

March 1, 2024

Via Electronic Mail & Hand Delivery

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

In re: ONEOK Rockies Midstream, L.L.C.
Cherry Creek Extension Pipeline Project
McKenzie County
Case No. PU-23-015
Our File No. 072530-000018

Dear Mr. Kahl:

Enclosed for filing on behalf of ONEOK Rockies Midstream, L.L.C., please find eight copies of the Tree and Shrub Mitigation Plan in the above-referenced matter.

Please feel free to contact me if you have any questions. Thank you.

Sincerely,


Casey A. Furey

CAF/lh
Enc.

cc: Michael Dailey (via email)
Alea Doray (via email)
Robert Frank (via email)



ONEOK
ROCKIES MIDSTREAM

A SUBSIDIARY OF ONEOK

ONEOK Rockies Midstream, L.L.C.
Cherry Creek Extension Pipeline Project

Tree and Shrub Mitigation Plan
for the North Dakota Public Service Commission
Case No. PU-23-015

February 2024

Prepared by:



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1.0 INTRODUCTION

ONEOK Rockies Midstream, L.L.C. (ONEOK) constructed the Cherry Creek Extension Pipeline Project (Project), an approximately 4-mile-long pipeline extension of its existing 12-inch-diameter Cherry Creek Pipeline (Pipeline). The Project originates at ONEOK's existing Lonesome Creek Gas Plant and terminates at an existing pipeline junction (Antelope Creek Junction) in McKenzie County, North Dakota. As part of the Project, ONEOK made facility modifications to its Lonesome Creek Gas Plant and Antelope Creek Junction in McKenzie County.

In accordance with the North Dakota Public Service Commission's (NDPSC) Certification Relating to Order Provisions - Transmission Facility Siting (Order) and accompanying Tree and Shrub Mitigation Specifications (Specifications) executed on March 8, 2023 (Appendix A), ONEOK inventoried trees and shrubs within the certificated corridor expected to be removed during the Project.

The data from the inventory was used to develop this Tree and Shrub Mitigation Plan (Plan), which outlines the measures ONEOK will follow to replant trees and shrubs at the NDPSC-prescribed ratio of 2:1. The purpose of this Plan as directed in the NDPSC's Order and Specifications is to create sustainable plantings appropriate for the local soil and growing conditions that will provide long-term benefit to landowners, farmers and ranchers, the community, wildlife, and the environment. As stipulated in the Specifications (Appendix A), two years after completion of this Plan ONEOK will file a summary document with the NDPSC describing how ONEOK achieved the purpose of the Plan. As part of this filing, ONEOK will also include documentation of the number of surviving replacement trees and shrubs from the replantings.

This Plan was developed in accordance with the USDA-NRCS-North Dakota Tree and Shrub Establishment Guide (Appendix B) and in consultation with applicable landowners.

This Plan includes a summary of inventoried trees and shrubs removed during construction and the proposed replacement methods and monitoring plan.

2.0 TREE AND SHRUB INVENTORIES

Pre-Construction Inventory

Tree and shrub inventory surveys were conducted on September 27-28 and on October 21, 2023, one area was revisited to confirm the count of fireberry hawthorn. Appendix D contains copies of the 2022 and 2023 inventory reports.

All trees and woody shrubs within the survey corridor were inventoried in accordance with NDPSC's typical Tree and Shrub Mitigation Specifications (Appendix A), which included:

- all planted trees 1 inch or greater in diameter at breast height (dbh);
- all shrubs and coniferous trees; and
- all volunteer trees and all volunteer shrubs.

The spatial location and species of each eligible tree and shrub were documented with a GPS point. Extensive clonal species such as quaking aspen (*Populus tremuloides*), buffalo berry (*Shepherdia argentea*), and chokecherry (*Prunus virginiana*) were mapped using polygons to map outer extents of populations.

In rare cases of extremely dense shrubs, the extent of non-clonal shrubs was mapped with a polygon, and an exact or estimated count was recorded within the area. Additionally, fireberry hawthorn shrubs were counted as individuals; discussed in greater detail below. Field crews additionally collected at least one

representative photo of each documented species (Appendix D).

Data collected during the pre-construction inventory included:

- date of inventory;
- field crew id conducting inventory;
- GPS location;
- site acreage;
- plot number;
- feature IDs of associated spatial points;
- species names; and
- number of individual trees or shrubs.

The entire NDPSC certificated Project corridor was inventoried (Appendix D). Three (3) species of trees and four (4) species of shrubs were documented. The species were volunteer individuals, not manicured plantings. The four tree and shrub species observed during field surveys were non-clonal species: green ash (*Fraxinus pennsylvanica*), Russian olive (*Elaeagnus angustifolia*), and American elm (*Ulmus americanus*) and fireberry hawthorn (*Crataegus chrysoarpa*). Three clonal species were observed: quaking aspen (*Populus tremuloides*), buffalo berry (*Shepherdia argentea*), and chokecherry (*Prunus virginiana*).

Fireberry hawthorn, while not always a clonal species, can occasionally exhibit a clonal growth form making an adaptive methodology for determining density appropriate. Nonetheless, it was later determined that this adaptive methodology was insufficiently reliable and a direct count of the number of individuals in the field would be necessary. The direct count was performed within the final, approved right-of-way (ROW).

Post-Construction Assessment

During construction, tree and shrub species within the Project workspace were avoided where practical and the maximum width of trees and shrubs cleared across the ROW was 50 feet. All native topsoil for the temporary and permanent ROW was removed, segregated, and replaced to allow for natural regeneration of the shrubs from root stock and seeds retained within the topsoil.

Post-construction assessment determined that 13 trees were removed and ONEOK will mitigate accordingly. Mitigation counts are discussed in further detail below and in Appendix C.

3.0 MITIGATION OVERVIEW

ONEOK assumes all trees cleared will require mitigation as trees typically cannot re-establish after being cut or uprooted. Of the four (4) shrub species inventoried for the Project, ONEOK identified three (3) clonal shrub species that can self-propagate from seed banks and/or root stock in native topsoil. A fourth shrub species, fireberry hawthorn, is not a species that self-propagates. As all native topsoil was segregated and replaced after construction, the following shrub species which self-propagate from seed banks and/or root stock were excluded from the final count requiring mitigation:

Table 1. Self-Propagating Shrubs		
Scientific Name	Common Name	Confirmation of Propagation Method (Source)
<i>Populus tremuloides</i>	Quaking Aspen	https://www.fs.usda.gov/database/feis/plants/tree/poptre/all.html
<i>Prunus virginiana</i>	Chokecherry	https://www.fs.usda.gov/database/feis/plants/tree/pruvir/all.html

Table 1. Self-Propagating Shrubs		
Scientific Name	Common Name	Confirmation of Propagation Method (Source)
<i>Shepherdia argentea</i>	Silver buffaloberry	https://www.fs.usda.gov/database/feis/plants/shrub/shearg/all.html

The permanent ROW will remain free of trees and shrubs to maintain the integrity of the pipeline and to provide a clear visual during aerial inspection. Therefore, trees and shrubs removed from the permanent ROW will be replaced outside of ONEOK’s permanent easement. Some self-propagating and clonal shrub species may become re-established within the permanent ROW; however, they will be periodically cut or mowed to assist with aerial inspection of the permanent ROW.

The Tree and Shrub Replacement Summary Table (Appendix C) shows the number and species of trees and shrubs requiring mitigation.

4.0 PROPOSED MITIGATION MEASURES

ONEOK has been working with the North Dakota Petroleum Foundation’s (NDPF) Plantings for the Future Program to develop this Plan for replacing the estimated 13 trees removed during construction of the pipeline.

Per the NDPSC’s required 2:1 replacement ratio, a total of 26 trees would be replanted through the NDPF’s program. In the case of an invasive or noxious species removal during construction, similar non-invasive and non-noxious species suitable for North Dakota growing conditions will be replanted in its place, as recommended by the NDPF.

While ONEOK intends to perform all tree and shrub mitigation and reporting required as part of the NDPSC Order in partnership with the NDPF, ONEOK will also provide the landowners that were affected by tree and shrub removal the option to have the same 2:1 ratio plantings replaced on their properties. ONEOK is currently in active discussions with these landowners.

ONEOK’s proposed plan to sponsor a specific project utilizing the Plantings for the Future Program for the tree and shrub mitigation and reporting requirement is a positive and worthwhile effort toward creating sustainable plantings to provide long-term benefit to landowners, farmers, ranchers, the communities, wildlife, and the environment. In addition, this plan will result in additional trees to be planted while ensuring a proper tracking of their survivability.

Upon NDPSC approval of this Plan, ONEOK will finalize its partnership with the NDPF to begin moving forward on the execution of a specific Project planting. ONEOK will provide the follow-up details of the tree and shrub plantings location and the specific species to be planted along with the approximate date(s) of the plantings through the program once they are finalized. The NDPF is currently working with landowners for planting plans for spring and fall of 2024, however, ONEOK anticipates that its Project mitigation re-plantings will take place in spring of 2024. The NDPF has indicated that their typical species planted by their Plantings for the Future Program include Amur maple, black currant, black hills spruce, buffaloberry, caragana, cedar, chokecherry, Colorado blue spruce, golden currant, juniper, lilac, plum, ponderosa pine, scotch pine, silverberry, and willow. Tree and shrub replacement plantings will be inventoried and documented through the Plantings for the Future Program.

5.0 MONITORING

Following the plantings, ONEOK will maintain contact with the NDPF’s Plantings for the Future program. NDPF will conduct a post-planting survey to determine survival rates, as required by the Specifications. Based on the results of this inspection, replanting would be conducted as needed to meet the purpose of

this Plan and the NDPSC's Specifications. Results of this inspection will be provided to the NDPSC. ONEOK agrees to comply with all stipulations in the NDPSC's Order, including the items outlined in this document.

As all mitigation required for the Project will be done in partnership with the NDPF, ONEOK does not anticipate conducting specific follow-up surveys for trees and shrubs replaced on landowner property; however, ONEOK will maintain contact with individual landowners to address any concerns that may arise.

6.0 REPORTING

Two years after replanting occurs, ONEOK will file a summary documenting how this Plan achieved sustainable plantings appropriate for the local soil and growing conditions that will provide long-term benefit to landowners, farmers and ranchers, the community, wildlife, and the environment, as directed in the NDPSC's Specifications.

7.0 CONCLUSION

ONEOK inventoried trees and shrubs removed during pipeline construction using pre-construction survey data and confirmed workspace to determine the number of trees and shrubs requiring mitigation. As all native topsoil was segregated and replaced after construction, the self-propagating shrub species outlined in Table 1 above were excluded from the final count of shrubs requiring mitigation. Thirteen green ash trees were confirmed removed, resulting in an estimated required replacement total of 26 trees when calculated at the NDPSC's prescribed ratio of 2:1. Upon NDPSC approval of this Plan, ONEOK will coordinate with the NDPF's Planting for the Future Program to replant the prescribed number of trees and shrubs. Two years after the replantings are completed by NDPF, ONEOK will file a summary documenting how this Plan met the purpose of the NDPSC Order and Specifications.

8.0 REFERENCES

Merjent, Inc. (Merjent). 2022. Natural Resources Report: Cherry Creek Extension Pipeline Project - North Dakota, ONEOK Rockies Midstream, L.L.C.

Merjent, Inc. (Merjent). 2023. Fireberry Hawthorn Mitigation: Cherry Creek Extension Pipeline Project - North Dakota, ONEOK Rockies Midstream, L.L.C.

