

August 25, 2023

Via Electronic Mail & U.S. Mail

Mr. Steve Kahl
Executive Director
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, North Dakota 58505-0480
ndpsc@nd.gov

RECEIVED

AUG 28 2023

NORTH DAKOTA
PUBLIC SERVICE COMMISSION

**In re: Northern Divide Wind, LLC
Northern Divide Wind Energy Center
Northern Divide 345-kV Transmission Line
Case Nos. PU-19-376 & PU-19-377
Our File No. 035218-000045**

Dear Mr. Kahl:

On behalf of Northern Divide Wind, LLC, please find enclosed for filing in Case Nos. PU-19-376 and PU-19-377 five copies of Northern Divide Wind, LLC's Final Tree and Shrub Mitigation Report.

Please feel free to contact me with any questions. Thank you.

Sincerely,

/s/ Casey A. Furey

Casey A. Furey

CAF/lh
Enc.

cc: Tracy Davis (via e-mail)

207 PU-19-376 Filed: 8/25/2023 Pages: 47
Final Tree and Shrub Mitigation Report

Northern Divide Wind, LLC
Casey Furey, Crowley Fleck, PLLP

199 PU-19-377 Filed: 8/25/2023 Pages: 47
Final Tree and Shrub Mitigation Report

Northern Divide Wind, LLC
Casey Furey, Crowley Fleck, PLLP

memo

To: Nic Dale, NextEra Energy Resources, LLC
From: Mary Rausch, Environmental Consulting & Technology, Inc.
CC: Brian Ortman, Environmental Consulting & Technology, Inc.
Date: August 18, 2023
Re: Northern Divide Tree and Shrub Mitigation Monitoring, Year 2
ECT Project No. 200363

The North Dakota Public Service Commission (PSC) approved the Tree and Shrub Mitigation Plan (Plan) on April 14, 2021. The Plan was filed by Environmental Consulting and Technology, Inc. (ECT) on behalf of Northern Divide Wind, LLC on March 23, 2021. As part of the approval, the PSC also granted a one-year extension for planting efforts due to the potential for 2021 to be a drought year (“Meeting Minutes from the April 14, 2021 North Dakota Public Service Commission Hearing” 2021). The North Dakota PSC required the Plan for the constructed Northern Divide Wind Energy Center – Burke County Siting Application Case No. PU-19-376 and the Northern Divide Wind, LLC 345 kilovolts (kV) Transmission Line – Burke and Mountrail Counties, Siting Application Case No. PU-19- 377.

The purpose of the Plan was to create sustainable plantings appropriate for the local growing conditions to provide long-term benefits to landowners, farmers, ranchers, community, wildlife, and the environment. The Plan was developed in consultation with impacted landowners and the local Soil Conservation District office in accordance with United States Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS)-North Dakota Field Office Technical Guide (FOTG): Windbreak and Woodland Tree Care and Management (USDA-NRCS 2011).

The North Dakota PSC required that, prior to the removal of any tree or shrub for construction, all trees with a diameter at breast height (DBH) larger than one inch be inventoried by recording the DBH, species, and location. This inventory was used to determine the proposed quantity, species, and locations for the Plan. Any species deemed to be noxious or invasive was replaced with a similar non-invasive, non-noxious species suitable for North Dakota growing conditions as recommended by the Burke County Soil Conservation District. The removed species were replaced with conservation-grade saplings and shrubs at least two years old at a 2:1 ratio.

During construction, Northern Divide Wind removed 5,072 trees and shrubs. Based upon the 2:1 ratio, 10,144 trees and shrubs were required to be planted. Environmental Consulting and Technology, Inc. (ECT) determined that planting a “buffer” of additional trees and shrubs was advisable in order to ensure adequate survival. ECT recommended planting an additional buffer of trees and shrubs, and a total of 10,900 trees and shrubs were planted in coordination with landowners and based on available stock from the NRCS office. The plantings took place in May 2021.



