

**SECOND ANNUAL MONITORING REPORT OF
TREE AND SHRUB SURVIVAL
FOR THE DAKOTA ACCESS PIPELINE**

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Introduction

This document is the second of three annual monitoring reports of tree and shrub mitigation on the Dakota Access Pipeline (DAPL). Dakota Access, LLC replanted trees and shrubs removed during construction following the methods outlined in the State of North Dakota Public Service Commission (NDPSC) approved Tree and Shrub Reclamation Plan submitted April 2017. The approximately 1,134 mile pipeline transports crude oil from Stanley, North Dakota, to Patoka, Illinois. The North Dakota portion of the DAPL Project is approximately 359 miles in length, traversing seven counties: Mountrail, Williams, McKenzie, Dunn, Mercer, Morton, and Emmons. The construction right-of-way (ROW) is 75 to 100 feet wide, inclusive of 50 feet of permanent right-of-way (PROW). Where superficially disturbed, the PROW will be maintained in an herbaceous state for the lifetime of the pipeline.

Tree and Shrub Mitigation Plantings

The 2017 inventory of planted tree and shrub species was documented in a letter to the NDPSC dated September 25, 2017 titled, Tree and Shrub Baseline Planting Report for Dakota Access Pipeline. In accordance to the NDPSC Tree and Shrub Mitigation Specifications, trees and shrubs removed within the ROW during construction were replaced at a 2:1 ratio, with an additional ~10% as a contingency to account for potential loss while still achieving the required successful reestablishment of trees and shrubs. In total, 88,309 trees and shrubs were planted in spring of 2017. Two-year-old saplings were purchased from Lincoln Oaks Nursery and the Towner State Nursery in North Dakota. The mitigation plantings were the same species as those removed, or in some cases substituted with a similar species as recommended by the North Dakota Forest Service.

In addition, the PSC identified 83 ROW sites in which a total of 437 trees and shrubs were cleared in excess of the maximum 85 feet allowed. The PSC stipulated that these trees and shrubs must be replaced at a 3:1 ratio as per the Advocacy Staff's July 21, 2017 Memorandum, these site locations were included in the 2018 report. The 3:1 ratio planting occurred at 31 locations along the ROW in the locations shown on the attached tree and shrub planting location maps.

DAPL worked with landowners along the pipeline ROW to determine desired locations and species for planting. Trees and shrubs were planted outside the ROW as requested by landowners; most plantings were placed within windrows and shelter belts. The goal is 75% survival after three years. A tree watering program has been implemented each year since the initial planting in 2017, during the growing months between May and September. Beginning in 2017 DAPL has; installed weed barrier fabric, sprayed deer and rodent deterrent, built fences, installed irrigation systems, and watered all mitigation plants to facilitate plant survival.

2018 Supplemental Planting Program

Many tree species had a high mortality rate after the severe 2017 drought; these losses were mitigated by additional plantings of 50,406 trees and shrubs in the spring of 2018 by KC Harvey Environmental, LLC (KC Harvey). Including the 3:1 mitigation described above, a total of 51,717 trees and shrubs were planted during 2018 by KC Harvey. Local County Soil Conservation districts planted 1,091 trees and shrubs in 2018. Several of the original 2017 planting locations had high mortality rates due to browsing by ground squirrels, prairie dogs and in some locations livestock. Supplemental planting was not conducted in these locations since it is anticipated that that continued high mortality rates would occur, these locations and others with poor soil composition were not replanted in 2018. Juneberry and Bur oak planted in 2018 had high mortality due to the nursery stock. To compensate for losses, Towner nursery provided 1,397 replacement plants in the spring of 2019.

Natural Tree/shrub Regeneration

DAPL reported 5,222 natural regenerated trees and shrubs on the pipeline ROW in the first annual monitoring report (2018). Sixteen land parcels were evaluated for re-generation in 2018. Two of the parcels were locations of horizontal drilling and documented not to have had tree or shrub removal. The 5,222 plants counted in 2018 were located on fourteen of the sixteen land parcels surveyed. The 2019 monitoring identified a total of 8,276 individual trees and shrubs naturally established within the ROW at seventeen land parcels representing a 60% sample of the original inventoried trees and shrubs. The locations where the regeneration surveys were completed are illustrated on the attached tree and shrub planting location maps. Individuals within species were counted in accordance to the methodology described in the original DAPL survey. Many rhizomatous shrub species such as silver sage and snowberry naturally regenerate on the reclaimed ROW. In addition to these, seed dispersing species had a large contribution in natural regeneration numbers, increasing the natural regeneration total over the 2018 count. Among the fourteen revisited parcels, there was a 39% increase in tree and shrub counts compared to 2018. Three new parcels were monitored once in 2019 and contributed 8% of the total 2019 regeneration counts. Green Ash recruitment resulted in 4.8 times more saplings in 2019 compared to 2018. Red Raspberries had the second highest increase, 3.7 times more frequent in 2019.

