

September 29, 2020

North Dakota Public Service Commission
Steve Kahl, Director of Administration
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480

RE: Third Annual Tree and Shrub Planting Survival Monitoring Report for the Dakota Access Pipeline

Dear Mr. Kahl,

In accordance with the North Dakota Public Service Commission (NDPSC) Tree and Shrub Mitigation Specifications, KC Harvey Environmental, LLC (KC Harvey) is submitting documentation of the reclamation planting survival monitoring for the third year after reclamation for the Dakota Access Pipeline (DAPL).

During pipeline construction, 34,371 trees and shrubs were removed from the DAPL right-of-way (ROW). DAPL was required to mitigate these trees and shrubs at a 2:1 ratio, which would be 68,742 mitigation plantings. An additional 1,311 plants were added to this total for plants that were mitigated at a 3:1 ratio. Further, the PSC set a goal of at least 75% survival of these mitigation plantings by 2020.

KC Harvey planted 88,349 trees and shrubs in 2017 and an additional 52,808 trees and shrubs in 2018 to compensate for the large number of losses due to the severe 2017 drought. KC Harvey conducted the third (of three) annual fall survival monitoring in August 2019. This monitoring of the mitigation plantings, as well as natural regeneration growth along the pipeline ROW, showed 57,418 surviving mitigation plants. This number is approximately 82% of the required 2:1 and 3:1 mitigation count and exceeds the 75% survival requirement by 4,878 plants. These monitoring results are documented in the attached report.

Please contact us if you require any additional information.

Sincerely,



David P. Cameron
Principal
KC Harvey Environmental, LLC

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

Prepared for:
Dakota Access, LLC

Submitted by:
KC Harvey Environmental, LLC
376 Gallatin Park Drive
Bozeman, MT 59715

September 21, 2020



Introduction

This document is the third annual monitoring reports for tree and shrub mitigation on the Dakota Access Pipeline (DAPL). The purpose of this monitoring report is to document results of the tree and shrub mitigation program in accordance to the State of North Dakota Public Service Commission (NDPSC). Dakota Access, LLC replanted trees and shrubs removed during construction following the methods outlined in the (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 pipeline 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, with 50 feet being 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 from the ROW during construction were replaced at a 2:1 ratio. To account for potential loss, an additional ~10% contingency was added to the plantings. In all, 88,309 trees and shrubs were planted in the spring of 2017. Mitigated trees and shrubs were two-year-old saplings purchased from Lincoln-Oaks Nursery and Towner State Nursery in North Dakota. The mitigation plantings were the same species as those removed, or substituted with a similar species as recommended by the North Dakota Forest Service.

In addition, the NDPSC identified 83 ROW sites in which a total of 437 trees and shrubs were cleared in excess of the maximum 85 feet allowed. The NDPSC 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 planting and monitoring report. The 3:1 ratio mitigation planting occurred at 31 locations along the ROW 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; often at a landowner's request, trees and shrubs were planted outside of the ROW. The goal is $\geq 75\%$ survival after three years. To facilitate a successful outcome, DAPL has: installed weed barrier fabric, sprayed deer and rodent deterrent, built fences, attached browse protectors, installed irrigation systems, and watered all mitigation plants during the growing season.

Supplemental Planting Program

Many tree species had a high mortality rate after the severe 2017 drought; these losses were mitigated by an additional planting of 50,406 trees and shrubs in the spring of 2018. This planting with the addition of the 3:1 mitigation described above summed up to a total of 51,717 trees and shrubs planted in 2018. Supplemental plantings did not occur at locations where high tree/shrub mortality was a result of uncontrollable variables (excluding drought). These variables in 2017

included browsing by livestock, ground squirrels, and prairie dogs; as well as poor soil composition not suitable for the desired trees and shrubs.

Juneberry and Bur oak planted in 2018 had high mortality rates and Towner Nursery credited the losses from their hardwood stock. To compensate for the losses, Towner Nursery provided 1,397 replacement plants in the spring of 2019. The replacement plantings were distributed to the landowners that incurred the loss of Bur oak and Juneberry from 2018.

Natural Tree and Shrub Regeneration

Natural tree and shrub regeneration field inventories were completed by scientists familiar with tree and shrub identification in North Dakota. Field teams visited priority areas defined in the pre-inventory report, as well as land parcels nearest the Missouri and Little Missouri Rivers. Data were collected using the field protocol defined in the *Monitoring Plan for Natural Tree and Shrub Regeneration Dakota Access Pipeline* from March 7, 2018. DAPL has reported increasing natural regeneration along the ROW since monitoring began in 2018. In 2018, DAPL conducted ROW natural regeneration monitoring on sixteen land parcels. Two of these parcels were locations where normal ROW disturbance was anticipated but replaced by horizontal drilling during the construction; because of this, no trees or shrubs were removed on these two parcels (ND-MC-100.900, ND-WI-251.000). The remaining fourteen parcels included 5,222 trees and shrubs naturally regenerating within the ROW. These same fourteen parcels in 2019 produced 7,652 trees and shrubs in 2019, this was a 46% increase in one year. In total for 2019, seventeen parcels were monitored and 8,276 individual trees and shrubs were identified within the ROW.

For 2020, DAPL has a reported 11,680 trees and shrubs naturally regenerating across sixteen land parcels in North Dakota representing a 59% sample of the original inventoried trees and shrubs. The parcels inventoried were locations where monitoring was conducted in 2018 or 2019 and landowner access was granted. The locations where the regeneration surveys were completed are illustrated on the attached tree and shrub planting location maps. Many rhizomatous shrub species such as Prairie rose (*Rosa arkansana*) and Western snowberry (*Symphoricarpos occidentalis*) are successful at regenerating on the ROW; however these rhizomatous species are not the largest contributors to the tree/shrub regeneration inventory. Seed dispersing species accounted for 62% of the overall inventory. Seed dispersing species have increased in abundance at an increasing rate since 2018. From 2018 to 2020 Green ash saplings, which only generate from seed, became 20 times more frequent within the ROW. Locations with high natural regeneration can be directly associated with favorable habitat conditions as well as high species abundance outside of the ROW. These plant communities will continue to establish within the ROW along these areas.

Tree and Shrub Mitigation Survival Monitoring

A total of 42,648 trees and shrubs were inventoried for the planned DAPL construction disturbance in the Tree and Shrub Reclamation Plan. This total included the trees and shrubs that were not removed in areas where the use of horizontal drilling techniques to bore beneath the surface, leaving some vegetative communities undisturbed. As described above, monitoring data from September 2018 documented 8,277 originally inventoried trees and shrubs from two land parcels that were not disturbed because of the use of horizontal drilling as opposed to trenched installation. Given that these areas were not disturbed, the original number inventoried has been adjusted from 42,648 to 34,371 trees and shrubs actually removed during pipeline construction (Table 1.). The adjusted 2:1

mitigation is 68,742. The additional 3:1 mitigation replacement of 1,311 trees/shrubs from 2018 was added for a total of 70,053 trees and shrubs, with a $\geq 75\%$ mitigation goal of 52,540.

Survival of planted trees and shrubs were monitored in August 2020 by counting the number of live tree and shrub individuals. Among windrows established in 2017 and 2018, there are 45,738 trees and shrubs surviving through August 2020. Natural regeneration was surveyed by counting the number of live individuals per species on sixteen different parcels. This effort counted 11,680 trees and shrubs naturally re-establishing within the ROW. Between the natural regeneration and the mitigated tree survival, there are a total of 57,418 live trees and shrubs (Table 1.). Table two provides the 2020 regeneration and mitigation survival by species.

This total live count (57,418) is approximately 82% of the required mitigation. The 2020 survival total of 57,418 living plants exceeds the 75% mitigation goal of 52,540 by 4,878 trees and shrubs.

Table 1. Summary of Tree and Shrub Mitigation on the Dakota Access Pipeline.