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ECT staff conducted Year 2 monitoring on September 14-17, 2022. Monitoring was conducted via visual encounter surveys by assessing each plant to determine its health status (*i.e.*, fail or success). Health status was determined by foliage, a moist cambium layer, and signs of stress. *Table 1* shows the monitoring results from Years 1 and 2.

Table 1. Success of Tree and Shrub Plantings for Years 1 and 2

Landowner	Date of Visit	Year 1 Success	Year 2 Success	Year 2 Total	Year 2 Percent Success
Douglas Ness	09/15/2022	765	1,439	1,803	79.81
Darrell Dihle	09/16/2022	1,474	88	258	34.11
Alex Brodal	09/16/2022	1,719	1,633	1,926	84.79
Jeff Larson	09/17/2022	1,317	634	1,093	58.01
James Elsbernd	09/17/2022	1,260	1,044	1,512	69.05
Embarc Farm LLP	09/17/2022	688	311	1,195	26.03
Rodney Olsen	09/16/2022	367	224	432	51.85
LeRoy and Marcia Schroeder	09/15/2022	61	20	94	21.28
Brad Dibble	09/15/2022	143	61	222	27.48
Hank's Difficult Decisions	09/15/2022	86	0	88	0
Norman Westernness	09/15/2022	183	101	127	79.53
Linda and Owen Enget ^a	N/A	Not Counted	Not Counted	Not Counted	N/A
	Total	8,063	5,555	8,750	63.49
	Total Required by PSC			10,144	54.76

^aNo visual survey conducted during monitoring due to access issues.

Year 2 had a total of 8,750 trees and shrubs. The cumulative total for years one and two was 54.76% survivability.



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Table 2 shows the 20-year mean (2001-2021) and the actual monthly precipitation amount from May to December 2021 for Crosby and Williston, ND acquired from the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NOAA, 2022). The Crosby, ND station was the nearest station northwest of the project area and the Williston, ND station was the nearest station southwest of the project area. The data from the two stations was averaged to more accurately represent the precipitation for the project area. Additionally, the difference between the 20-year means and the 2021 monthly data was calculated to show the precipitation deficit for the project area since the initial plantings in Year 1.

Table 2. 2021 Monthly Average and Actual Precipitation Amount (inches)

Month	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total Deficit
20-year Mean	2.23	3.02	1.99	1.60	1.68	1.08	0.46	0.50	
2021	2.02	3.33	1.31	1.19	0.33	0.90	0.18	0.80	
Difference	-0.21	0.31	-0.68	-0.41	-1.35	-0.18	-0.28	0.30	-2.50

Table 3 shows the 20-year mean (2002-2022) and the actual monthly precipitation amount this year (2022) from January to August for Crosby and Williston, ND (NOAA, 2022). The difference between the 20-year means and 2022 monthly data was calculated to show the current precipitation deficit for the project area in Year 2.

Table 3. 2022 Monthly Average and Actual Precipitation Amount (inches)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total Deficit
20-year Mean	0.37	0.35	0.47	0.98	2.41	2.88	2.00	1.67	
2022	0.30	0.15	0.13	2.10	6.04	1.99	2.97	0.61	
Difference	-0.07	-0.20	-0.34	1.12	3.63	-0.89	0.97	-1.06	3.16

Northern Divide submits that the replanting effort has successfully achieved the purpose of Northern Divide's Mitigation Plan, in particular given the precipitation deficit that was experienced in the project area since the planting occurred.

To give the trees and shrubs a better chance of survival, ECT added supplemental nutrient - rich potting soil and a synthetic moisture retaining polymer around the roots, during the planting of each tree or shrub in Year 1 and Year 2. Landowners receiving trees and/or shrubs were advised to provide supplemental watering to increase survivability. Additionally, after the July 2021 precipitation data was reviewed, ECT conducted a supplemental watering effort for all plantings in August 2021, in an attempt to supplement the low precipitation experienced in Year 2.