Appendix A

NDPSC Order PU-23-015 Tree and Shrub Specifications

March 8, 2023

Via Electronic Mail & Hand Delivery

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

In re: ONEOK Rockies Midstream, L.L.C.
Siting Application - Amendment
Cherry Creek Lateral Pipeline Project
McKenzie County
Case No. PU-23-015
Our File No. 072530-000018

Dear Mr. Kahl:

On behalf of ONEOK Rockies Midstream, L.L.C., please find enclosed for filing in the above-referenced matter eight copies of the executed Certification Relating to Order Provisions – Transmission Facility Siting with attached Tree and Shrub Mitigation Specifications.

Please feel free to call should you have any questions. Thank you.

Sincerely,



Casey A. Furey

CAF/lh
enc.

- cc: Wade Mann (via email)
Michael Dailey (via email)
Rachel Grant (via email)
Kolton Burge (via email)
Maddy Krumwiede (via email)
Robert Frank (via email)

**STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

**ONEOK Rockies Midstream, L.L.C.
Amend Certificate #203 and Route Permit #213
Siting Application**

Case No. PU-23-15

**CERTIFICATION RELATING TO ORDER PROVISIONS
TRANSMISSION FACILITY SITING**

I am Todd McKimmey, a representative of ONEOK Rockies Midstream, L.L.C. ("Company") with authority to bind Company to requirements to be set forth by the Commission in its Order and I certify the following:

1. Company understands and agrees that any Certificate of Corridor Compatibility or Route Permit issued by the Commission will be subject to the conditions and criteria set forth in Chapter 49-22.1 of the North Dakota Century Code and Chapter 69-06-08 of the North Dakota Administrative Code, and that Company shall be responsible for compliance with this order and conditions and criteria set forth in the applicable laws and rules.
2. Company agrees to comply with the rules and regulations of all other agencies having jurisdiction over any phase of the transmission facility including all city, township, and county zoning regulations.
3. Company understands and agrees that it shall obtain all other necessary licenses and permits, and shall provide copies of all licenses and permits to the Commission prior to construction activity associated with the transmission facility that requires said license or permit.
4. Company understands and agrees that any Certificate of Corridor Compatibility or Route Permit issued by the Commission is subject to suspension or revocation and may, in an appropriate and proper case, be suspended or revoked for failure to comply with the Commission's order, the conditions and criteria of the certificate or subsequent modification, or failure to comply with the applicable statutes, rules, regulations, standards, and permits of other state or federal agencies.
5. Company agrees to maintain records that will demonstrate that it has complied with the requirements of the Commission's order issuing a Certificate of Corridor Compatibility or Route Permit, and that it will preserve these records for Commission inspection at any reasonable time upon reasonable notice.
6. Company understands and agrees that the authorizations granted by any Certificate of Corridor Compatibility or Route Permit issued by the Commission for the

transmission facility are subject to modification by order of the Commission if deemed necessary to protect further the public or the environment.

Construction:

7. Company agrees to hold a preconstruction conference prior to commencement of any construction, which must include a Company representative, its construction supervisor, and a representative of Commission Staff, to ensure that Company fully understands the conditions set forth in the Commission's order.
8. Company understands and agrees that all cultural resource mitigation plans must be submitted to the North Dakota State Historic Preservation Office and approved prior to the start of any fieldwork and construction activity in the affected area.
9. Company understands and agrees that topsoil removal will begin when the Commission's third-party construction inspector is present at the Project site to observe that topsoil is properly removed and kept segregated from subsoil until replacement occurs. Company shall establish the date and time for the Commission's third-party construction inspector's topsoil removal oversight in the preconstruction conference.
10. Company agrees to inform the Commission and the Commission's third-party construction inspector of its intent to start construction on the transmission facility prior to the commencement of construction. Once construction has started, Company shall keep the Commission and the Commission's third-party construction inspector updated on construction activities on a monthly basis.
11. Company understands and agrees that the pipeline will be buried to a minimum depth from the ground surface to the top of the pipe of 48 inches in range land, 48 inches for cultivated land, 48 inches at the bottom of the ditch for road crossings, and 72 inches across undeveloped section lines.
12. Company understands and agrees that all topsoil, up to 12 inches, or topsoil to the depth of cultivation, whichever is greater, over and along trench areas where cuts will be made, must be carefully stripped and segregated from the subsoil. Any area on which excavated subsoil will be placed must also be stripped of topsoil. The stripped topsoil must not be stockpiled in natural drainages, and must be protected from water erosion. Care must be taken to protect topsoil from unnecessary compaction by heavy machinery. Unless otherwise approved by the Commission, topsoil must be removed before topsoil freezes in the late fall/ early winter to the point that frost inhibits proper soil segregation. After backfilling with subsoil is completed, any excess subsoil must be placed over the excavation area, blending the grade into existing topography. Topsoil must be replaced over areas from which it was stripped only after the subsoil is replaced.

13. Company understands and agrees that all buried facility crossings of graded roads must be bored unless the responsible governing agency specifically permits Company to open cut the road.
14. Company understands and agrees that staging areas or equipment shall not be located on land owned by a person other than Company unless otherwise negotiated with landowners.
15. Company understands and agrees that if any cultural resource, paleontological site, archeological site, historical site, or grave site is discovered during construction, it must be marked, preserved and protected from further disturbances until a professional examination can be made and a report of such examination is filed with the Commission and the State Historical Society.
16. Company understands and agrees that construction must be suspended when weather conditions are such that construction activities will cause irreparable damage to roads or land, unless adequate protection measures are taken by Company.
17. Company understands and agrees that the Commission has authority to stop Project construction activities in the event of a probable violation of the siting laws, siting rules, or applicable Commission Orders if, in the opinion of the Commission, construction activities are likely to result in irreparable or significant harm.

Restoration and Maintenance:

18. Company understands and agrees that it shall, as soon as practicable upon the completion of the construction of the transmission facility, restore the area affected by the activities to as near as is practicable to the condition as it existed prior to the beginning of construction.
19. Company understands and agrees that all pre-existing township and county roads and lanes used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to the construction of the transmission facility and that will accommodate their previous use, and that areas used as temporary roads or working areas during construction must be restored to their original condition.
20. Company understands and agrees that reclamation, fertilization, and reseeding is to be done according to the Natural Resources Conservation Service recommendations, unless otherwise specified by the landowner and approved by the Commission.

21. Company will fulfill its obligation for reclamation and maintenance of the approved transmission facility right-of-way, transmission facility, and associated facilities continuing throughout the life of the transmission facility.
22. Company will repair all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.
23. Company will repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility.
24. Company agrees to comply with the Tree and Shrub Mitigation Specifications, attached.
25. Company understands and agrees that it shall remove all waste that is a product of construction and operation, restoration, and maintenance of the site, and properly dispose of it on a regular basis.
26. Company understands and agrees that it shall provide any necessary safety measures for traffic control or to restrict public access to the transmission facility.

Communication with Landowners and PSC:

27. Company understands and agrees that, prior to beginning construction of the transmission facility at a location, it shall send a letter to each landowner with whom an easement was executed for that location specifying the name and phone number of the company representative who is responsible for receiving and resolving landowner issues for the life of the easement.
28. Company understands and agrees that it will file with the commission the name and phone number of the current company representative who is responsible for receiving and resolving landowner issues for the transmission facility. The company will update this information whenever there is a change to the current company representative for the life of all easements for the transmission facility.
29. Upon request, Company agrees to provide the Commission with engineering design drawings of the transmission facility prior to construction.
30. Company understands and agrees that it shall advise the Commission as soon as reasonably possible of any extraordinary events which take place at the site of the transmission facility, including injuries to any person.
31. Company agrees to report to the Commission, as soon as reasonably possible, the presence in the permit area of any critical habitat or threatened or endangered species of which Company becomes aware and which were not previously reported to the Commission.

32. Company understands and agrees that it shall inform the Commission in writing of any plans to modify the transmission facility or of any plans to modify the site plan for the transmission facility.
33. Company agrees to provide the Commission with both an electronic and a paper copy of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built, and will provide this information within 3 months of the completion of the construction. Company also agrees to provide an electronic version of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built that can be imported into ESRI GIS mapping software within 3 months of the completion of the construction. This electronic map data must be referenced to the North Dakota coordinate system of 1983, North and/or South zones US Survey feet (NAD 83) UTM Zone 13N or 14N feet (NAD 83), or geographic coordinate system (WGS 84) feet. The vertical data must be in the appropriate vertical datum for the coordinate system used. All submissions must specify the datum in which the data was developed.
34. Company shall notify the Commission as soon as reasonably possible if any damage, as defined by North Dakota Century Code Chapter 49-23, occurs to underground facilities during construction conducted under the certificate or permit issued in this proceeding. In the event of any damage to underground facilities, Company shall suspend construction in the vicinity of the damage until compliance with One-Call Excavation Notice System requirements under North Dakota Century Code Chapter 49-23 has been determined.

Route Adjustments Before or During Construction:

35. Company agrees to utilize the following procedures if Company seeks a route adjustment before or during construction of the pipeline, pursuant under N.D.C.C. §49-22.1-15.
36. Company will specifically identify which subsection of NDCC 49-22.1-15 it is requesting the adjustment under. Company will file the name and contact information for a key contact person for the purposes of notice and communication during the adjustment application.
37. **ROUTE ADJUSTMENT WITHIN DESIGNATED CORRIDOR, NO AVOIDANCE AREA AFFECTED:** Before conducting any construction activities for any adjustment to the designated route within the designated corridor under NDCC 49-22.1-15(1), the Company will file:

- a. Certification and supporting documentation affirming that construction activities will be within the designated corridor, will not affect any known exclusion or avoidance areas within the designated corridor;
- b. Certification and supporting documentation, including a map meeting the requirements of N.D. Admin. Code § 69-06-04-01(2)(n) identifying the designated corridor, route and the route adjustment;
- c. Certification that Company will comply with the Commission's order, law and rules designating the corridor and route.

38. **ROUTE ADJUSTMENT WITHIN DESIGNATED CORRIDOR, AVOIDANCE AREA AFFECTED:** Before adjusting the route of a gas or liquid transmission line under NDCC 49-22.1-15(2), within the designated corridor that may affect an avoidance area, and before conducting any construction activities for any adjustment to the designated route within the designated corridor, the Company will file:

- a. A specific description of the avoidance area expected to be impacted, including a map meeting the requirements of N.D. Admin. Code § 69-06-04-01(2)(n) identifying:
 - i. the designated corridor, route and the route adjustment;
 - ii. all exclusion and avoidance areas within the portion of the designated corridor containing the route adjustment
- b. Certification and supporting documentation affirming:
 - i. That construction activities will be within the designated corridor
 - ii. That construction activities will not affect any known exclusion area
- c. All field studies performed on the portion of the designated corridor containing the route adjustment;
- d. Specific information about any mitigation measures Company will take within the adjustment area;
- e. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment;
- f. Certification that unless the Commission previously authorized the impact to the same avoidance area, that the utility has good cause and a specific reason to impact the avoidance area and a reasonable alternative does not exist;
- g. Certification that Company will comply with the Commission's order, law and rules designating the corridor and route.

Company acknowledges and agrees that:

1. Written authorization from the Commission for impacting the avoidance area is necessary prior to commencement of construction activity unless the Commission fails to act within ten working days of receipt of filing a complete adjustment application, in which case the adjustment is deemed approved.
2. The initiation of the ten working days begins upon receipt of a complete filing, to include Company's certifications, supporting documentation and maps. However, Commission may extend the ten working day provision if Company, in the person of the key contact referenced above, is informed of the reason additional time is necessary for extension and has no objection to an extension.