Original Inventory	Not Removed	Adjusted Replacement Total (2:1)	3:1 Mitigation Total Planted	2017 Planted	2018 Planted	2019 Planted	Natural Regeneration	2020 Mitigation Survival	Total 2020 Tree/Shrubs	Percent of Mitigation
42,648	8,277	68,742	1,311	88,349	52,808	1,397	11,680	45,738	57,418	81.96%

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

Species	Number Inventoried	2017 Replacement Counts	Not Removed	Actual Number Removed	2:1 Replacement Requirement	2:1 Mitigation Planted	3:1 Mitigation Planted	Natural Regeneration	2020 Alive Count	Total 2020 Tree/Shrubs
American Bittersweet	8	16	0	8	16	0	0	0	0	0
American Elm	304	608	3	301	602	0	0	23	0	23
American Hazelnut	1,268	2,536	0	1,268	2,536	2,952	27	0	34	34
American Plum	72	144	0	72	144	12,852	253	35	8,396	8,431
Amur Honeysuckle	200	400	146	54	108	0	0	0	0	0
Amur Maple	8	16	0	8	16	477	0	0	604	604
Arnold hawthorn	0	0	0	0	0	101	0	0	0	0
Bay Willow	1	2	0	1	2	0	0	0	0	0
Beaked hazel	118	236	108	10	20	0	0	2	0	2
Black currant	1,033	2,066	1,023	10	20	64	0	0	0	0
Black Hills spruce	19	38	0	19	38	2,609	31	0	1,038	1,038
Boxelder	114	228	14	100	200	3,268	0	0	0	0
Broom snakeweed	0		0	0	0	0	0	0	0	0
Bur oak	619	1,238	0	619	1,238	2,811	23	249	596	845
Canadian gooseberry	1,785	3,570	146	1,639	3,278	0	0	11	0	11
Caragana	0	0	0	0	0	460	0	0	447	447
Clove currant	793	1,586	0	793	1,586	0	0	0	0	0
Colorado blue spruce	1	2	0	1	2	2,185	31	0	601	601
Common buckthorn	1,188	2,376	0	1,188	2,376	0	0	19	0	19
Common chokecherry	602	1,204	40	562	1,124	21,055	245	734	2,958	3,692
Common juniper	67	134	2	65	130	0	0	0	0	0
Common lilac	18	36	0	18	36	3,709	99	0	3,739	3,739
Downy hawthorn	0	0	0	0	0	2,167	12	0	136	136
Eastern cottonwood	231	462	69	162	324	0	0	0	0	0
Eastern red cedar	15	30	0	15	30	461	2	3	80	83
Fourwing saltbush	84	168	0	84	168	0	0	0	0	0

Species	Number Inventoried	2017 Replacement Counts	Not Removed	Actual Number Removed	2:1 Replacement Requirement	2:1 Mitigation Planted	3:1 Mitigation Planted	Natural Regeneration	2020 Alive Count	Total 2020 Tree/Shrubs
Fragrant sumac	99	198	5	94	188	153	0	0	0	0
Golden currant	912	1,824	149	763	1,526	32,367	0	0	3,282	3,282
Greasewood	226	452	0	226	452	0	0	2	0	2
Green ash	3,618	7,236	156	3,462	6,924	12,944	127	3,180	6,163	9,343
Hackberry	0	0	0	0	0	125	0	0	33	33
Hawthorn	2,154	4,308	3	2,151	4,302	0	0	3	0	3
Horizontal juniper	126	252	3	123	246	0	0	0	0	0
Indigo bush	16	32	16	0	0	0	0	0	0	0
Japanese elm	1	2	0	1	2	0	0	0	0	0
Juneberry	0	0	0	0	0	1,724	2	92	239	331
Leadplant	22	44	0	22	44	0	0	0	0	0
Long-leaved sage	49	98	0	49	98	0	0	0	0	0
Meyer spruce	0	0	0	0	0	187	13	0	200	200
Missouri River willow	198	396	0	198	396	0	0	0	0	0
Multiflora rose	7	14	3	4	8	0	0	0	0	0
Nannyberry viburnum	980	1,960	0	980	1,960	2,189	6	0	499	499
Native cottonwood	0	0	0	0	0	1,231	5	229	107	336
Paper birch	17	34	0	17	34	150	0	0	0	0
Peachleaf willow	30	60	27	3	6	175	0	3	0	3
Pekin lilac	0	0	0	0	0	2,565	54	0	559	559
Pin cherry	625	1,250	0	625	1,250	0	0	0	0	0
Poison ivy	3	6	0	3	6	0	0	0	0	0
Ponderosa pine	59	118	10	49	98	4,778	32	0	1,264	1,264
Prairie rose	212	424	11	201	402	0	0	213	0	213
Quaking aspen	312	624	31	281	562	1,258	0	156	0	156
Rabbitbrush	552	1,104	0	552	1,104	0	0	3,746	0	3,746

Species	Number Inventoried	2017 Replacement Counts	Not Removed	Actual Number Removed	2:1 Replacement Requirement	2:1 Mitigation Planted	3:1 Mitigation Planted	Natural Regeneration	2020 Alive Count	Total 2020 Tree/Shrubs
Red raspberry	788	1,576	0	788	1,576	0	0	142	0	142
Redosier dogwood	1,935	3,870	1,085	850	1,700	4,179	0	158	142	300
Rocky Mountain juniper	238	476	1	237	474	4,226	11	1	4,018	4,019
Russian olive	254	508	68	186	372	0	0	0	0	0
Sand cherry	314	628	0	314	628	1,990	37	0	555	555
Sand sagebrush	21	42	0	21	42	0	0	0	0	0
Sandbar willow	5,532	11,064	4,851	681	1,362	1,036	0	467	303	770
Scotch pine	0	0	0	0	0	3,026	0	0	2,988	2,988
Serviceberry	106	212	8	98	196	0	0	10	0	10
Sharpleaf willow	0	0	0	0	0	150	0	0	0	0
Siberian elm	1,604	3,208	150	1,454	2,908	198	0	2	242	244
Silver buffaloberry	1,187	2,374	75	1,112	2,224	3,986	63	47	323	370
Skunkbush sumac	28	56	0	28	56	4,893	233	25	4,111	4,136
Woods rose	125	250	19	106	212	46	0	0	0	0
Shrubby cinquefoil	1,633	3,266	0	1,633	3,266	0	0	0	0	0
Siberian peashrub	193	386	20	173	346	0	0	0	0	0
Silver sage	7,664	15,328	9	7,655	15,310	0	0	1,817	0	1,817
Silverberry	573	1,146	1	572	1,144	0	0	27	0	27
Snowberry	728	1,456	21	707	1,414	0	0	246	0	246
Tatarian honeysuckle	856	1,712	0	856	1,712	2,496	5	0	2,081	2,081
Water birch	6	12	0	6	12	0	0	14	0	14
White willow	3	6	0	3	6	0	0	0	0	0
Winterfat	94	188	4	90	180	0	0	24	0	24
TOTAL	42,648	85,296	8,277	34,371	68,742	141,243	1,311	11,680	45,738	57,418

Attachments

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

References

Monitoring Plan for Natural Tree and Shrub Regeneration Dakota Access Pipeline from March 7, 2018 Dakota Access, LLC. 2017. Tree and Shrub Reclamation Plan for the Dakota Access Pipeline. Prepared by KC Harvey Environmental, LLC, and Bozeman, MT.

Attachment 1

Tree and Shrub Mitigation Photos

Figures 1 - 9



Figure 1. The Green ash at Brian Reider's residence are exceeding 8' in height.



Figure 2. Aerial image of the grove establish at Richard Lawlar's property by the DAPL project.



Figure 3. Richard Lawlar's grove with flowering Tatarian honeysuckle.



Figure 4. DAPL Regeneration monitoring on Mavis Brandvick's ranch shows high Rubber rabbitbrush Production.



Figure 5. New vegetation reestablishing from the edge of the ROW at the Leonard Lindsey property.



Figure 6. First plums on Doug Hillie's property from planting in 2017.