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References

- “Meeting Minutes from the April 14, 2021 North Dakota Public Service Commission Hearing.” 2021. Bismarck, ND. <https://psc.nd.gov/public/meetings/minutes/2021/202104141000-minutes-regular-1.pdf>.
- NOAA. 2021. “NOAA- Online Weather Data.” NOAA’s National Weather Service. 2021. <https://www.weather.gov/wrh/Climate?wfo=bis>.
- Northern Divide Wind, LLC. 2019a. “Tree and Shrub Mitigation Specifications- 200 MW Northern Divide Wind Energy Center-Burke.” State of North Dakota Public Service Commission.
- . 2019b. “Tree and Shrub Mitigation Specifications- 345 KV Transmission Line-Burke Mountrail.” State of North Dakota Public Service Commission.
- USDA-NRCS. 2011. “Tree Care and Management.” In *North Dakota NRCS Field Office Technical Guide*, 20. https://efotg.sc.egov.usda.gov/references/public/ND/Tree_Care_and_Management.pdf.

Attachment A

Planting Plans

Douglass Ness

Name Douglas Ness Address 1905 2nd Avenue E, Williston, ND 58801 Phone # 612-501-6878 Date: 3/12/2021

Quarter NW 1/4 Section 8 Twnshp 161N Range 93W

Planned Soil Mapunit / name component(s) Williams-Zahl-Parnell complex, 0 to 9 percent slo Planned by: Reed Scott Date: 3/12/2021

Approved by: Date:

Conservation Tree & Shrub Group 8K Select MLRA 53B

Type of Planting New

Landuse Field Program None

Site Preparation Tilled/Herbicide Protected from livestock? Yes

Site conditions at planting time:

Spacing between rows: 10 feet

Distance from Windward row to roads or bldgs.: ~1120 feet

(Minimum 200' on N & W, and 100' on S & E) Planted by:

Remarks on site prep, conditions and management (Weed Con Date:)

Shrub protection tubes and stakes will be utilized to increase survivability



This practice installation **MEETS** / **DOES NOT MEET** the ND FOTG standards and specifications. (circle one)

Checkout by: Date: Certified By: Date:

Planting No.	Planned Length	Planted Length	Planned Width	Acres	Row #	Primary Species of Tree or Shrub	Type or Variety	Alternating Specie	Planned Spacing in row	Row Spacing (installed)	Number Planned (est)	Number Planted (installed)	Primary Specie / CTSG Suitability	Alternating Specie / CTSG Suitability
2	208		15	0.07	1	Buffaloberry			6.12		34		suitable	
	205				2	Buffaloberry			6.03		34		suitable	
	205				3	Buffaloberry			6.03		34		suitable	
	208				4	Buffaloberry			6.12		34		suitable	
	209				5	Buffaloberry			6.15		34		suitable	
	207				6	Buffaloberry			6.09		34		suitable	
	205				7	Buffaloberry			6.03		34		suitable	
	205				8	Buffaloberry			6.03		34		suitable	
	205				9	Buffaloberry			6.03		34		suitable	
	206				10	Buffaloberry			6.03		35		suitable	
	204				11	Buffaloberry			6.03		34		suitable	
	204				12	Buffaloberry			6.15		34		suitable	
	205				13	Buffaloberry			6.22		33		suitable	
	206				14	Buffaloberry			6.25		33		suitable	
	208				15				6.31		33		suitable	

3090		15	0.07	Totals							508			
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Darrell Dihle

Alexander Brodal

Name **Alexander Brodal** Address **10131 COUNTY ROAD 6, Columbus ND 58727** Phone # **701-641-8764** Date: **3/16/21**

Plan Sketch Map



Quarter **SW 1/4** Section **12** Twnshp **161N** Range **94W**

Planned Soil Mapunit / name component(s) **Williams-Zahl-Parnell complex, 0 to 9 percent slo** Planned by: **Reed Scott** Date: **3/16/21**

Approved by: **[Blank]** Date: **[Blank]**

Conservation Tree & Shrub Group **3** Select MLRA **53B**

Type of Planting **New**

Landuse **Field** Program **None**

Site Preparation **Fallow** Protected from livestock? **Yes**

Site conditions at planting time: **[Blank]**

Spacing between rows: **10** feet

Distance from Windward row to roads or bldgs.: **~876** feet

(Minimum 200' on N & W, and 100' on S & E)