39. **ROUTE ADJUSTMENT OUTSIDE DESIGNATED CORRIDOR, NO AVOIDANCE AREA AFFECTED:** Before adjusting the route of a gas or liquid transmission line under NDCC 49-22.1-15(3), outside the designated corridor and not affecting any exclusion and avoidance area, before conducting any construction activities for any adjustment to the designated route outside the designated corridor, the Company will file:

- a. Certification and supporting documentation affirming that construction activities will not affect any known exclusion or avoidance areas,
- b. Certification and supporting documents stating the length of the proposed route outside of the corridor and a map meeting the requirements of N.D. Admin. Code § 69-06-04-01(2)(n) identifying the designated corridor, corridor adjustment, designated route and the route adjustment;
- c. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment; and
- d. Detailed field studies indicating exclusion and avoidance areas for the proposed adjustment area; and
- e. Certification that Company will comply with the Commission's order, law and rules designating the corridor and route.

40. **ROUTE ADJUSTMENT OUTSIDE DESIGNATED CORRIDOR, AVOIDANCE AREA AFFECTED:** Before adjusting the route of a gas or liquid transmission line under NDCC 49-22.1-15(4), outside the designated corridor that may affect an avoidance area, and before conducting any construction activities for any adjustment to the designated route outside the designated corridor, the Company will file:

- a. A specific description of the avoidance area expected to be impacted, including a map meeting the requirements of N.D. Admin. Code § 69-06-04-01(2)(n) identifying:
 - i. the designated corridor, corridor adjustment, route and the route adjustment;

- ii. all exclusion and avoidance areas within the adjustment area
- b. Certification that construction activities will not affect any known exclusion area;
- c. Certification that the utility has good cause and a specific reason to impact the avoidance area and a reasonable alternative does not exist within the designated corridor and route;
- d. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment;
- e. Provide specific information about any mitigation measures Company will take within the adjustment area;
- f. Detailed field studies indicating exclusion and avoidance areas for the proposed adjustment area; and
- g. Certification that Company will comply with the Commission’s order, law and rules designating the corridor and route.


Company acknowledges and agrees that:

- 1. Written authorization from the Commission for impacting the avoidance area is necessary prior to commencement of construction activity unless the Commission fails to act within ten working days of receipt of filing a complete adjustment application, in which case the adjustment is deemed approved.
- 2. The initiation of the ten working days begins upon receipt of a complete filing, to include Company’s certifications, supporting documentation and maps. However, Commission may extend the ten working day provision if Company, in the person of the key contact referenced above, is informed of the reason additional time is necessary for extension and has no objection to an extension.

41. When applicable, Company may submit the field studies from the original application for the corridor and route provided they cover the adjustment area.

Dated this 8th day of March, 2023.

ONEOK ROCKIES MIDSTREAM, L.L.C.


 DocuSigned by:
Todd McKimney
 D9AC1DA0B5D742F...
 By: _____
 Name: Todd McKimney
 Its: Vice President Integrated Operations and Capital Projects

**STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

**ONEOK Rockies Midstream, L.L.C.
Amend Certificate #203 and Route Permit #213
Siting Application**

Case No. PU-23-15

Tree and Shrub Mitigation Specifications

Inventory

Prior to cutting or clearing trees or shrubs for construction:

- All trees one-inch or greater in diameter at breast height must be inventoried to record the location, number, and species.
- All shrubs and all coniferous trees of any diameter must be inventoried to record the location, number, and species.

Clearing

The maximum width of tree and shrub removal is 50 feet, unless otherwise approved by the Commission.

Replacement

1. Landowners must be given the option to have trees and shrubs that are removed from their property replaced on their property. The landowner may waive this option in writing. If the landowner waives this option, the company shall plant replacement trees and shrubs in an alternate location in the same region, if practical.
2. Trees and shrubs must be replaced on a minimum two-to-one basis. The company shall develop a Tree and Shrub Mitigation Plan (Plan) in consultation with landowners who are seeking replacement trees and shrubs and in accordance with USDA-NRCS-North Dakota Field Office Technical Guide: Windbreak and Woodland Tree Care and Management. The guidelines outlined in the Technical Guide shall be followed until filing of the Plan summary outlined in number 5 below.
3. The purpose of the company's Tree and Shrub Mitigation Plan is to create sustainable plantings, appropriate for the local soil and growing conditions that will provide long-term benefit to landowners, farmers and ranchers, the community, wildlife and the environment.
4. The Plan, including the proposed number, variety, type, location, and approximate date for plantings, shall be filed with and approved by the Commission.
5. Two years after completion of the plan, the company must file a summary documenting how the plan achieved the purpose outlined in number 3 above. The summary must also report the number of surviving replacement trees and shrubs.
6. The Commission will consider, on a limited basis as conditions warrant, mitigation plans that provide long-term wildlife habitat and conservation benefits but do not involve the replanting of trees and shrubs.

Appendix B

USDA-NRCS Tree and Shrub Establishment Guide

Tree and Shrub Establishment Guide (TSEG)

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Part 1. Planting Dates

Plant bare-root stock in the spring of the year after frost is out beyond 18 inches. All stock must be planted by May 31st except as noted below. Extension to the planting date to June 10th may be made by the District Conservationist or Conservation Delivery Unit Supervisor if local conditions justify it. The most important variable for survival is adequate moisture, so forecasted rainfall should be a primary consideration for justification along with current site moisture, temperature forecast, and wind forecast. Consideration should include the 10- and 30-day forecast. Late spring plantings may require additional effort by the cooperator such as supplement watering.

Container-grown stock planted through weed barrier fabric placed at least one year in advance may be planted up to June 30. Refer to Installed Fabric Site Preparation in Part 2E for details. Ensure soil moisture is as field capacity to a depth of at least 2 feet.

Fall tree and shrub planting should not be attempted other than direct seeding.

Part 2. Site Preparation (*refer to CPS 490 Tree and Shrub Site Preparation*)

A planting site assessment should be conducted to evaluate potential issues such as: pesticide carryover, previous feedlots, manure piles, hay storage, or manure runoff.

2A) Tillage Site Prep

1. Perform sufficient tillage to remove sod and provide for a reasonably weed-free planting bed.
2. Avoid tilling wet soils as the subsequent compaction can reduce rooting success of bare-root tree stock.
3. Avoid deep tillage immediately prior to planting to prevent drying the site. Shallow tillage to remove annual weeds is appropriate.
4. Seedbed needs to be firm to aid in proper plant placement. See Figure 1 below.

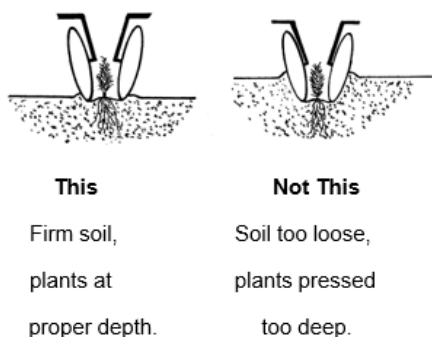


Figure 1: Effects of Seedbed Firmness

2B) Scalp Planting Site Prep

Scalp planting is usually accomplished with an attachment to the tree planter which clears a narrow strip of sod on each side of the planted row.

1. Scalping into aggressive sod-forming grasses may require additional chemical site preparation and subsequent weed control.
2. Scalping tends to encourage a flush of annual weeds on the freshly exposed soil.
3. Consider scalping on the contour to reduce erosion risks.
4. Do not scalp into tilled sites.

2C) Chemical Site Prep

Follow all label instructions to assure control of existing vegetation.

1. Consider starting chemical prep one year before planting on sites with aggressive sod-forming grasses.
2. Aggressive sod-forming grasses and some persistent weeds will require more than one treatment for adequate control.
3. Treat the entire planting area including a 10-foot buffer unless the site has a high risk for erosion. Sites with a high risk for erosion should have 5-6-foot-wide strips (8-10 feet if using weed barrier fabric) while leaving vegetation between rows.

2D) Natural Regeneration Site Prep

1. Should only be attempted in floodplains where adequate seed trees are within 200 yards of the planting area and soils are suitable for tree planting.
2. Healthy stands of Cottonwood or Willows may be up to ¼ mile away.
3. Suitable for all perennial streams in counties bordering the Red River; and scattered segments of the Souris, James, and Sheyenne Rivers that meet the criteria of the first bullet.
4. Existing vegetation should be controlled with herbicides or tillage as riparian sites tend to have an extensive seed bank.
5. Expose bare soil via tillage just prior to seed dispersal from the adjacent desired species.
6. Consider leaving strips of vegetation perpendicular to flood flows to reduce scour erosion.

2E) Installed Fabric Site Prep

All instructions concerning fabric installation is found in the “Synthetic Mulch Weed Control” portion of the maintenance section.

1. Fabric site prep can be very effective at weed control and moisture storage.
2. Since trees must be hand planted into the existing fabric, only trees with compact root systems are appropriate, such as container-grown stock.

2F) Native Grass Cover Site Prep

Warm-season native grass species of blue grama and/or sideoats grama may be seeded to reduce erosion, prevent sandblasting, and improve wildlife cover.

1. A 6-foot-wide strip (or 3-foot radius around each tree) must be maintained weed-free for the first 3 years after planting.
2. Blue grama and sideoats grama initiate growth after the trees break dormancy, reducing competition for early-season water. They are also shade intolerant and will be suppressed as trees form a canopy.
3. Refer to [Warm-Season Grass Cover Between Tree Rows](#) for more details.

- Seed blue grama at 2.5 pounds pure live seed (PLS) per acre and sideoats grama at 7.5 pounds PLS per acre. Increase rates to 1.5x if broadcast seeding.

Part 3. Planting Equipment/Methods

3A) Bare-root stock

Rooted stock will be planted in a vertical position with root collars approximately ½ inch below the soil surface.

The planting trench or hole must be deep and wide enough to allow the roots to properly spread out and down. Trim roots of bare-root stock as need to prevent J-roots, L-roots, broken roots, or compacted roots. Do not trim roots more than needed, see Part 4.1. See Figure 2 for common planting issues and proper planting.

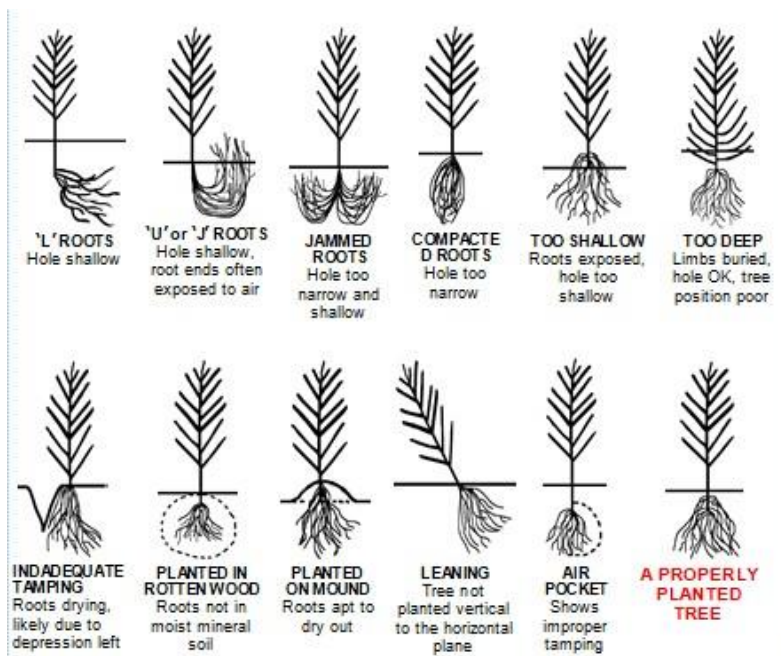


Figure 2

3B) Unrooted Cuttings (willow, poplar, and dogwood species)

- Cuttings should be soaked for 10-24 hours before plantings (soaking the base end of larger cuttings is permissible).
- If stored for more than one week, cut the base end at a 45-degree angle to maximize water uptake.
- Planting may be done with hydraulic jetting, hand dibbles, shovels, tree planters, or probes.
- Insert cuttings deep enough to reach adequate soil moisture with one or two buds above the soil surface. Base end must be planted down. Example: this may require a 2-foot cutting to be planted 18 inches deep.
- Ensure soil is firmly packed when planting smaller cuttings through a tree-planting machine.
- Avoid excessive force that may kink or break the cutting.