Figure 7. Continued browsing by livestock and wildlife on planting locations.



Figure 8. Aerial image of the grove at the Martin Ranch.

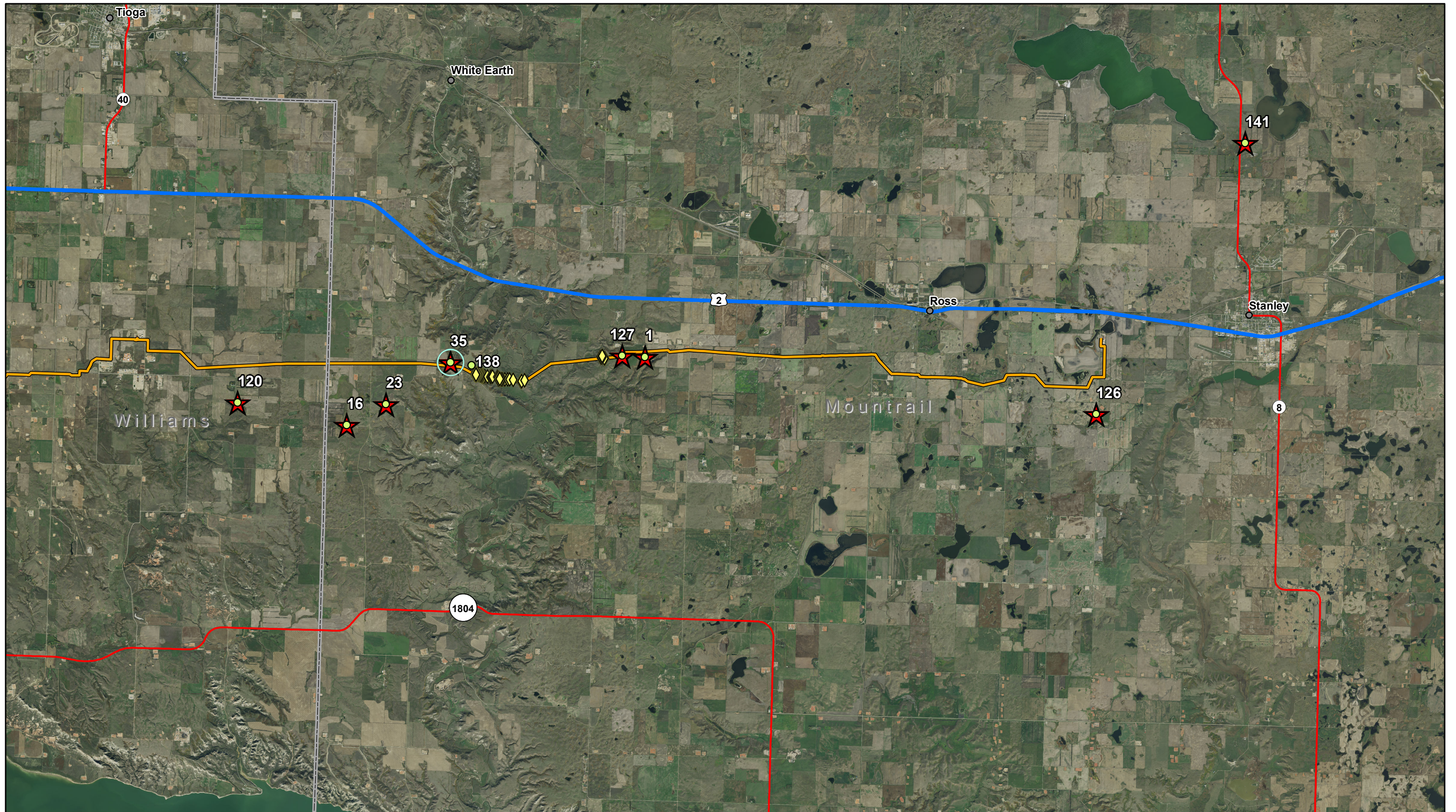


Figure 9. American plum and Golden currant at the Martin Ranch.

Attachment 2

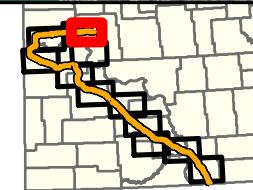
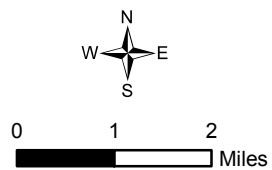
Tree and Shrub Planting Location Maps

Maps 1 - 12



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★ 2017 Planting Locations

● 2018 Planting Locations

○ 3:1 Mitigation Location

◇ Natural Regeneration Monitoring Point

— Pipeline

— US Highway

— State Highway

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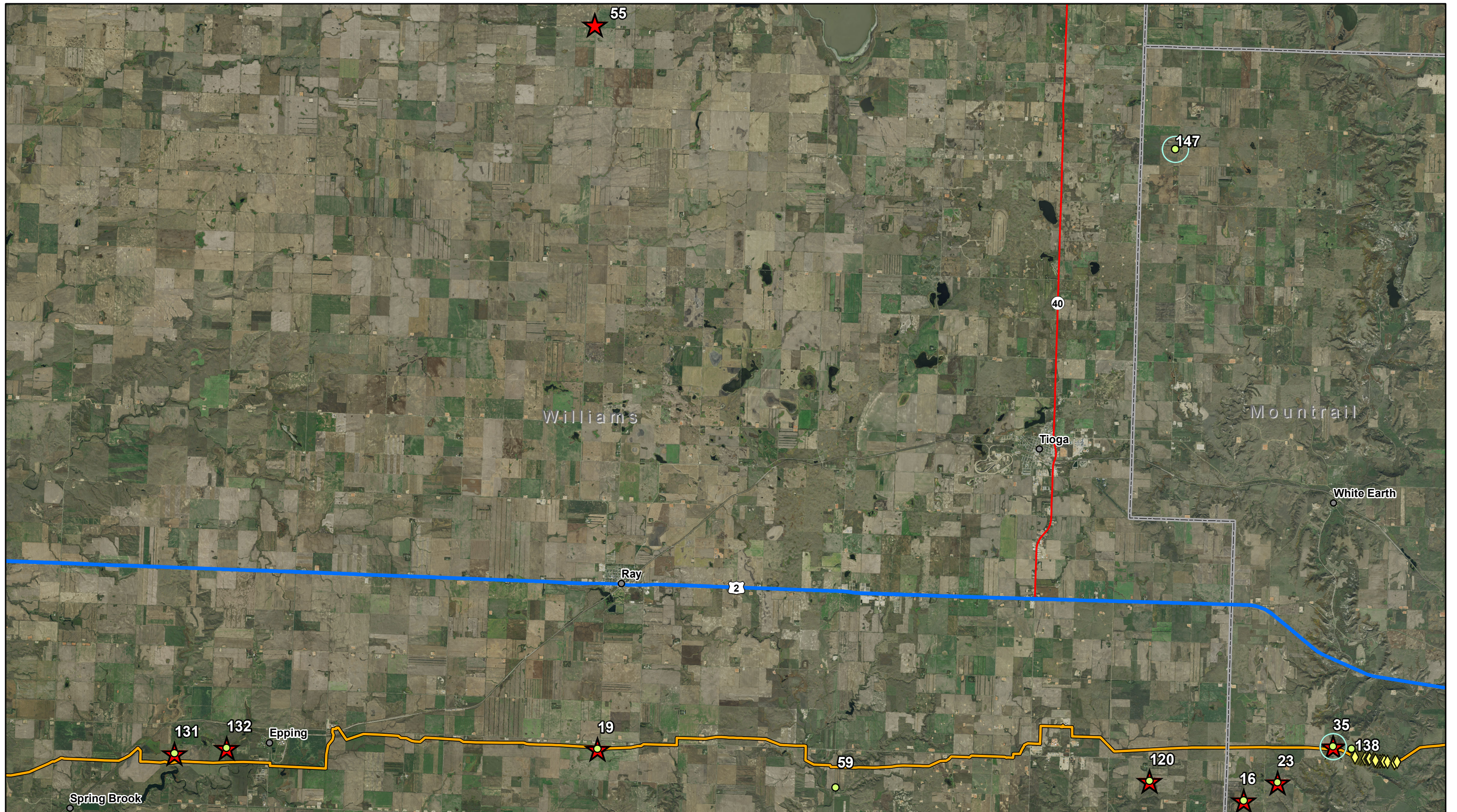
Dakota Access Pipeline
Tree and Shrub Planting Locations