Planted by: **[Blank]**

Remarks on site prep, conditions and management (Weed Con Date: **[Blank]**)

Shrub protection tubes and stakes will be utilized to increase survivability

This practice installation **MEETS** / **DOES NOT MEET** the ND FOTG standards and specifications. (circle one)

Checkout by: **[Blank]** Date: **[Blank]** Certified By: **[Blank]** Date: **[Blank]**

Planting No.	Planned Length	Planted Length	Planned Width	Acres	Row #	Primary Species of Tree or Shrub	Type or Variety	Alternating Specie	Planned Spacing in row	Row Spacing (installed)	Number Planned (est)	Number Planted (installed)	Primary Specie / CTSG Suitability	Alternating Specie / CTSG Suitability
2	1525.1		15	0.53	1	Buffaloberry			6		255		suitable	
	1362				2	Buffaloberry			6		227		suitable	
	895.5				2	Caragana			6		150		suitable	
	1514				3	Caragana			6		253		suitable	
	468				4	Caragana			6		78		suitable	
	1040.4				4	Dogwood			7.25		144		suitable	
	222.9				5	Willow, Sandbar			6		38		NR	
	180.4				6	Willow, Sandbar			6		31		NR	
	65.2				7	Dogwood			8		9		suitable	
	65.2				8	Dogwood			8		9		suitable	
	65.2				9	Dogwood			8		9		suitable	
	65.2				10	Dogwood			8		9		suitable	
	65.2				11	Dogwood			8		9		suitable	
	475.1				12	Willow, Sandbar			6		80		NR	
	435.5				13	Willow, Sandbar			6		73		NR	
	395.9				14	Willow, Sandbar			6		66		NR	

8840.8 **Totals** 15 0.53 1440

Jeffery Larson

James Elsbernd

Name **James Elsbernd** Address **10320 117TH AVE NW, CROSBY, ND 58730** Phone # **701-965-6190** Date: **3/17/21**

Plan Sketch Map



Quarter **SW 1/4** Section **14** Twnshp **161N** Range **93W**

Planned Soil Mapunit / name component(s) **Zahl-Williams loams, 9 to 15 percent slopes** Planned by: **Reed Scott** Date: **3/17/21**

Approved by: _____ Date: _____

Conservation Tree & Shrub Group **10** Select MLRA **53B**

Type of Planting **New**

Landuse **Field** Program **None**

Site Preparation **Fallow** Protected from livestock? **Yes**

Spacing between rows: **6** feet

Distance from Windward row to roads or bldgs.: **~675** feet

(Minimum 200' on N & W, and 100' on S & E)

Planted by: _____ Date: _____

Remarks on site prep, conditions and management (Weed Con Date: _____

Shrub protection tubes and stakes will be utilized to increase survivability

This practice installation **MEETS** / **DOES NOT MEET** the ND FOTG standards and specifications. (circle one)

Checkout by: _____ Date: _____ Certified By: _____ Date: _____

Planting No.	Planned Length	Planted Length	Planned Width	Acres	Row #	Primary Species of Tree or Shrub	Type or Variety	Alternating Specie	Planned Spacing in row	Row Spacing (installed)	Number Planned (est)	Number Planted (installed)	Primary Specie / CTSG Suitability	Alternating Specie / CTSG Suitability
1	889		13	0.27	1	Willow, Sandbar			6		149		NR	
	888				2	Willow, Sandbar			6		148		NR	
	96				3	Willow, Sandbar			6		16		NR	
	168				3	Willow, White			6		28		NR	
	1016				3	Dogwood			6		170		NR	
	858				4	Dogwood			6		143		NR	
	418				4	Juneberry			6		70		NR	
	474				5	Juneberry			6		79		NR	
	168				5	Chokecherry, commc			6		28		NR	
	307				5	Buffaloberry			6		52		NR	
	307				5	Cherry, Nanking			6		52		NR	
	1235				6	Buffaloberry	Cherry, Nanking		6		206		NR	NR
	1215				7	Buffaloberry	Cherry, Nanking		6		203		NR	NR
	672				8	Spruce, Blue	Boxelder		6		112		NR	NR
	523				8				9.5		56		NR	NR