The locations where naturally regeneration is high can be associated with the favorable habitat conditions where those species naturally occur in abundance. These locations are likely favorable with respect to soil type, hydrology, aspect and other factors that would support a sustainable plant community. It is expected to see a further increase in regeneration during the 2020 survey.

Tree and Shrub Mitigation Survival Monitoring

A total of 42,648 trees and shrubs were documented in the planned construction disturbance on the ROW in the Tree and Shrub Reclamation Plan. This quota did not take into account selective use of horizontal drilling techniques to bore beneath the surface, leaving some vegetative communities undisturbed. Monitoring data from September 2018 documented 8,277 originally inventoried trees and shrubs that were not removed during construction, which were included in the total previously thought to be removed and included in the mitigation plan. With this new data, an adjusted total of 34,371 trees and shrubs were actually removed during pipeline construction (Table 1). The adjusted 2:1 replacement count is 68,742. The additional 3:1 mitigation replacement count of 1,311 was added to this for a total of 70,053 plants, with a 75% survival goal of 52,540 plants.

Survival of planted trees and shrubs was monitored in August 2019 counting the number of live shrub/tree individuals. Among windrows established in 2017 and 2018, there are 47,838 trees and shrubs surviving through August 2019. Natural regeneration was surveyed by counting the number of live individuals per species on seventeen different parcels. This effort counted 8,276 trees and shrubs naturally reestablishing along the ROW. With the addition of the 8,276 count, there are a total of 56,114 live trees and shrubs (Table 1). Table 2 provides the 2019 survival counts and regeneration by species.

This total live count is approximately 80.1% of required mitigation. This survival percentage accounts for trees and shrubs not removed by selective horizontal drilling and including the additional 1,311(3:1) mitigation planting. This overall total of 56,114 living plants exceeds the 75% mitigation goal of 52,540 by 3,574 plants.

Table 1. Summary of tree and shrub mitigation plantings on the Dakota Access Pipeline.

Number Inventoried	Not Removed	Adjusted Number Inventoried	Adjusted Replacement Total (2:1)	3:1 Mitigation Total Planted	2017 Planted	2018 Planted	Natural Re-generation	2019 Alive Count	Total Live
42,648	8,277	34,371	68,742	1,311	88,349	52,808	8,276	47,838	56,114

Table 2. Tree and shrub species present on the Dakota Access Pipeline.

Species	Number Inventoried	Not Removed	2:1 Mitigation Planted	3:1 Mitigation Planted	Total Planted ¹	Natural Re-generation	2019 Alive Count
American Bittersweet	8	0	0	0	0	0	0
American Elm	304	3	0	0	0	2	0
American Hazelnut	1268	0	2952	27	2979	3	75
American Plum	72	0	12852	253	13105	29	8697
Amur Honeysuckle	200	146	0	0	0	0	0
Amur Maple	8	0	477	0	477	0	854
Arnold hawthorn	0	0	101	0	101	0	0
Bay Willow	1	0	0	0	0	0	0
Beaked hazel	118	108	0	0	0	0	0
Black currant	1033	1023	64	0	64	0	2154
Black Hills spruce	19	0	2609	31	2640	0	1136
Boxelder	114	14	3268	0	3268	22	1
Broom snakeweed	0	0	0	0	0	81	0
Bur oak	619	0	2811	23	2834	119	528
Canadian gooseberry	1785	146	0	0	0	11	0
Caragana	0	0	460	0	460	0	455
Clove currant	793	0	0	0	0	0	0
Colorado blue spruce	1	0	2185	31	2216	0	458
Common buckthorn	1188	0	0	0	0	5	0
Common chokecherry	602	40	21055	245	21300	749	3415
Common juniper	67	2	0	0	0	2	0
Common lilac	18	0	3709	99	3808	0	3691
Downy hawthorn	0	0	2167	12	2179	4	127
Eastern cottonwood	231	69	0	0	0	6	0
Eastern red cedar	15	0	461	2	463	0	21
Fourwing saltbush	84	0	0	0	0	7	0
Fragrant sumac	99	5	153	0	153	1	0
Golden currant	912	149	32367	0	32367	4	917
Greasewood	226	0	0	0	0	1	0
Green ash	3618	156	12944	127	13071	927	7032
Hackberry	0	0	125	0	125	0	24
Hawthorn	2154	3	0	0	0	0	0
Horizontal juniper	126	3	0	0	0	1	0
Indigo bush	16	16	0	0	0	0	0
Japanese elm	1	0	0	0	0	0	0
Juneberry	0	0	1724	2	1726	62	539
Leadplant	22	0	0	0	0	0	0
Long-leaved sage	49	0	0	0	0	0	0
Meyer spruce	0	0	187	13	200	0	200