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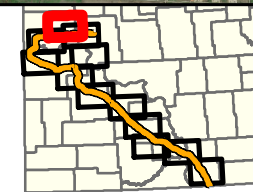
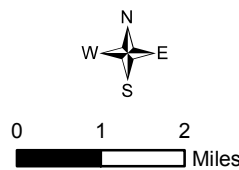
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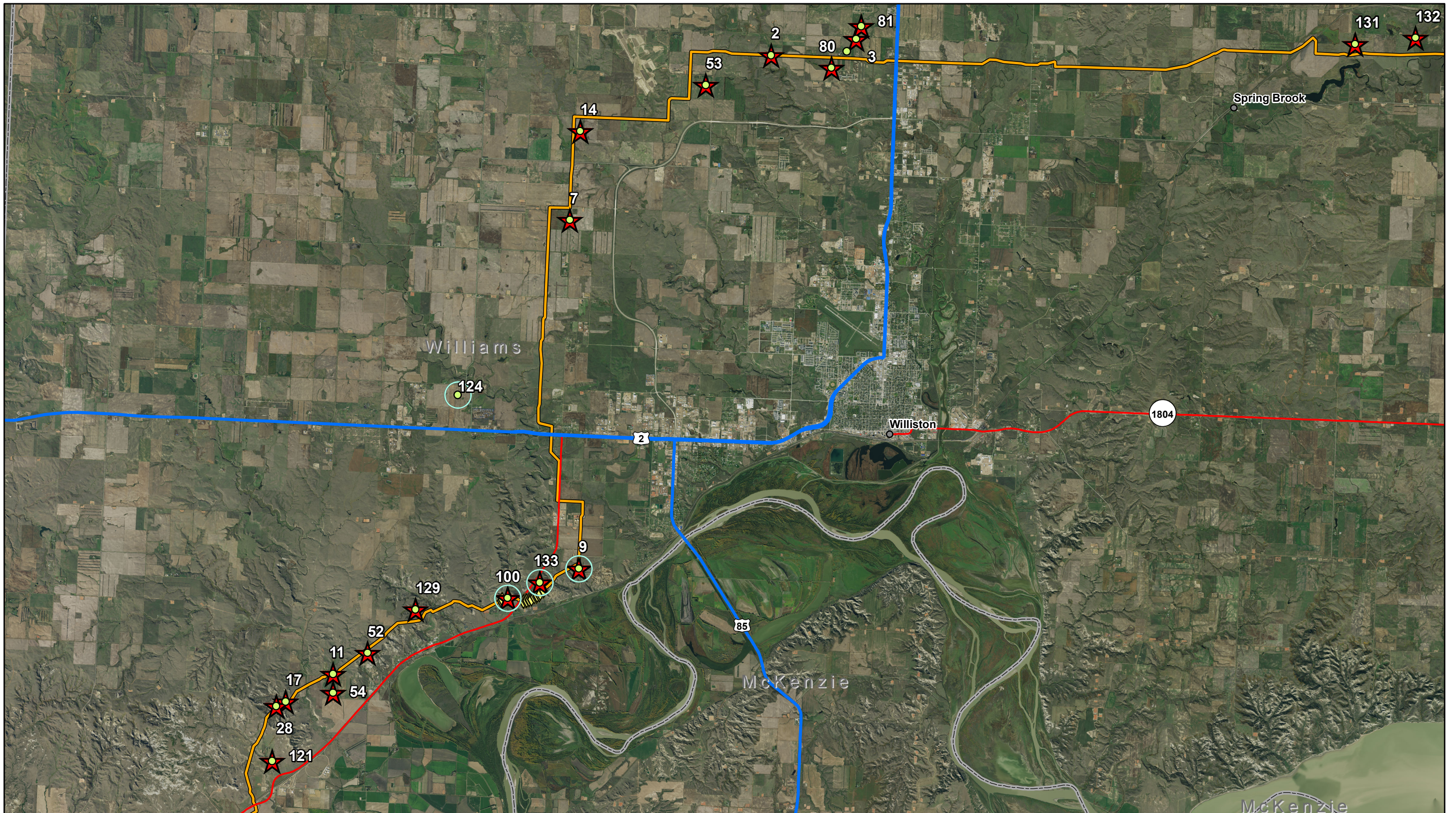
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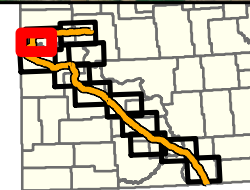
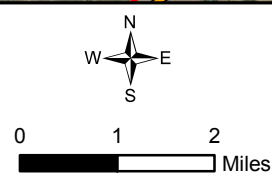
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- ★ 2017 Planting Locations
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- Pipeline
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Map: 3

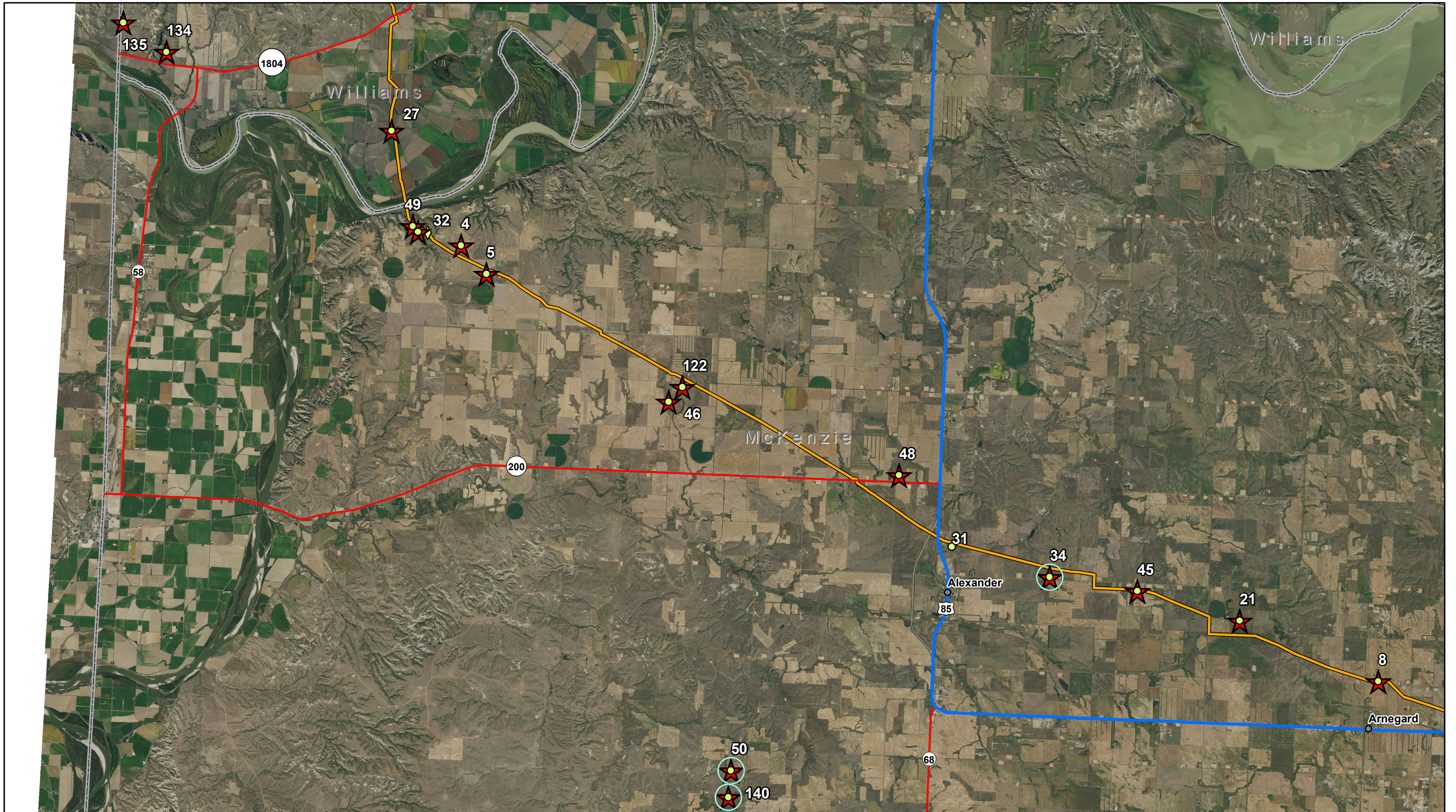
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Tree and Shrub Planting Locations