9234		13	0.27	Totals				1512	
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Embarc Farms

Name **Embarc Farm** Address **2727 SHANNON FOREST CT, KATY, TX 77494** Phone # **303-579-2267** Date: **3/17/21**

Plan Sketch Map



Quarter **NW 1/4** Section **27** Twnshp **159N** Range **93W**

Planned Soil Mapunit / name component(s) **hl-Williams-Zahill complex, 6 to 9 percent slop** Planned by: **Reed Scott** Date: **3/17/21**

Approved by: **[Blank]** Date: **[Blank]**

Conservation Tree & Shrub Group **3** Select MLRA **53B**

Type of Planting **New**

Landuse **Field** Program **None**

Site Preparation **Fallow** Protected from livestock? **Yes**

Site conditions at planting time: **[Blank]**

Spacing between rows: **10** feet

Distance from Windward row to roads or bldgs.: **~1400** feet

(Minimum 200' on N & W, and 100' on S & E) Planted by: **[Blank]**

Remarks on site prep, conditions and management (Weed Con Date: **[Blank]**)

Shrub protection tubes and stakes will be utilized to increase survivability

This practice installation **MEETS** / **DOES NOT MEET** the ND FOTG standards and specifications. (circle one)

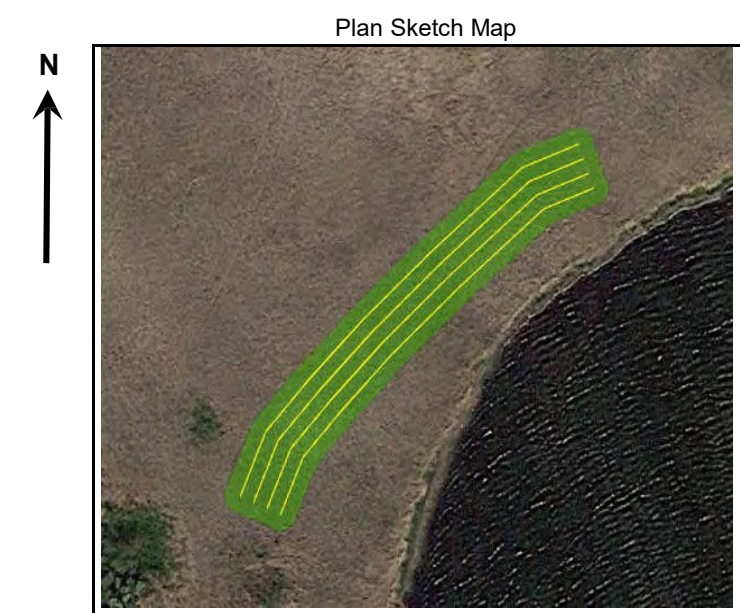
Checkout by: **[Blank]** Date: **[Blank]** Certified By: **[Blank]** Date: **[Blank]**

Planting No.	Planned Length	Planted Length	Planned Width	Acres	Row #	Primary Species of Tree or Shrub	Type or Variety	Alternating Specie	Planned Spacing in row	Row Spacing (installed)	Number Planned (est)	Number Planted (installed)	Primary Specie / CTSG Suitability	Alternating Specie / CTSG Suitability
1	1100		15	0.38	1	Lilac, Common			6.63		166		suitable	
	1050				2	Spruce, Blue			12		88		suitable	
	500				3	Poplar, hybrid specie			12		42		NR	
	396				3	Cottonwood			12		33		NR	
	104				3	Poplar, hybrid specie			12		9		NR	
	198				4	Crabapple, species			6.1		33		suitable	
	200				4	Juneberry		Chokecherry, commc	6.67		30		suitable	suitable
	200				4	Buffaloberry		Sandcherry, Western	6.67		30		suitable	suitable
	500				5	Maple, Amur			6.67		75		suitable	
	200				6	Poplar, hybrid specie			12		17		NR	
	1400				6	Maple, Amur			6.6		213		suitable	
	136				7	Poplar, hybrid specie			12		12		NR	
	1464				7	Spruce, Blue			12		122		suitable	
	1400				8	Lilac, Common			6.67		210		suitable	
	200				8	Poplar, hybrid specie			12		17		NR	
	1200				9	Poplar, hybrid specie			12.3		98		NR	