3C) Container-grown stock

1. Remove stock from pots, blocks, wire baskets. Balled and burlap (B&B) stock can remain in the burlap ball with ties removed from around the trunk.
2. If B&B stock has developed girdling roots, gently spread the roots radially from the trunk; essentially creating a bare-root stock.
3. Keep root balls moist but do not soak in water.
4. Plant stock so the plug is covered with approximately ½ inch of soil.

3D) Direct seeding

Viability and success of direct seeding has not been established, so this method requires a variance requested through the State Resource Conservationist

1. Only attempt in the areas mentioned as suitable for natural regeneration.
2. Use a diverse number of species suited to the site to maximize success.
3. Strive for 15,000 seedlings per acre. Use this goal with the seeds per pound, desired percent of the stand, percent purity, and percent germination to determine pounds of seed for each species. (For basswood to be 20% of mix: 15,000 seedlings x 20% / 80% purity / 2% germination / 3,000 seeds per pound = 62.5 pounds bulk seed per acre).
4. Tree seeds are very sensitive to planting depth – plant seeds to a depth of 1-3 times the diameter of the seed. Example: a ½ inch diameter seed should be planted at 0.5-1.5 inches.
5. For specific information about proper time to seed each species, refer to the [Woody Plant Seed Manual](#).

Part 4. Plant Stock Requirements

Tree planting stock must be an approved species or seed strain/variety or be acquired from an established nursery in North Dakota or an immediately adjacent state/province providing conservation-grade seedlings. When possible, seed source of planting stock should be requested from source nursery to determine if it is suitable for the location to be planted.

1. Bare-root deciduous stock: at least ¼ inch caliper at 1-inch above root collar and top growth of at least 12 inches. Stock should not exceed a 2:1 shoot-to-root ratio.
2. Bare-root coniferous stock: either 3-0 or 2-1 age class with at least a 6-inch shoot. At least 3/16-inch stem diameter at 1-inch above the root collar. Should not exceed a 2:1 shoot-to-root ratio.
3. Vegetative Cuttings: no less than ½ inch diameter at the base, all apical bud and lateral side branches removed, and produced in a length sufficient to reach a soil depth saturated throughout the growing season.
4. Container-grown stock: minimum container volume of 7 cubic inches with a high root to soil ratio and seedling height of at least 6 inches.

Part 5. Storage and Care of Stock

1. Rooted stock and cuttings will be stored in a cool, moist environmental (34-38 degrees F) or heeled into soil.
2. Keep stock free of mold, cool, and moist.
3. Evaluate stock that has gotten dry, allowed to heat, or has developed mold; destroy if any doubt to viability.
4. Cooperators may keep stock up to one week in a cool, shaded, moist area. Do not store in a bucket of water as this results in breaking dormancy and reduces survival.

5. Keep roots moist during planting operations by placing in a water-soil slurry, super-absorbent (e.g., polyacrylamide) slurry, or covering with wet peat moss, wet shingle tow, or similar material. Do not cover with dry material and expect to wet it afterwards.
6. Pre-treat bare root stock by soaking in water or polyacrylamide for several minutes before placing on the tree planting machine.
7. Limit exposure to air and sunshine while loading the planter and planting. Studies from South Dakota have shown that exposure of Scotch Pine roots to air and sun on a 73-degree day for only 2 minutes resulted in 80% mortality.
8. Avoid planting on hot, dry, windy days. See Figure 9.
9. Remove any wire or plastic ties that encircle the trunk or limbs.

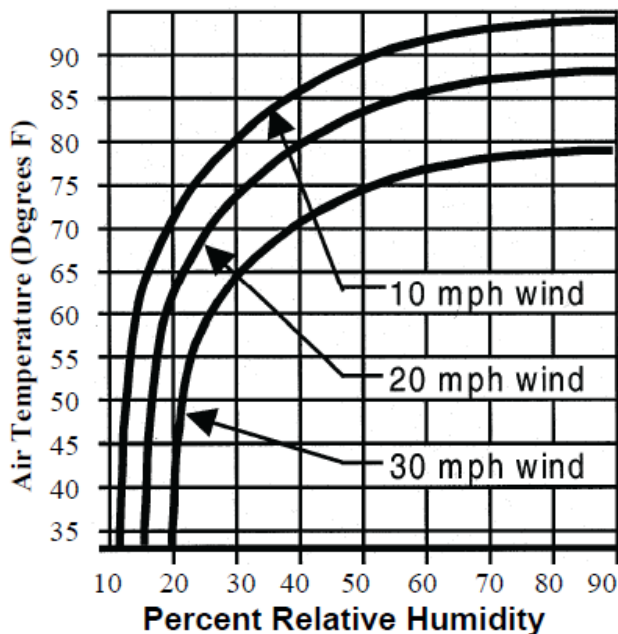


Figure 9. Climate Stress Chart – do not plant if conditions are above this line.

5A) Sweating seedlings

Certain species such as bur oak and hackberry may require “sweating”, especially in cold, wet soils.

1. Sweating trees is a process requiring nothing more than large sheets of plastic, large cardboard boxes, and tape. One to two weeks before the trees are to be planted, remove them from the cooler. Line the cardboard boxes with a large piece of plastic. Break tree bundles and place loosely in the plastic-lined box. Wet them thoroughly. Fold and tape the plastic together to make an air-tight seal. Store the wrapped trees at room temperature, away from direct sunlight, for one to two weeks, checking to ensure they do not dry out.
2. Condensation should form on the inside of the plastic within hours, indicating a tight seal and that the process is working. If condensation does not form, repair air leaks.
3. When properly sweated, the buds will have swollen and, in some cases, broken open. Use extra precautions when planting sweated stock, especially if leaves are starting to emerge, because they are very sensitive to drying out during handling and the effects of hot dry winds immediately after planting.

Part 6. Operation and Maintenance

6A) General requirements

1. Competitive vegetation must be controlled for a 3-foot minimum radius of each seedling for at least 3 years.
2. Aggressive sod-forming grasses (such as smooth brome, Kentucky bluegrass, reed canarygrass, or quackgrass) and deep-rooted legumes such as alfalfa or sweetclover should be kept from the tree area for the life of the planting.
3. Consider a 10-foot weed-free zone around the entire planting to serve as a firebreak and reduce sod encroachment.
4. A sparse cover of vegetation outside the 3-foot zone may benefit the windbreak by trapping snow, shading the soil surface, and controlling erosion.
5. Avoid damage to roots, trunks, and branches from herbicide, tillage, or animals.

6B) Mechanical weed control

1. Tillage too close, or too deep can damage trunks, limbs, and roots. Excessive tillage can cause erosion and cause roots to become exposed.
2. Tillage operations when not needed to control weeds will waste moisture and increase risk of tree damage.

6C) Chemical weed control

1. Follow all label directions
2. Adhere to state or local rules regarding herbicide applications.
3. Use only when needed to maintain or improve the health and vigor of tree planting.

6D) Organic mulches

1. Organic mulches include straw, wood chips, saw dust, chopped corn cobs, grass clippings, or other organic byproducts.
2. Maintain to the dripline of the tree or beyond.
3. Place for a 6-foot diameter around new seedlings for a depth of 2-4 inches.
4. Established perennials must be controlled before applying mulch.
5. In high moisture situations, keep a 4–6-inch mulch-free zone around the trunk.
6. Fine textured mulches may need to be packed to stay in place.
7. Reapply as necessary to maintain effective depth.
8. Expand to maintain coverage of the drip line.

6E) Synthetic Mulch weed control

1. Manufacturer should warrant for complete weed control for five years.
2. Must be black or capable of preventing underlying plant growth.
3. Pin-punched plastic, solid polyethylene, woven polypropylene, or other rot-resistant material.
4. Fabric prone to puncture from hooves requires a variance to evaluate effectiveness over time.
5. Roll width will be at least 6 feet, with a 4-5-foot effective width after installation.
6. Individual pieces will be 6 foot square or 6-foot diameter.
7. Not recommended for use on suckering shrubs.
8. Site should be firmed and leveled so fabric lays flat against the ground to avoid providing a runway for rodents or trapping summer heat in an air pocket. Site should be firm enough to barely show an adult footprint.

9. In no-till situations, remove excessive vegetation from the surface to reduce rodent habitat.
10. Use a sharp instrument to cut openings to avoid tearing the fabric or causing it to fray.
11. Openings shall be X, C, L, or J shaped and not exceed 12 inches.
12. Seedlings must be pulled through the fabric within minutes after installation to avoid damage.
13. Edges need to be firmly anchored.
14. In light soils or windy conditions, pins or anchors may be needed next to and between each tree. Fabric strips should be anchored up the middle. If a planting trench remains, fabric may need to be stapled at each tree.
15. Splices must be anchored with staples, pins, or rocks; consider tucking a few inches at the cut line under the end to reduce snagging.
16. Do not cover fabric with organic mulches.
17. When installing with a machine, ensure 10-12 inches of fabric edge is anchored in soil.
18. If using pins to anchor the edge, staples must be placed every 3 feet.
19. Even if anchored with soil, the outside edge of a curve will often need to be pinned.
20. Enlarge the opening as needed to prevent girdling of the tree. Inspect annually.
21. Remove weeds, soil, or clippings which have accumulated on the fabric immediately to avoid it becoming a rooting medium.
22. Take care not to hook the buried edge of the fabric if tilling next to the fabric.
23. Individual fabric squares should be stapled at each corner, the middle of each edge, and at the tree, and more may be needed.

6F) Replanting

- Any trees or shrubs that fails within first 3 years should be replaced with a similar plant.

6G) Prevent/Repair Damage

- Conduct annual inspections to spot weather/animal damage, replacement needs, weed issues, or insect/disease problems.

6H) Supplemental Watering

- During first three years: in absence of timely rain add 5 gallons per tree per week during year 1 and 10 gallons per tree every other week in years 2-3.

6I) Tree shelters

1. A wide assortment of tree shelters exists in the marketplace. They range from 1 foot tall to 6 feet tall, from solid tubes to flat sheets that fold into tubes, to plastic meshes. All are effective in preventing certain kinds of damage.
2. One of the more common tree shelters in North Dakota consist of tubes, or flat sheets that fold into tubes, that range from 2-6 feet in height and form a 3–5-inch cylinder around the tree. These shelters protect the tree from wind, sun, small mammals, rodents, and deer. Tree shelters also encourage faster initial growth and provide an opportunity for much easier herbicide applications. Five-foot or taller shelters are most effective at preventing deer browse. Deer may still browse plants at the top of the 5-foot tubes, but trees can usually grow past the browse risk.
3. Tubes are usually tied to wood stakes with plastic ties. Tubes should not be removed for several years after the tree has emerged from the top of the tube. This time is needed for the tree to develop adequate stem diameter to withstand wind. Removal of the tree

shelter just as the tree reaches the top of the tube will often result in a tree that "lays on the ground" or is broken off at the first strong wind.