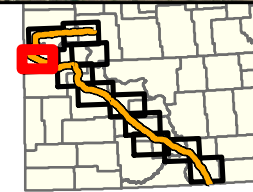
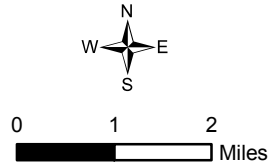
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- ★ 2017 Planting Locations
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- State Highway

Map: 4

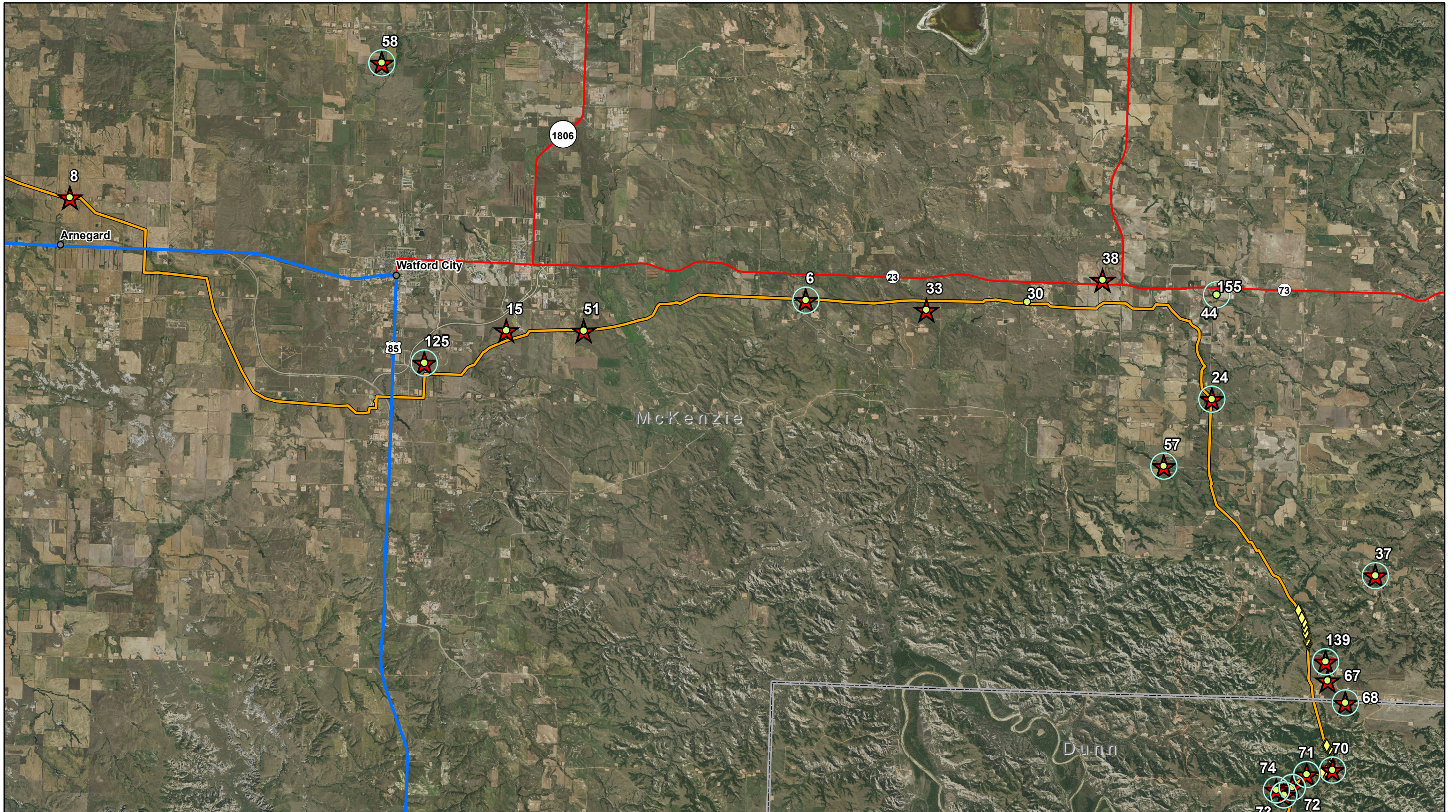
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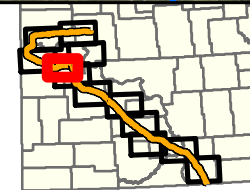
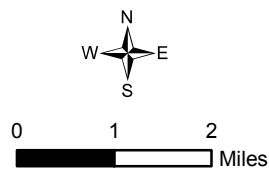
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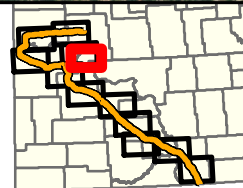
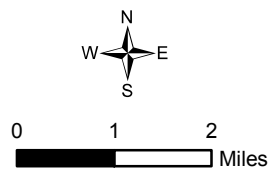