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Species	Number Inventoried	Not Removed	2:1 Mitigation Planted	3:1 Mitigation Planted	Total Planted ¹	Natural Re-generation	2019 Alive Count
Missouri River willow	198	0	0	0	0	0	0
Multiflora rose	7	3	0	0	0	0	0
Nannyberry viburnum	980	0	2189	6	2195	0	319
Native cottonwood	0	0	1231	5	1236	274	133
Paper birch	17	0	150	0	150	0	63
Peachleaf willow	30	27	175	0	175	14	0
Pekin lilac	0	0	2565	54	2619	0	528
Pin cherry	625	0	0	0	0	0	0
Poison ivy	3	0	0	0	0	0	0
Ponderosa pine	59	10	4778	32	4810	0	2180
Prairie rose	212	11	0	0	0	444	0
Quaking aspen	312	31	1258	0	1258	158	0
Rabbitbrush	552	0	0	0	0	1613	0
Red raspberry	788	0	0	0	0	309	0
Redosier dogwood	1935	1085	4179	0	4179	9	71
Rocky Mountain juniper	238	1	4226	11	4237	0	4016
Russian olive	254	68	0	0	0	0	0
Sand cherry	314	0	1990	37	2027	0	522
Sand sagebrush	21	0	0	0	0	0	0
Sandbar willow	5532	4851	1036	0	1036	545	297
Scotch pine	0	0	3026	0	3026	0	2151
Serviceberry	106	8	0	0	0	0	0
Sharpleaf willow	0	0	150	0	150	0	0
Siberian elm	1604	150	198	0	198	0	257
Silver buffaloberry	1187	75	3986	63	4049	42	280
Skunkbush sumac	28	0	4893	233	5126	19	4482
Woods rose	125	19	46	0	46	69	0
Shrubby cinquefoil	1633	0	0	0	0	0	0
Siberian peashrub	193	20	0	0	0	0	0
Silver sage	7664	9	0	0	0	2323	0
Silverberry	573	1	0	0	0	37	0
Snowberry	728	21	0	0	0	337	0
Tatarian honeysuckle	856	0	2496	5	2501	0	2215
Water birch	6	0	0	0	0	0	0
White willow	3	0	0	0	0	0	0
Winterfat	94	4	0	0	0	47	0
TOTAL	42,648	8,277	141,243	1,311	142,554	8,276	47,838

1. This total planted number also includes the 1,091 plants planted in 2018 by the Soil Conservation Districts.

Attachments

1. Tree and Shrub Mitigation Photos
2. Tree and Shrub Planting Locations Maps

References

Dakota Access, LLC. 2017. Tree and Shrub Reclamation Plan for the Dakota Access Pipeline.
Prepared by KC Harvey Environmental, LLC, Bozeman, MT.

Attachment 1

Tree and Shrub Mitigation Photos

Figures 1 - 10



Figure 1. Green Ash Windrow established at the Robert Tuhy residence. Site has been established for 3 years.



Figure 2. Second year's growth of Ponderosa Pine and Black Hill's Spruce at the Beth Sunday residence.



Figure 3. Golden Currant at the Karla/Allison Sheets residence



Figure 4. Second Year's growth of Scotch pine at the Randy Keller property.



Figure 5. Example of Golden Current that has been impacted by wildlife browsing.



Figure 6. Natural Regeneration of multiple species on Rodney Wolf property.



Figure 7. Natural regeneration of Quaking aspen and a variety of shrubs can be seen on the ROW, Ted Kupper property.



Figure 8. Ripe Currants on the Martin Ranch property.



Figure 9. Amur Maple from the 2017 planting on Robert Reider property exceeds 8 feet in height.



Figure 10. Common Lilac at Gerald Kadrmas property.

Attachment 2

Tree and Shrub Planting Location Maps

Maps 1 - 12