4. Manufacturers should warrant the tubes for at least 3 years before they start breaking down from ultraviolet light. Follow the manufacturer's instructions for installing specific brands of tubes.

6J) Staking

1. Most trees shorter than 5 feet do not need staking.
2. Trees should not be staked for more than 2 years to allow for wind hardiness.
3. Wires and ties should be loose enough to allow some movement.

Part 7. Guidelines for evaluating establishment

Below are the criteria for successful establishment based on practice and purpose.

1. Practice 380: 85% survival with no two adjacent plants missing.
2. Practice 311: 85% survival with no two adjacent plants missing.
3. Practice 391: 75% survival of all trees and shrubs.
4. Practice 612: 75% survival of all trees and shrubs.
5. Practice 580: 50% survival of all trees and shrubs unless specific site requires a higher survival rate.
6. Practice 644: 50% survival of all trees and shrubs unless specific site requires a higher survival rate.
7. Practice 645: 50% survival of all trees and shrubs unless specific site requires a higher survival rate.

Part 8. Establishment Design Criteria for CPS 380 – Windbreak-Shelterbelt Establishment and Renovation

Cautions:

1. Several establishment methods involve substantial soil disturbance at depths below typical agricultural tillage. If the depth of disturbance will exceed 18 inches, notification of various utility companies via the North Dakota One Call System at 1-800- 795-0555 is required.
2. Several of the establishment methods are considered undertakings per Section 106 of the Federal Historic Preservation Act and will need to be investigated and assessed accordingly.
3. Tree and shrub plantings on native range and/or wetlands is permitted only after alternative treatments have been evaluated and then only to protect building sites or roads.

8A) Establishment: General

When designing a windbreak, consider the effects of the surrounding topography and land management on the ability of the windbreak to function properly. Conversely, consider the positive and potentially negative impacts the windbreak may have on surrounding land uses. A sample of the items to consider include areas of snow drifts, water runoff from melting snow, water erosion potential, stifling summer air flows, visibility hazards, ice blockage of drains, etc.

8B) Establishment: Location

1. Design is often based on 20-year tree height (H), or multiples such as 10H.

2. Windbreaks should be positioned so at maturity they do not spread into right-of-way of roads: refer to [Tree and Shrub Characteristics](#) for mature spread.
3. Maximum snow deposition will occur within 2-5H from the windward dense row. Higher density = deeper drift.
4. All areas needing protection should be within the 10H-15H zone on the leeward side.
5. Field windbreaks for snow spreading may be up to 20H apart.
6. Primary windbreaks for wind protection and snow control are located on the north and west of the area needing protection. Secondary windbreaks will be south and east of the area needing protection.
7. Secondary windbreaks typically consist of shrubs and shorter trees to allow summer breezes to penetrate the protected area. Any design of one or more rows is acceptable.

8C) Establishment: Setbacks

1. Windbreaks shall be no closer than 16 feet from any property line unless a signed agreement between both owners exists.
2. According to North Dakota Century Code, no trees or shrubs may be placed within 33 feet of a section line unless written permission is secured from the county commissioners or township supervisors.
3. No trees shall be placed within the easement area of overhead transmission lines.
4. As per international treaty, no trees or shrubs shall be planted in a location where foliage, at maturity, will encroach upon the 20-foot wide (10 feet on each side) line-of-site vista along the US/Canadian border.
5. Windbreaks adjacent to, or crossing, assessment or private drainages should be set back at least 100 feet to prevent snow and ice buildup.
6. If local units of government have established more restrictive setback distances, the more restrictive regulations will apply.
7. Secondary windbreaks must be 100 feet or 3H of the tallest tree away from the area needing protection, whichever is larger.

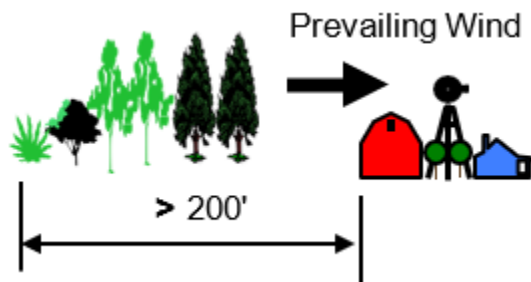


Figure 3: Primary windbreaks must have a minimum 200-foot setback from windward row to area needing protection.

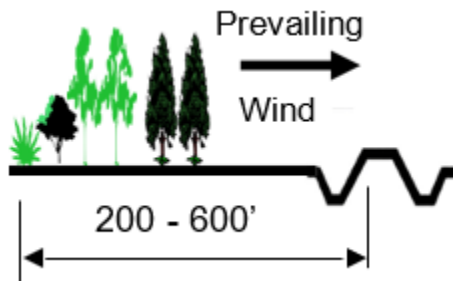


Figure 4: When measuring from roadways, the measurement should begin at the road edge closest to the proposed windbreak. For a snow trap, the most windward row can be used for measurement purposes. This setback also applies to the ends of a windbreak which is perpendicular to roads or areas needing protection.

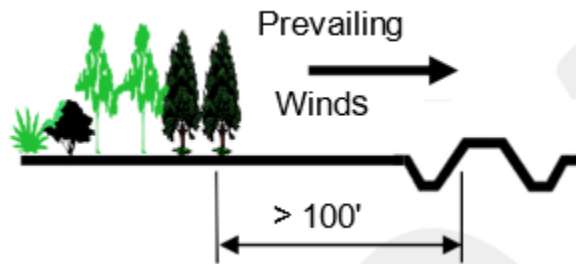


Figure 5: Even if the windward row meets the 200-foot minimum setback, the leeward row must be no closer than 100 feet from the nearest road edge.

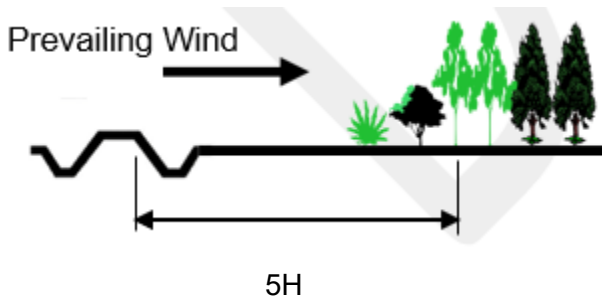


Figure 6: Windbreaks to the south or east of roadways shall be no closer than 5H from the nearest road edge.

8D) Establishment: General Design Criteria for all Windbreaks

1. Select species which are compatible with the soils: reference the [20-Year Tree Heights](#) and the Conservation Tree and Shrub Group (CTSG) from the county interpretive table in FOTG Section 2. Be aware of minor components within soil map units which may require species changes within-row to assure effectiveness.
2. To reduce the risk and spread of pests/diseases, no more than two rows in any windbreak system shall be of the same species unless CTSG suitability and site conditions restricts the number of available species.
3. Maximize species diversity when feasible within the planting and by alternating within row. See Table 1 for allowable alternation of species or inserting of species.

- a. A single-row, single-species planting may meet design criteria, but is increasingly prone to failure from drought, disease, or insects.
 - b. Mixing compatible species within the row may be considered to reduce the risk of this type of failure. If species are alternated, they need to have a similar size, density and growth habit, and not present incompatible characteristics that may affect form, survival, filling-in, shade tolerance, disease, etc.
 - c. **Allowable Alternation** – Example: Ponderosa Pine at 10 foot within-row spacing becomes Ponderosa Pine and Scotch Pine with 10 feet between plants. When alternating Larch, be sure landowner understands that larch lose their needles in fall.
 - d. **Allowable Insertion** – Example: Green Ash at 10 foot within-row spacing becomes Green Ash and Common Lilac with 5 feet between plants.
4. End of windbreaks should extend at least 200 feet past area needing protection.
 5. Design living snow fences and farmstead/feedlot windbreaks for conditions worse than average: don't short cut the setbacks, number of rows, or diversity of species.
 6. Refer to Table 1 for within-row spacing by tree type.
 - a. Closer within-row spacing increases density and typically provides a faster wind barrier due to canopy closure.
 - b. Between-row spacing should be at least 1.5 times the within-row and sufficient to meet the minimum square feet per plant, not to exceed 25 feet other than Twin-row, High-density plantings as noted in Section 8L.
 - c. It is best to increase between-row spacing with closer within-row spacing to provide quicker closure and a more effective wind barrier.
 - d. Trees should not be planted within 25 feet of existing Cottonwood, Poplar, or Tree Willows, and should not be alternated with these species.

Table 1. Within-row spacing, between-row spacing, square footage, alternating species, and inserted species requirements.

		Within-row Spacing		Between-row Space	Minimum square feet per plant	Allowable alternations	Allowable Insertions
		Minimum	Maximum	Minimum			
1	Suckering Shrubs	3	6	5	15	1	2, 3, 4
2	Non-suckering Shrubs*	3	8	5	15	2	1, 3, 4
3	Short/Medium Deciduous Trees*	5	10	8	80	3	1, 2
4	Tall Deciduous Trees	8	16	12	144	4	1, 2
5	Spruce	8	16	12	144	5, 6, 7	none
6	Juniper, Cedar, Arborvitae	6	10	9	144	5, 6, 7	none
7	Larches	8	14	12	144	5, 6, 7	none
8	Pines	8	16	12	192	8	none

* Certain species of deciduous trees may not be expected to grow much taller than a shrub on certain sites, and some non-suckering shrubs may achieve the height of a small tree on others. The main distinction is that a shrub has several main stems growing from ground level, rather than one trunk, which influences density of the windbreak at lower levels.

8E) Establishment: Snow Control (including Living Snow Fence)

1. Minimum 2 or more rows of deciduous trees and/or non-suckering shrubs or one row of conifer or suckering shrubs.
2. Multiple rows of diverse species are strongly encouraged.
3. Refer to Table 1 for within-row and between row spacing.
4. To reduce end-effect drifting, consider reducing density of the last 200 feet at each end. (80% + for snow control portion, 35-60% for the 200-foot end sections)

8F) Establishment: Snow Spreading on Crop or Pasture

1. Suckering shrubs, spruces, junipers, cedars, or arborvitaes are not suitable.
2. Tree density of 35-60% to allow enough air flow to spread snow.
3. Planting shall consist of one row of a non-suckering shrub, deciduous tree, larch, or pine.

8G) Establishment: Erosion Control

1. One or more rows of any suitable species is appropriate.
2. The windbreak in conjunction with the cropping system, must result in wind erosion below the soil loss tolerance "T" for the field needing protection; based on current wind erosion prediction technology.
3. Some crops are sensitive to erosion far below "T". These tolerances can be found in part 502 of the [National Agronomy Manual](#). Design the windbreak and cropping system to meet the tolerance levels of these crops as needed.

8H) Establishment: Livestock and Building Site Protection

1. Proper setbacks as listed in section 8C are the most important factor and must be met.
2. If the cooperators controls adequate space with suitable soils to meet setbacks the minimum number of rows is as follows:
 - a. 6 rows of trees and shrubs in Major Land Resource Areas (MLRA) 53, 54, and 58.
 - b. 8 rows of trees and shrubs in MLRA 55 and 56.
3. Any possible alternative to meet both items 1 and 2 should be installed to provide adequate protection; but if #2 cannot be met; the following two options are allowable minimum substitutions provided proper setbacks are still maintained (it is recommended to install more than these minimums if space allows):
 - a. 1 row of shrubs and 2 rows of deciduous trees.
 - b. 2 rows of conifers
4. If space concerns are a matter of operational convenience rather than property line, soil suitability, or topography issues; the minimum number of rows in 2a and 2b can be reduced by 1 for each of the following that exists:
 - a. The most windward row is spruce, juniper, cedar, or suckering shrub (maximum reduction of 1 row)

- b. An effective field windbreak is established no more than 300 feet from the proposed windbreak.
- c. A snow trap is located an appropriate distance windward of the proposed windbreak.