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-  2017 Planting Locations
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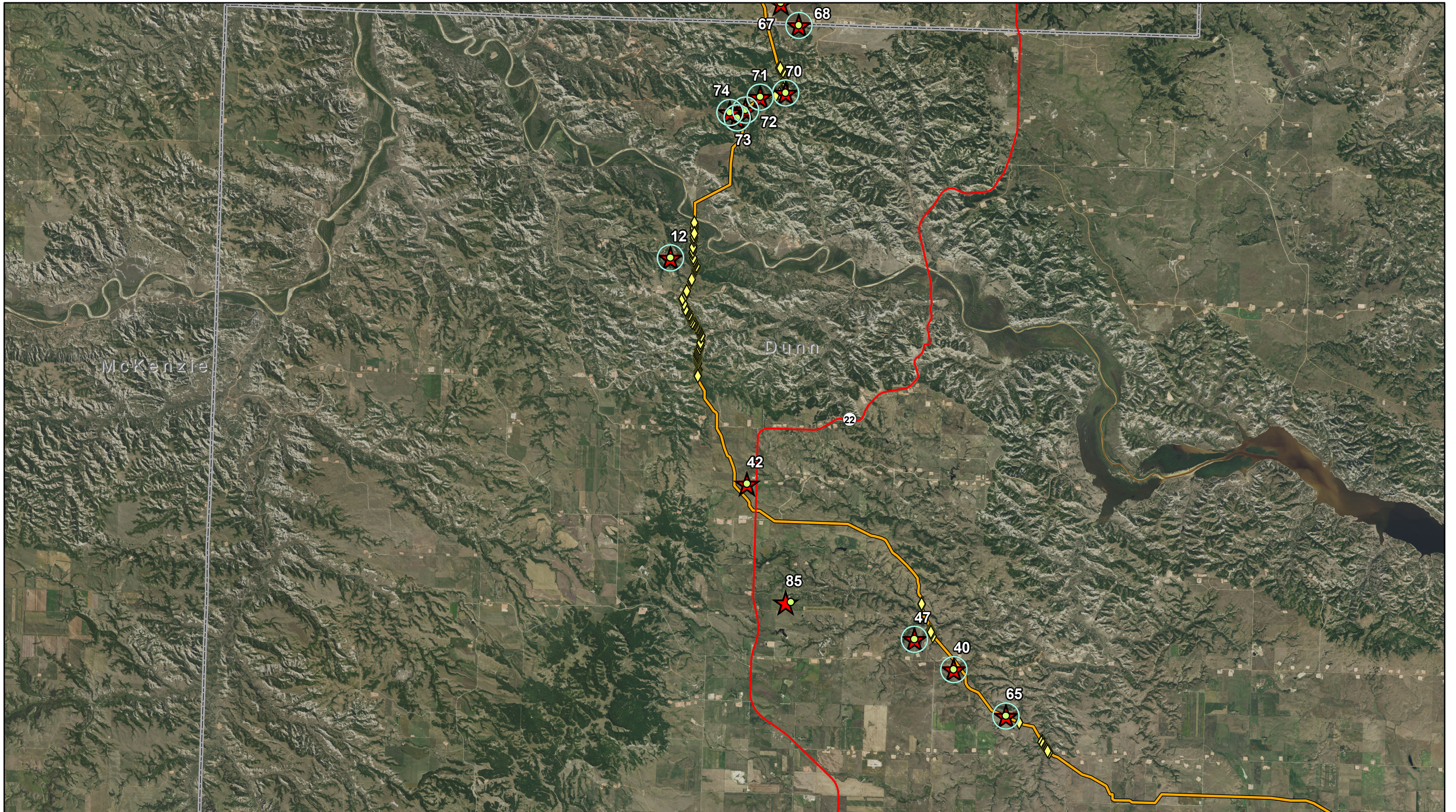
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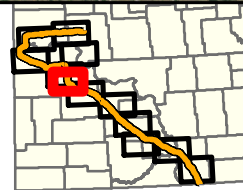
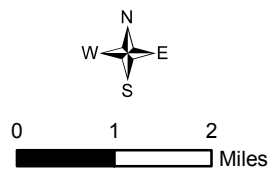
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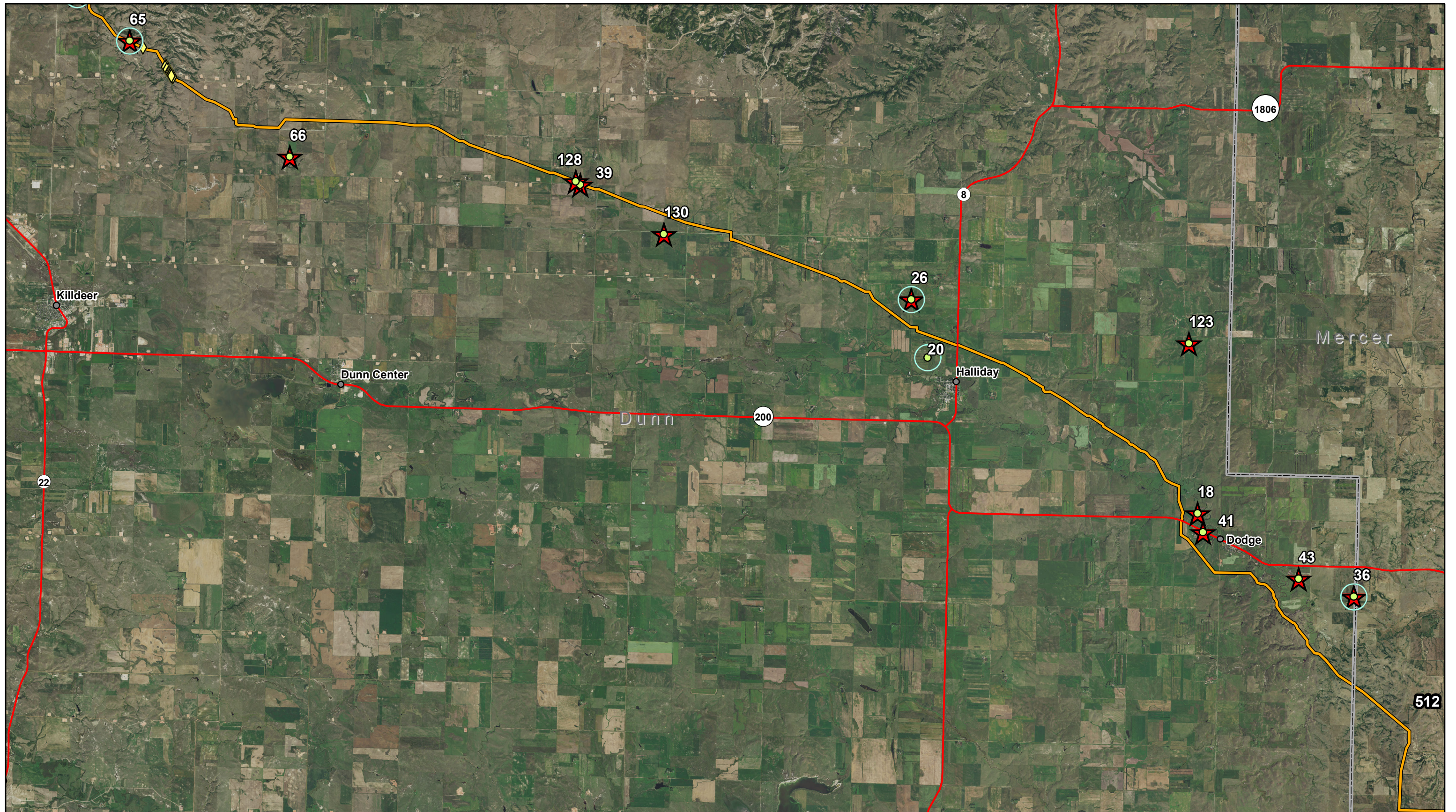
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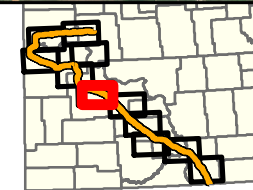
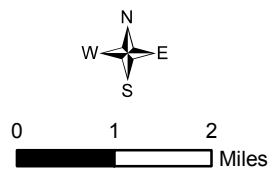
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★ 2017 Planting Locations