10248		15	0.38	Totals					1195	
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Rodney Olson

Name Rodney Olson Address _____ Phone # 701-240-3136 Date: 3/16/2021



Quarter SE 1/4 Section 18 Twnshp 161N Range 93W

Planned Soil Mapunit / name component(s) Zahl-Williams loams, 9 to 15 percent slopes Planned by: Reed Scott Date: 3/16/2021

Approved by: _____ Date: _____

Conservation Tree & Shrub Group Select MLRA 53B

Type of Planting New

Landuse Field Program None

Site Preparation Fallow Protected from livestock? Yes

Spacing between rows: 6 feet

Distance from Windward row to roads or bldgs.: ~260 feet

(Minimum 200' on N & W, and 100' on S & E)

Planted by: _____ Date: _____

Remarks on site prep, conditions and management (Weed Con) Date: _____

Shrub protection tubes will be utilized to increase survivability

This practice installation **MEETS** / **DOES NOT MEET** the ND FOTG standards and specifications. (circle one)

Checkout by: _____		Date: _____		Certified By: _____		Date: _____								
Planting No.	Planned Length	Planted Length	Planned Width	Acres	Row #	Primary Species of Tree or Shrub	Type or Variety	Alternating Specie	Planned Spacing in row	Row Spacing (installed)	Number Planned (est)	Number Planted (installed)	Primary Specie / CTSG Suitability	Alternating Specie / CTSG Suitability
<u>4</u>	<u>201</u>		<u>13</u>	<u>0.06</u>	<u>1</u>	<u>Buffaloberry</u>			<u>9</u>		<u>23</u>		<u>Buffaloberry</u>	
	<u>196.2</u>				<u>2</u>	<u>Buffaloberry</u>			<u>9</u>		<u>22</u>		<u>Buffaloberry</u>	
	<u>191.4</u>				<u>3</u>	<u>Buffaloberry</u>			<u>9</u>		<u>22</u>		<u>Buffaloberry</u>	
	<u>186.5</u>				<u>4</u>	<u>Buffaloberry</u>			<u>9</u>		<u>21</u>		<u>Buffaloberry</u>	

775.1 13 0.06 **Totals** 88

LeRoy Schroeder

Brad Dibble

Hank's Difficult Decisions

Norman Westernness

Owen & Linda Enget

Name Owen and Linda Enget Address 9265 78th St NW, POWERS LAKE, ND 58773 Phone # 701-628-2086 Date: 3/17/21

Plan Sketch Map



Quarter Section 15 Twnshp 158N Range 93W
Planned Soil Mapunit / name component(s) Williams-Zahl loams, 3 to 6 percent slopes
Planned by: Reed Scott Date: 3/17/21
Approved by:
Conservation Tree & Shrub Group 3 Select MLRA 53B
Type of Planting New
Landuse Field Program None
Site Preparation Fallow Protected from livestock? Yes
Spacing between rows: 12 feet
Distance from Windward row to roads.: ~60 feet
Planted by:
Remarks on site prep, conditions and management (Weed Con Date:
Shrub protection tubes and stakes will be utilized to increase survivability

This practice installation MEETS / DOES NOT MEET the ND FOTG standards and specifications. (circle one)

Checkout by: Date: Certified By: Date:

Table with 15 columns: Planting No., Planned Length, Planted Length, Planned Width, Acres, Row #, Primary Species of Tree or Shrub, Type or Variety, Alternating Specie, Planned Spacing in row, Row Spacing (installed), Number Planned (est), Number Planted (installed), Primary Specie / CTSG Suitability, Alternating Specie / CTSG Suitability. Rows include planting details for Buffalo, Spruce, and Blueberry.

Totals row: 332, 16, 0.00, 48