8I) Establishment: Wildlife

1. When the primary purpose of a tree planting is wildlife, refer to CPS 645 – Upland Wildlife Habitat Management for specific details. Considerations to improve wildlife value of plantings serving other primary purposes are listed below.
2. Provide dense thickets of suckering shrubs or conifers to provide winter thermal cover.
3. Choose a variety of plants that provide food throughout the year, especially during winter.
4. Consider where snow deposition will occur and use snow traps to keep food sources and shelter areas from becoming buried.
5. Install additional rows on the leeward side that provide food or cover.
6. Add a secondary windbreak to protect food and cover from south or east winds.
7. Where appropriate, connect isolated habitat by providing a travel corridor of at least 5 rows of trees and shrubs.

8J) Establishment: Reducing Chemical Drift

Windbreaks reduce chemical drift by reducing wind velocity across the field and by intercepting chemicals that have moved offsite.

1. Minimum requirement is one row of a suited tree or shrub.
2. Use the tallest tree appropriate – tall trees intercept more laterally moving air mass and have more surface area to intercept drift.
3. When installing a system of windbreaks to reduce drift, space windbreaks at 10H. The space can be reduced to accommodate even multiples of toolbar widths.
4. Coordinate use of windbreaks with other drift reducing technologies and conservation practices.
5. The biggest challenge is knowing which tree species will be most resistant to chemical drift 20 years from now. Based on 50 years of herbicide applications in North Dakota; phenoxy-type herbicides have been most damaging to trees, and conifers have shown the most resistance to injury from these.

8K) Establishment: Carbon Storage

1. Close within-row and between-row spacing maximizes plants per acre without causing plant stress – use minimum required spacings from Table 1.
2. Select long-lived species as much as appropriate.
3. Select trees that develop a large, extensive, deep root system.
4. Minimize tillage within the planting to what is necessary for establishment.
5. Establish adequate firebreaks to prevent catastrophic loss of the planting, see CPS 394 – Firebreak.

8L) Establishment: Twin-row, high-density

1. Consists of at least three pairs of twin-rows. Each pair will be a single species.
2. Windward row will be at least 200 feet from area being protected.
3. Within-row spacing will be the smallest value from Table 1 for the species being planted.
4. Between-row spacing for the pair will be the same as within-row.
5. Spacing between pairs will be 30-50 feet. See Figure 7.

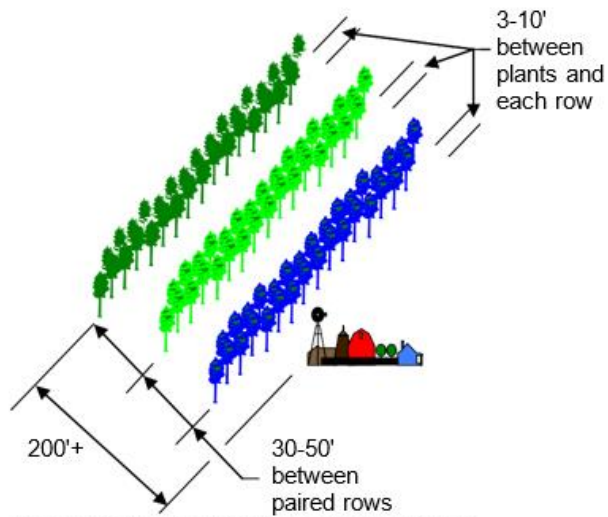


Figure 7: Twin-row, High-density windbreak

8M) Establishment: Stubs for snow control

1. Establish a 300–400-foot stub to the criteria in Section 8E, perpendicular to the existing windbreak.
2. Setback is 400 feet if a machinery gap is left or 200 feet with no gap. See Figure 8.

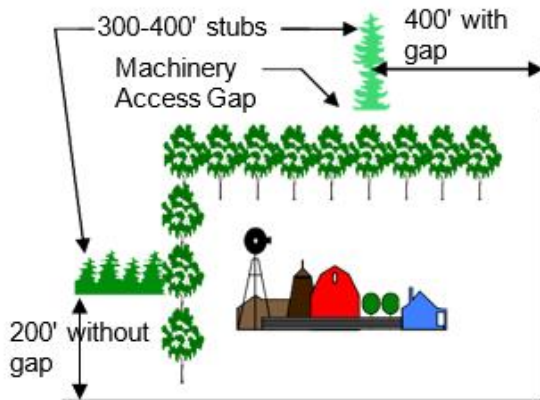


Figure 8: Windbreak stubs for snow control

8N) Establishment: Temporary Windbreaks

1. Plant at same time as main windbreak.
2. Design as a one twin-row, high-density as in Section 8L; only one pair is needed.
3. Select a fast-growing species, at least 2 feet per year as found in the [Tree and Shrub Characteristics](#).
4. Temporary windbreak must be at least 50-feet windward or leeward of the main windbreak.
5. Temporary windbreak will be removed once the main windbreak is established and functioning.

Part 9. Renovation Design Criteria for CPS 380 – Windbreak-Shelterbelt Establishment and Renovation

Cautions:

1. Several renovation methods involve substantial soil disturbance at depths below typical agricultural tillage. If the depth of disturbance will exceed 18 inches, notification of various utility companies via the North Dakota One Call System at 1-800- 795-0555 is required.
2. Several of the renovation methods are considered undertakings per Section 106 of the Federal Historic Preservation Act and will need to be investigated and assessed accordingly.

9A) Renovation Methods - Coppicing:

1. Effective on broken-down shrubs or certain trees provided they still have a healthy root system.
2. Shrubs should be cut at 6-8 inches above root collar.
3. Trees suitable for coppicing can be found in the [Tree and Shrub Characteristics](#); and should be cut at 1-4 inches to encourage a strongly attached sprout from the root collar.
 - a. Trees require maintenance during the first few years after coppicing to prune multiple stems, leaving only one or two stems per stump.

9B) Renovation Methods – Gap Planting:

1. Restore function by filling in openings in otherwise healthy windbreak.
2. Gap may have been due to a soil-related issue, evaluation to determine site-specific Conservation Tree and Shrub Group is strongly encouraged.
3. Refer to the appropriate Establishment criteria in Section 8 for planting details.

9C) Renovation Methods – Row Removal and Replacement:

1. Removes dead/dying rows, provides space for supplemental planting, creates a diversity of age class, or alter windbreak composition/density.
2. At a minimum all top growth is removed but may also include removal of stumps and roots.
3. If removal occurs within a windbreak, one additional row will be removed to make space for the new rows (remove 3, plant 2).
4. Replacement planting may be done in the previous location, or more distant if the new windbreak(s) protect the same land unit.
 - a. If replacement planting will be in the previous location the site must be effectively prepared to assure the absence of roots and resprouts.
5. Tops of American Elm and Siberian Elm will be disposed of by burning, burying, chipping, or debarking to reduce risk of spreading Dutch Elm disease. Disposal should occur immediately but must occur within one year.
6. Other species may be burned, buried, hauled away, or left in piles consistent with local/state laws and landowner objectives.
 - a. Consider burning or burying if trees are infected with disease or insects.
7. Disposal considerations include:
 - a. Open burn permit requirements, restrictions, and liabilities.
 - b. Local ordinances for disposal of elm wood.
 - c. Potential impacts to cultural resources.

- d. Location of buried utilities.

9D) Renovation Methods – Shearing:

1. Can be used to increase density, reduce spread or extent, or shape windbreak to meet an objective.
2. Should be done frequently to avoid removal of branches older than two years.
3. Shearing shall be done with tools that leave a clean, smooth cut.

9E) Renovation Methods – Sod release and management:

1. Removes herbaceous competition to extend windbreak life.
2. Sod forming grasses will be controlled by tillage, mowing, and/or herbicide at or before three inches of new growth.

9F) Renovation Methods – Supplemental planting:

1. Can be used to improve density, species/age diversity, wildlife habitat, or expand a windbreak.
2. Refer to Section 8 of this guide for design criteria.
 - a. New planting should be no closer than 40 feet from a deciduous tree, spruce, or suckering shrub.
 - b. New planting should be no closer than 20 feet from other conifers or non-suckering shrubs.

9G) Renovation Methods – Thinning:

1. Can be used to alter density, reduce competition, or manage snow moisture.
2. Tops of American Elm and Siberian Elm will be disposed of by burning, burying, chipping, or debarking to reduce risk of spreading Dutch Elm disease. Disposal should occur immediately but must occur within one year.
3. Stump resprouting may need to be addressed.
 - a. There may be a risk of using herbicides to treat stumps of trees that root graft. Root grafting does not occur between plants of different species.
4. Windbreak function may be reduced after thinning. To reduce this impact, do not thin all rows of a multi-row windbreak at one time; or consider a supplemental planting several years before thinning.
5. Thinning may be “every other tree”, “every third tree”, or another scenario to provide the desired result. A residual plant-to-plant spacing of 4-6 feet for shrubs or 12-18 feet for large trees is appropriate.
6. Thinning of conifers should occur before canopies overlap by more than 2-3 feet. Extended period of overlap will result in dieback.

9H) Renovation Methods – Underplanting:

1. Can be used to increase species diversity and increase density.
2. Select species with appropriate levels of shade tolerance – refer to the Tree and Shrub Characteristics.
3. Site preparation must control herbaceous weeds and sod-forming grasses prior to planting.
4. Refer to Section 8 of this guide for design criteria.

Appendix C

Tree and Shrub Summary Table

**Cherry Creek Extension Pipeline Project
Tree and Shrub Summary Table***

Scientific Name	Common Name	Tree or Shrub	Removed	2:1 Replacement Count
<i>Fraxinus pennsylvanica</i>	Green ash	Tree	13	26
TOTAL			13	26

*This table summarizes the trees and shrubs planned to be removed during construction of the Cherry Creek Extension Pipeline project which will be mitigated through the NDPF Plantings for the Future Program.

Appendix D

Natural Resources Reports

CHERRY CREEK EXTENSION
McKenzie County, North Dakota

ONEOK Rockies Midstream, L.L.C.

Natural Resources Report

Prepared by:



November 2022

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ACRONYM LIST

ESRI	Environmental Systems Research Institute
FWS	Fish & Wildlife Service
GIS	Geographical Information Systems
GPS	Global Positioning System
Merjent	Merjent, Inc.
NHD	National Hydrography Dataset
NRCS	National Resource Conservation Service
NWI	National Wetland Inventory
OHW	Ordinary High-Water Mark
ONEOK	ONEOK Rockies Midstream, L.L.C.
PEM	Palustrine Emergent Wetlands
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WETS	NRCS Climate Analysis for Wetlands Tables

1.0 INTRODUCTION

Merjent, Inc. (Merjent) performed a wetland and other water delineations for the ONEOK Rockies Midstream, L.L.C. (ONEOK) Cherry Creek Extension Project (Project) in McKenzie County, North Dakota. ONEOK provided Merjent 129.05-acre survey area to complete wetland and other water delineations (Figure 1). Other waters include, but are not limited to, streams, ponds, and lakes. The field survey was conducted on September 27-28 and October 21, 2022. Concurrently, Merjent completed a field review of potentially suitable habitat for federally protected species including species protected under the Endangered Species Act (ESA) and bald and golden eagle nests. Surveys also identified invasive species in the survey area, and included a tree and shrub inventory.