● 2018 Planting Locations

○ 3:1 Mitigation Location

◇ Natural Regeneration Monitoring Point

— Pipeline

— State Highway

Energy Transfer Partners, L.P.

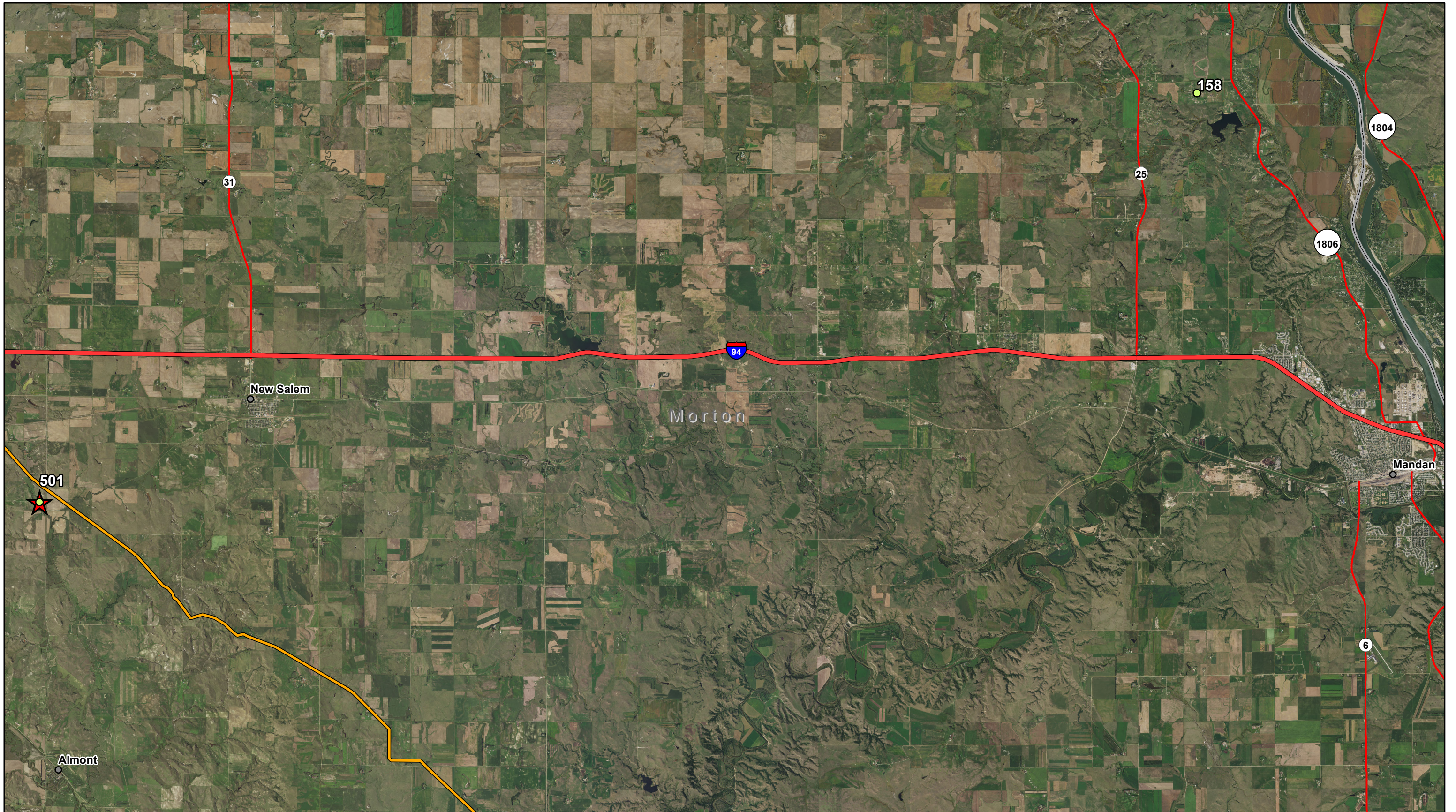
Dakota Access Pipeline
Tree and Shrub Planting Locations

Map: 8

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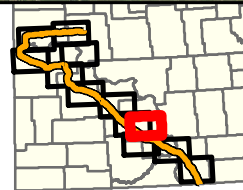
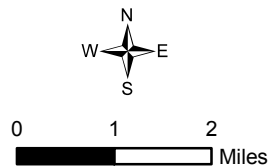
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Date: 9/18/2019



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- ★ 2017 Planting Locations
- 2018 Planting Locations

- Pipeline
- Interstate
- State Highway

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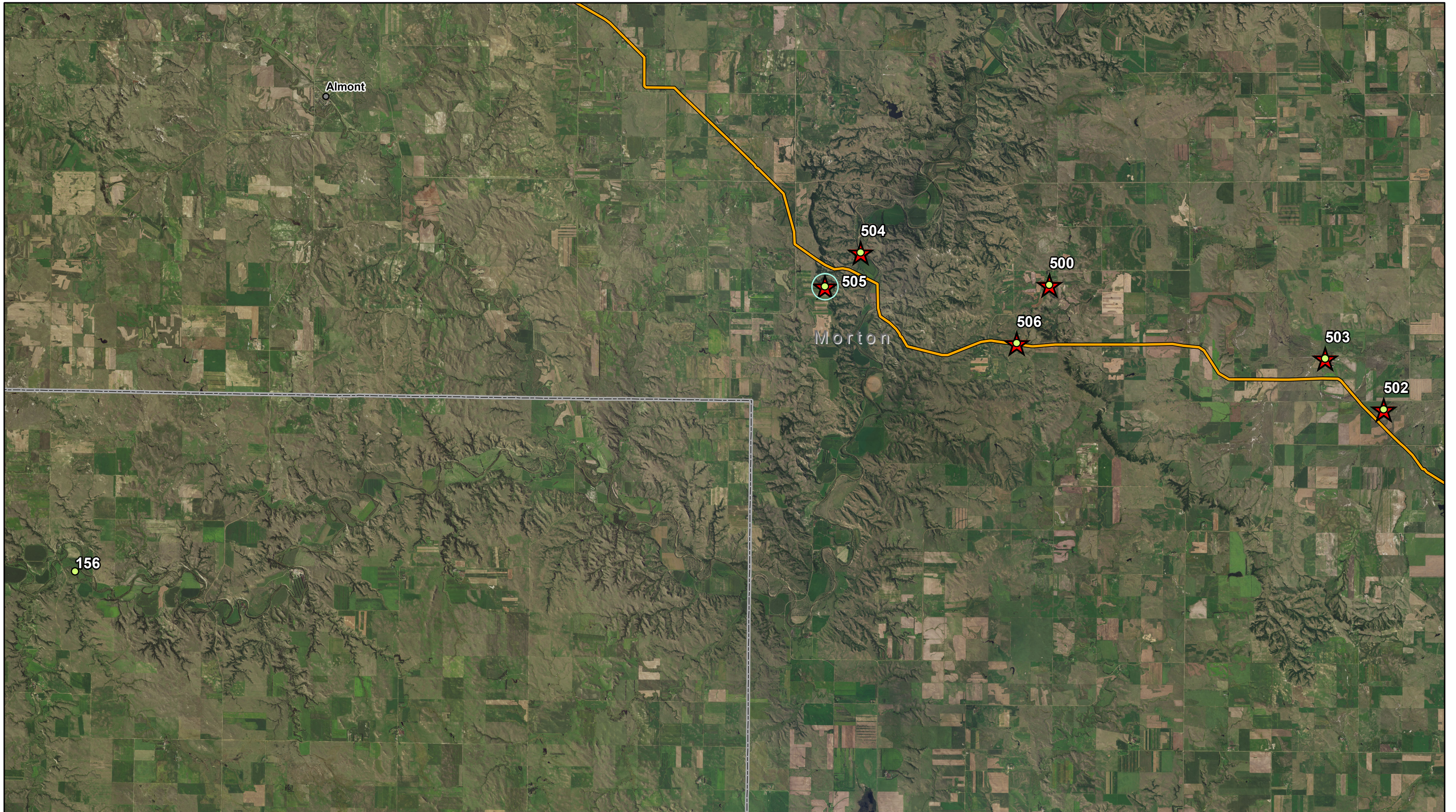
Dakota Access Pipeline
Tree and Shrub Planting Locations

Map: 9

1:125,000

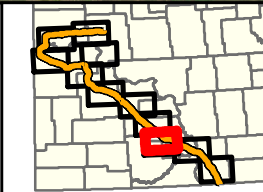
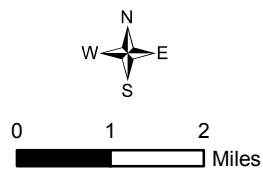
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Date: 9/18/2019



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- ★ 2017 Planting Locations
- 2018 Planting Locations

