of Ray, c/o Kim Steffan	0650	Williams	156N	97W	16	N2 of NW/4 of SW/4
City of Ray, c/o Kim Steffan	0620	Williams	156N	97W	16	NE/4 less tracts; SE/4 of NW/4
Daryle Holte, Vernell L. Holte, Linda Faye Raan	0440	Williams	156N	96W	8	N/2
David & Ronda Davidson	0160	Williams	156N	95W	11	SE/4
David Davidson	0150	Williams	156N	95W	12	SW/4
Donald & Connie Bergstrom	0580	Williams	156N	97W	10	W/2 of SW/4; E2 of SE/4; SW/4 of SE/4; SE/4 of SW/4
Donald A. & Betty M. Christopherson	0970	Williams	156N	99W	16	NW/4
Donald L. & Barbara A. Kaldahl	0490	Williams	156N	96W	7	NW/4
George Moe, Janice Moe Mattern, Julius Moe, Arvid Moe, Willie Moe, Adell Moe Johnson	0180	Williams	156N	95W	14	NE/4 Less a Tract
Great Northern Railway Company	0670	Williams	156N	97W	17	NE/4 of SE/4
Isabelle M. Hughes	1330	Williams	155N	101W	22	W/2 of W/2
Isabelle M. Hughes	1310	Williams	155N	101W	16	SE/4
James E. & Colleen A. Weyrauch	0830	Williams	156N	98W	16	NW/4
James E. Weyrauch	0720	Williams	156N	97W	18	S/2 of NW/4
JoAnn M. Becker	0290	Williams	156N	96W	12	NE/4; E2 of NW/4; S/2
Kelly & Sandra Booke	1360	Williams	155N	101W	20	S/2 of SE/4
Laurel Wehr	0460	Williams	156N	96W	8	Tract in S/2
LeAnn Hersel	0080	Mountrail	157N	94W	31	SE/4
Orville M. Erickson	1380	Williams	155N	101W	20	W/2 of SW/4
Restated Family Trust, Arlene M. Stone, Trustee, Arlene M. Kontos, Individually, Kathleen M. Neset, PR, Roy C. Neset Estate	0040	Mountrail	157N	94W	30	E/2 of NW/4; W/2 of NE/4
Robert A. & Cleo M. Erickson	1440	Williams	154N	101W	5	W/2 of W/2
Robert Brian Rieder	1230	Williams	155N	101W	2	SW/4; NW/4 of SE/4; SW/4 of NE/4
Rodger Lloyd Nelson, Bryan Lloyd Nelson	0220	Williams	156N	95W	17	NE/4
Ronald E. Viall	0715	Williams	156N	97W	18	SW/4

Williston-Tioga Tree and Shrub Inventory and Replacement Plan

Vernon Herfindahl, Ronald Herfindahl, Sandra Shepherd	0270	Williams	156N	95W	7	S/2
Vernon L. Nelson	0060	Mountrail	157N	94W	30	W2 of SE4 less RR
W. Thomas Joyce, Michael Joyce, Mary Ellen Kirn, Daniel Joyce, Timothy Joyce, Edith Ann Joyce	0140	Williams	156N	95W	12	NW/4