This natural resources report outlines the wetland and other natural resources delineation investigation, methodology, and findings as completed by Merjent. This report has been compiled by the following staff that are trained and experienced in wetland delineation methodologies, habitat and species assessments, and applicable regulations. This report will be used to support future maintenance activity, planning, and permitting.

- **Chris Firkus, MS – Senior Analyst; Field Manager**

Mr. Christopher Firkus is a senior analyst specializing in environmental field surveys, permitting, and project management in the Upper Midwest. Mr. Firkus has over eleven years of experience serving Oil & Gas, Transmission, Transportation, and Development sectors. On behalf of his clients, Mr. Firkus works with environmental permitting agencies to streamline the permitting process and ensure an appropriate timeline is maintained. Mr. Firkus coordinates and conducts field surveys and desktop reviews of threatened and endangered species surveys, habitat assessments, wetland delineations, cultural resources, and contaminated land investigations.

- **Andy Kranz – Environmental Consultant; Field Lead**

Mr. Andy Kranz is a botanist specializing in threatened and endangered species surveys and wetland and waterbody delineation and determination. He has over 15 years of botanical experience in the Midwest, including rare plant survey, vegetation monitoring, and plant community classification and mapping, and is a Minnesota Department of Natural Resources qualified surveyor for endangered and threatened vascular plants. He has over six years of experience conducting wetland delineations and wildlife habitat assessments in the Midwest, Great Plains, and the Southern United States. Mr. Kranz also has over seven years of experience in prairie and woodland restoration consulting and implementation.

- **Adam Weishair – Environmental Consultant; Field Lead**

Mr. Adam Weishair is an environmental technician specializing in wetland delineations and environmental surveys in the Upper Midwest. Mr. Weishair has three years of experience serving Oil & Gas, Transmission, Transportation, and Development sectors, and 4 years of experience conducting field surveys for the Fish and Wildlife Service (FWS) and the National Park Service. Mr. Weishair has conducted field surveys and desktop reviews of threatened and endangered species surveys, grassland assessments, wetland delineations, cultural resources, and Phase I environmental site assessments.

- **Rachel Mortensen – Environmental Consultant; Report Author**

Ms. Rachel Mortensen is an environmental consultant with over two years of experience in environmental consulting, focusing on wetland, prairie, and forest habitat management, wetland mitigation banks, and invasive species management. Ms. Mortensen has developed vegetation establishment plans and wetland delineation reports in support of projects throughout the Midwest.

- **Preston Rye – Environmental Analyst; GIS Analyst**

Preston Rye is a Geographical Information Systems (GIS) Consultant with over four years of experience in environmental consulting, focusing on utility, transportation, and government clients. His expertise includes developing maps and performing spatial analysis for permitting and other client needs; creating and/or managing project data; publishing and hosting ArcGIS Online services and applications; training staff on the use of ESRI software; and supporting field staff by setting up survey maps and processing field data. Mr. Rye has worked on electric/gas transmission, solar, and wetland delineation projects throughout the U.S.

2.0 METHODS

2.1 DESKTOP REVIEW

Desktop resources were used to identify potential natural resources within the survey area. Sources of information consulted prior to field investigation include:

- United States Geological Survey (USGS) Topographical Map (Figure 2; USGS, 2021)
- United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey Database for McKenzie County, North Dakota (Figure 3; Soil Survey Staff, NRCS, USDA, 2022)
- National Wetlands Inventory (NWI) FWS, 2021; Figure 4)
- USGS National Hydrography Dataset (NHD; Figure 4)
- Environmental Systems Research Institute (ESRI) Basemap 2016 Aerial Imagery (Figures 3-5)
- Google Earth™ Aerial Imagery (multiple years)

2.2 FIELD INVESTIGATION METHODOLOGY

Merjent performed wetlands delineations based on the methodology described in the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (USACE, 2010). Merjent identified other waters in accordance with the USACE Jurisdictional Determination Form Instructional Guidebook (USACE-United States Environmental Protection Agency, 2007).

Prior to the field work, Merjent reviewed background information to establish the potential location of natural resources within the survey area. On September 27-28 and October 21, 2022, the surveyors walked the survey area with the specific intent of determining wetland boundaries. The surveyor sampled data points during this time at locations within or near the wetland areas to document soil characteristics, evidence of hydrology, and dominant vegetation. The surveyor identified vegetative community boundaries according to the Cowardin Classification System (Cowardin et al., 1979).

2.2.1 Naming Protocol

Features identified in associated figures and appendices are named in the following manner:

- Wetlands (w01, w02, etc.)
- Streams (s01, s02, etc.)
- Data points (dp01, dp02, etc.)
- Invasive species (i01, i02, etc.)
- Dakota Skipper Potential Suitable Habitat (dh01, dh02, etc.)
- Photo points (pp01, pp02, etc.)

2.2.2 Site Photographs

Photographs provided in Appendix A provide a visual representation of wetland communities and boundaries, as well as general site conditions, at the time of inspection. Photos are geospatially referenced by their associated photo point location and presented with direction taken (e.g., "pp01

view west,” “pp02 view northeast”). Photo point locations are depicted on the wetland delineation figure (Figure 3).

2.2.3 Delineation Data Sheets

Wetland delineation data sheets are the written documentation of how representative data points meet or do not meet each of the wetland criteria. Plant species nomenclature follows the Regional Wetland Plant List (USACE, 2020). Hydric soils are identified using the methods outlined in Field Indicators of Hydric Soils in the United States, Version 8.2 (USDA-NRCS, 2018).

2.2.4 Survey of Wetlands and Other Waters Boundary

Merjent surveyed all data point locations, wetland boundaries, and the ordinary high-water mark (OHWM) of other waters using Global Positioning System (GPS) technology capable of sub-meter accuracy. While these surveys provide reasonably accurate spatial data, they do not provide the same level of accuracy as a professional land survey. Wetland boundaries were not flagged during the field survey.

2.2.5 Previous Site Review

Merjent is not aware of a previous wetland delineation performed at this site.

3.0 RESULTS AND DISCUSSION

3.1 DESKTOP REVIEW

3.1.1 Topography

The Project area is located in a landscape with varied topography (Figure 2; USGS, 2021). The northern portion of the survey area is generally less steep than the central and southern areas of the survey area. Two primary drainages are evident near the middle of the route and further south.

3.1.2 Soil Survey

The NRCS soil map of the survey area (Figure 3) identifies twenty-one soil types, none of which are classified as hydric (Table 1; Soil Survey Staff, NRCS, USDA, 2022).

3.1.3 Mapped Wetlands and Other Waters

The NWI/NHD map (Figure 4) indicated two wetlands or other waters within the survey area (Table 2). Both features are considered riverine.

3.1.4 Current, Historic, and High-Resolution Aerial Imagery

Merjent reviewed multiple sources of historic aerial imagery to evaluate the survey area for wetland signatures. Based on this review, possible wetland signatures are present in the low-lying land within the Project area. Saline soils are evident in areas, and wetlands are likely along riparian zones.

3.1.5 Recent Climatic Conditions and Precipitation Data

The NRCS Climate Analysis for Wetlands (WETS) Tables define the normal range for monthly precipitation over a representative period of time (USDA, no date). Merjent compared recent precipitation data with historic precipitation data from a 30-year dataset (1993-2022) from a nearby WETS weather station (Watford City, ND) to determine if normal hydrologic and climatic conditions were present on-site during field delineations. When compared, the observed precipitation data from three months prior to the field delineations indicated drier than normal precipitation conditions at the time of the September field delineation, and normal precipitation conditions at the time of the October field delineation (Table 3A, Table 3B).

3.2 FIELD INVESTIGATION – GENERAL UPLANDS

Based on the field survey and review of desktop resources, it is our professional opinion that five wetlands and one stream exist within the survey area (Tables 4 and 5, Figure 5).

The survey area consists primarily of agricultural fields, rangeland, and naturally vegetated drainage ways.

The majority of the upland areas within the survey area are planted crop fields, hay fields, or rangeland.

The uplands are dominated by non-native grasses including smooth brome (*Bromus inermis*) and intermediate wheatgrass (*Thinopyrum intermedium*). Native species include prairie dropseed

(*Sporobolus heterolepis*), western snowberry (*Symphoricarpos occidentalis*), and little bluestem (*Schizachyrium scoparium*).

3.3 FIELD INVESTIGATION – WETLANDS

Merjent identified five palustrine emergent (PEM) wetlands totaling 1.16 acres within the Project area according to Cowardin et al. (1979) classification (Figure 5, Table 4). Summaries of these features are provided below, and more detailed information for associated data points are found in the wetland determination data forms in Appendix B.

3.3.1.1 Wetland w01

Wetland w01 (0.16 acre) is a PEM wetland located in a low-lying area within an agricultural field. Datapoint dp01 was recorded to document conditions. The canopy and sapling/shrub stratum are absent. The herb stratum is dominated by fox-tail barley (*Hordeum jubatum*). The herb stratum has been disturbed by mowing, and most of the vegetation has senesced. The soil profile met the hydric soil indicator for Redox Dark Surface (F6). Observed indicators of hydrology include Presence of Reduced Iron (C4) and Geomorphic Position (D2).

3.3.1.2 Wetland w02

Wetland w02 (0.04 acre) is a PEM wetland located in a riparian corridor associated with stream s01 (see Section 3.4). Datapoint dp03 was recorded to document conditions. The canopy and sapling/shrub stratum are absent. The herb stratum is dense throughout with freshwater cord grass (*Spartina pectinata*). The soil profile met the hydric soil indicator for Redox Dark Surface (F6). Observed indicators of hydrology include Geomorphic Position (D2) and FAC-neutral Test (D5).

3.3.1.3 Wetland w03

Wetland w03 (0.12 acre) is a PEM wetland located in a riparian corridor associated with stream s01 (see Section 3.4). Datapoint dp05 was recorded to document conditions. The canopy and sapling/shrub stratum are absent. The herb stratum is dense throughout with freshwater cord grass and creeping wild rye (*Elymus repens*). The soil profile met the hydric soil indicator for Redox Dark Surface (F6). Observed indicators of hydrology include Geomorphic Position (D2) and FAC-neutral Test (D5).

3.3.1.4 Wetland w04

Wetland w04 (0.62 acre) is a PEM wetland located in a linear, low-lying area between agricultural fields. The feature is associated with an NHD feature; however no defined bed or bank were observed. Datapoint dp06 was recorded to document conditions. The canopy and sapling/shrub stratum are absent. The herb stratum is dense throughout with freshwater cord grass and rough bent (*Agrostis scabra*). The soil profile met the hydric soil indicator for Depleted Matrix (F3). Observed indicators of hydrology include Surface Soil Cracks (B6), Geomorphic Position (D2), and FAC-neutral Test (D5).

3.3.1.5 Wetland w05

Wetland w05 (0.22 acre) is a saline PEM wetland located in a slight depression along the access road. Datapoint dp08 was recorded to document conditions. The canopy and sapling/shrub

stratum are absent. The herb stratum is dense throughout with freshwater cord grass and reed canary grass (*Phalaris arundinacea*). The soil profile met the hydric soil indicator for Depleted Dark Surface (F7). Observed indicators of hydrology include Salt Crust (B11), Surface Soil Cracks (B6), Geomorphic Position (D2), and FAC-neutral Test (D5).