 3:1 Mitigation Location

Pipeline

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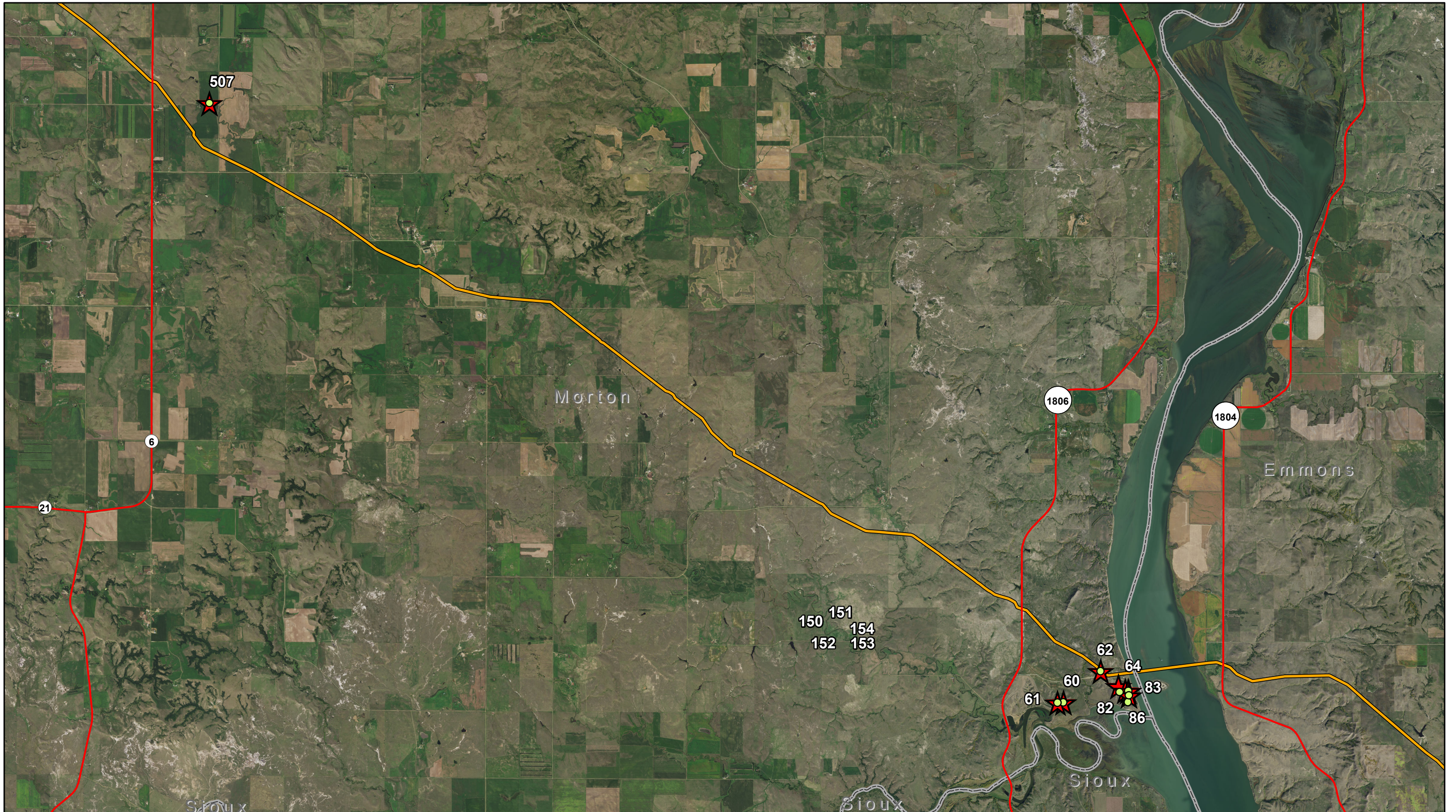
Dakota Access Pipeline
Tree and Shrub Planting Locations

Map: 10

1:130,000

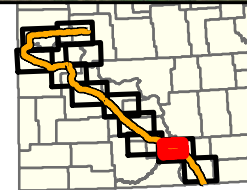
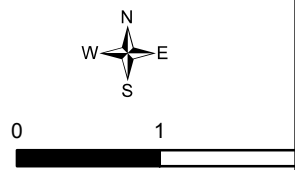
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Date: 9/18/2019



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- ★ 2017 Planting Locations
- 2018 Planting Locations

- Pipeline
- State Highway

Energy Transfer Partners, L.P.

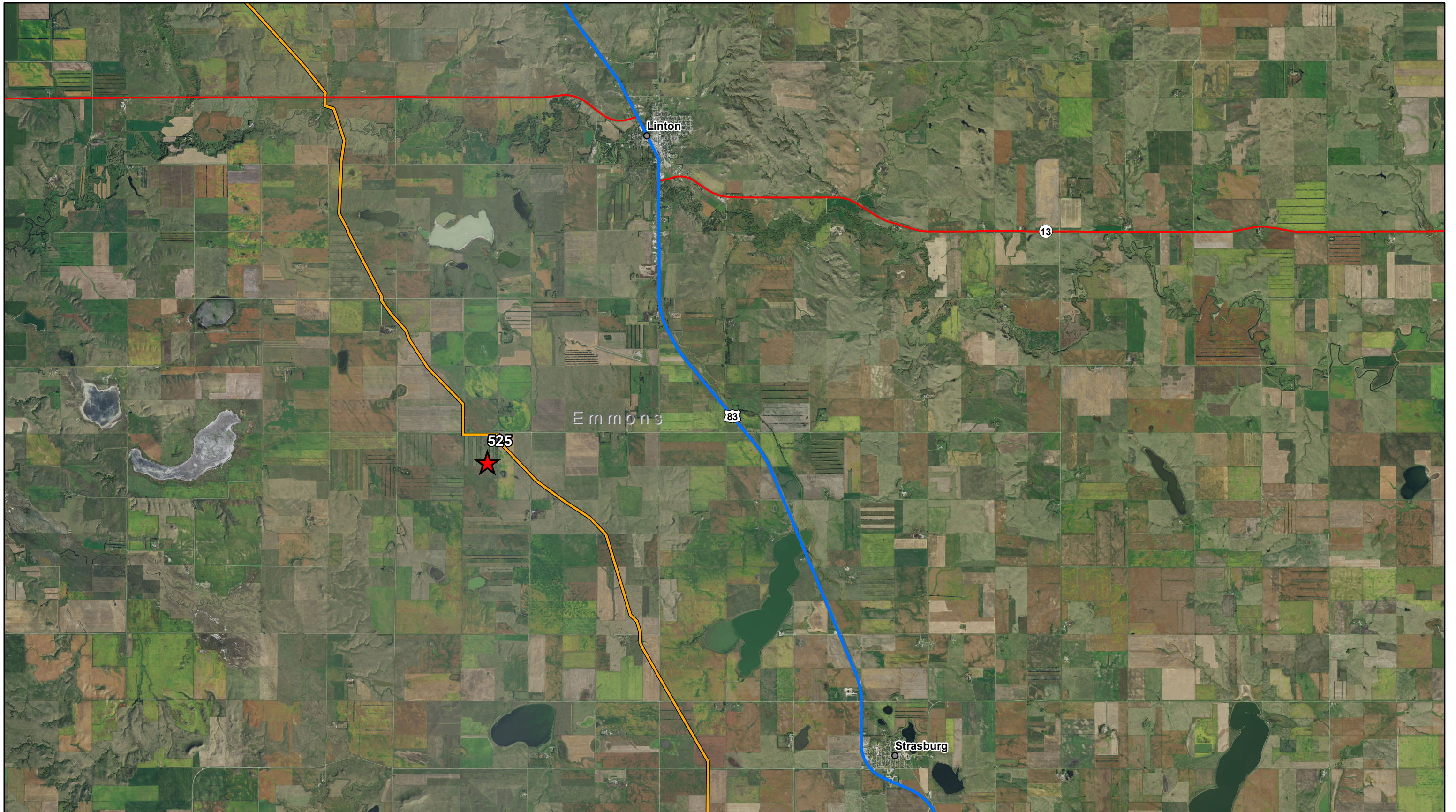
Dakota Access Pipeline
Tree and Shrub Planting Locations

Map: 11

1:85,000

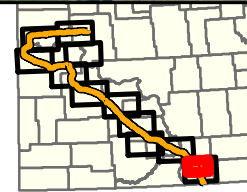
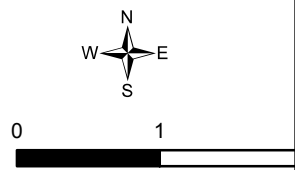
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Date: 9/18/2019



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★ 2017 Planting Locations

- Pipeline
- US Highway
- State Highway

Energy Transfer Partners, L.P.

Dakota Access Pipeline
Tree and Shrub Planting Locations

Map: 12

1:85,000

Imagery: NAIP 2017

Date: 9/18/2019