3.3.2 Naturally Problematic and Significantly Disturbed Datapoints

No data points were determined to be significantly disturbed or naturally problematic.

3.4 FIELD INVESTIGATION – WATERWAYS AND OTHER WATERS

Merjent determined that one stream exists within the survey area (Figure 5, Table 5). The feature has a discontinuous bed and bank, and it was dry at time of survey.

3.4.1 Other Resources Identified

No other water resources were identified within the survey area. Impoundments for cattle ponds are common throughout the rangeland and some are close to the survey area.

3.5 HABITAT ASSESSMENT – FEDERALLY PROTECTED SPECIES

Prior to beginning survey, Merjent reviewed the USFWS Information for Planning and Consultation (IPaC) website for a list of USFWS Endangered Species Act (ESA) threatened, endangered, proposed, and candidate species and designated critical habitat that may be present within the survey area (USFWS 2022).

In this review, six species were considered: Northern Long-eared Bat (*Myotis septentrionalis*; NLEB), Piping Plover (*Charadrius melodus*), Rufa Red Knot (*Calidris canutus rufa*), Whooping Crane (*Grus americana*), Dakota Skipper (*Hesperia dacotae*), and Monarch Butterfly (*Danaus plexippus*; Candidate).

Merjent also surveyed for eagle nests in and near the survey area. Surveys were performed from within the survey area, but also considered areas outside the survey area within line of sight.

3.5.1 Northern Long-eared Bat

Per the USFWS, suitable habitat for NLEB is defined as a tract of wooded habitat over 10 acres in size which contains traditional uneven-aged forest structure with understory and trees with loose or flaking bark that can provide roosting habitat, and which is connected by wooded travel corridor to larger tract of roosting or foraging habitat.

Unsuitable northern long-eared bat habitat includes areas with individual trees, fence rows, or small wooded lots (less than 10 acres) that are greater than 1,000 feet from forested/wooded areas; trees found in highly developed urban areas (e.g., street trees, trees in someone's yard or business); and a pure stand of less than 3-inch diameter at breast height trees that are not mixed with larger trees.

Stands of trees are present along both linear drainages. Common species include green ash (*Fraxinus pennsylvanica*) and cottonwood (*Populus deltoides*). The northern riparian area is sparsely vegetated with mature trees, with discontinuous patches along immediately adjacent

extents. The southern riparian area is denser and more continuous, and it likely exceeds 10 acres in total, continuous extent.

3.5.2 Piping Plover

In the Northern Great Plains, Piping Plovers nest on the unvegetated shorelines of alkaline lakes, reservoirs, or river sandbars, where they forage at the water's edge. None of the wetlands identified in the survey area appear to support surface water retention features. Suitable foraging and nesting habitat for Piping Plover is not present in the Project area.

3.5.3 Rufa Red Knot

Rufa Red Knot migrates through the area, foraging in a variety of wetland habitats, but do not nest nearby. Wetland and waterway areas within the survey area may provide suitable migratory habitat.

3.5.4 Whooping Crane

Whooping Crane migrates through the area, foraging in a variety of herbaceous habitats, but do not nest nearby. Potential migratory habitat is present throughout rangeland and agricultural fields.

3.5.5 Dakota Skipper

Dakota Skipper utilizes two types of prairie habitat: mesic tall grass prairie (Type A) and dry short grass prairie (Type B). Type A habitat is not present in the survey area, and it is generally uncommon in the region due to loss to agriculture.

Five areas of potential Type B habitat were identified during the field survey for a total of 2.66 acres (Table 6; Figure 6). The areas are dominated by non-native grasses such as crested wheatgrass (*Thinopyrum cristatum*), though little bluestem, purple coneflower (*Echinacea angustifolia*), and prairie sagewort (*Artemisia frigida*) are found in all five Type B habitat areas. Four of the areas are located in grazed rangeland; the other area is in an ungrazed fallow area. It is our professional opinion that these areas are low quality potential habitat due to encroachment by non-native grasses. These areas are also small and disjunct.

3.5.6 Monarch Butterfly

Monarch butterflies require milkweed (*Asclepias* spp.) during the larval stage. Adult monarch butterflies are nectar generalists and can feed on a wide variety of flowering plants. Common milkweed grows in a variety of habitats and disperses readily across the landscape. Therefore, potential for common milkweed, and consequently potential suitable habitat for the monarch butterfly, is present within the survey area.

3.5.7 Eagle Nests

Suitable eagle nesting habitat is not present in the survey area, and no eagle nests were identified in or near the survey area.

3.6 FIELD INVESTIGATION – INVASIVE SPECIES

Survey for invasive species focused on both state- and McKenzie County-listed noxious weeds. Observations of invasive species across the entire survey area were very low. Two populations of Canada thistle (*Cirsium arvense*) were detected during the September survey (Table 7). The locations of the Canada thistle populations can be seen in Figure 5.

3.7 FIELD INVESTIGATION – TREES AND SHRUBS

All woody species were marked within the survey area. Non-clonal species were marked with a GPS point, while clonal species were mapped using polygons to map outer extents of populations. Clonal species are those that grow laterally underground, creating a patchwork of emerging stems to create a stand that is considered a single individual. Woody species are overwhelmingly concentrated near drainage ways intersecting the survey area.

Three non-clonal species were observed, green ash, Russian olive (*Eleagnus angustifolia*), and American elm (*Ulmus americanus*). One small Russian olive was marked with a diameter at breast height (DBH) of 3 inches. Green ash was the most commonly observed tree. 39 green ash were marked, ranging from 2-15" DBH. Two American elm were marked measuring 5 and 9" DBH.

Four clonal species were observed, fireberry hawthorn (*Crataegus chrysocarpa*), quaking aspen (*Populus tremuloides*), buffalo berry (*Shepherdia argentea*), and chokecherry (*Prunus virginiana*). Three shrubby areas have overlapping populations of multiple species, with total shrubby areas total 1.5 acres.

4.0 SUMMARY AND CONCLUSION

Merjent performed natural resource surveys for the ONEOK Cherry Creek Extension Project in McKenzie County, ND.

Based on the field survey and review of desktop resources, it is our professional opinion that five wetlands totaling 1.16 acres and one stream exist within the 129.05-acre survey area. Minor populations of invasive species are present. Low quality Dakota Skipper habitat is present near both drainage ways. Woody species are predominately confined to drainageways. No eagle nests were observed. This report represents our best professional judgment based on recent field conditions and our local knowledge and experience.

5.0 DISCLAIMER

The natural resources identified in this report may be subject to regulation by federal, state, and/or local jurisdiction. These authorities may require a professional land survey of the delineated boundaries to verify impacts for regulatory purposes.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of the assessment. They cannot apply to site changes of which Merjent is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to the natural processes or human impacts at the Project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of Merjent.

6.0 LITERATURE CITED

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Table 1
Mapped Soils Units

Mapped Soil Units			
Symbol	Description	Hydric Soil Unit?	Acres
E0447B	Daglum-Belfield complex, 0 to 6 percent slopes	No	5.36
E0515B	Rhoades-Daglum complex, 0 to 6 percent slopes	No	3.28
E0559B	Dogtooth-Janesburg complex, 0 to 6 percent slopes	No	0.36
E0913C	Moreau-Wayden silty clays, 6 to 9 percent slopes	No	2.72
E1025B	Regent-Savage silty clay loams, 3 to 6 percent slopes	No	3.72
E1333C	Vebar-Cohagen fine sandy loams, 6 to 9 percent slopes	No	13.03
E1355D	Vebar-Flasher-Tally complex, 9 to 15 percent slopes	No	4.06
E2120B	Farnuf loam, 2 to 6 percent slopes	No	4.4
E2213B	Golva silt loam, 2 to 6 percent slopes	No	1.98
E2213C	Golva silt loam, 6 to 9 percent slopes	No	1.49
E2641C	Reeder-Werner loams, 6 to 9 percent slopes	No	2.15
E2737C	Chama-Cabba-Sen silt loams, 6 to 9 percent slopes	No	16.73
E2741D	Cabba-Chama-Sen silt loams, 9 to 15 percent slopes	No	15.04
E2819B	Reeder-Farnuf loams, 3 to 6 percent slopes	No	4.21
E2913B	Chama-Sen-Cabba silt loams, 3 to 6 percent slopes	No	9.43
E3107F	Cabba-Badland complex, 6 to 70 percent slopes	No	17.32
E3527B	Williams-Bowbells loams, 3 to 6 percent slopes	No	4.05
E3639C	Zahl-Williams-Cabba complex, 6 to 9 percent slopes	No	0.04
E3703C	Dooley-Zahl complex, 6 to 9 percent slopes	No	12.24
E3703D	Dooley-Zahl complex, 9 to 15 percent slopes	No	4.93
E4190F	Cabba-Chama-Havrelon, occasionally flooded complex, 2 to 70 percent slopes	No	2.5
		Total	129.05

Note: Source: Soil Survey Staff, NRCS, USDA, 2022

Table 2
Mapped Wetlands

Mapped Wetlands and Other Waters		
NWI Code	Description	Acres
R4SBC	Riverine, Intermittent; Stream Bed, Seasonally Flooded	0.81
R5UBH	Riverine, Unknown Perennial; Unconsolidated Bottom, Permanently Flooded	0.08
	Total:	0.89

¹ Source: Cowardin et al., 1979

Table 3
WETS Analysis

TABLE 3A									
WETS Analysis – September 2022									
Long-term rainfall records (1993-2022)									
Watford City, ND	Month	<30%	Mean	>30%	Actual	Condition	Condition Value ^a	Weight	Value X Weight
3 rd Prior Month	Jul	1.66	2.77	3.36	1.43	Dry	1	1	1
2 nd Prior Month	Aug	0.91	1.41	1.69	0.34	Dry	1	2	2
1 st Prior Month	Sep	0.54	1.37	1.66	0.19	Dry	1	3	3
								Sum:	6
								Conditions on Site^b:	Dry

^a 1 = Dry; 2 = Normal; 3 = Wet

^b If sum equals: 6 to 9 = prior period has been drier than normal; 10 to 14 = prior period has been normal; 15 to 18 = prior period has been wetter than normal

TABLE 3B									
WETS Analysis – October 2022									
Long-term rainfall records (1993-2022)									
Watford City, ND	Month	<30%	Mean	>30%	Actual	Condition	Condition Value ^a	Weight	Value X Weight
3 rd Prior Month	Aug	0.91	1.41	1.69	0.34	Dry	1	1	1
2 nd Prior Month	Sep	0.54	1.37	1.66	0.19	Dry	1	2	2
1 st Prior Month	Oct	0.64	1.07	1.3	2.14	Wet	3	3	9
								Sum:	12
								Conditions on Site^b:	Normal

^a 1 = Dry; 2 = Normal; 3 = Wet

^b If sum equals: 6 to 9 = prior period has been drier than normal; 10 to 14 = prior period has been normal; 15 to 18 = prior period has been wetter than normal

Table 4
Wetlands

Wetlands			
Feature ID	Cowardin	Acres	Sq Ft
w01	PEM	0.16	6,795
w02	PEM	0.04	1,867
w03	PEM	0.12	5,436
w04	PEM	0.62	26,957
w05	PEM	0.22	9,613
Total:		1.16	50,668

Table 5
Waterways

Waterways				
Feature ID	Cowardin	Substrate	Regime	OHWM*
s01	R6	Silt, Clay, Mud	Ephemeral	3

*Ordinary High Water Mark Width (feet)

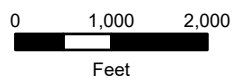
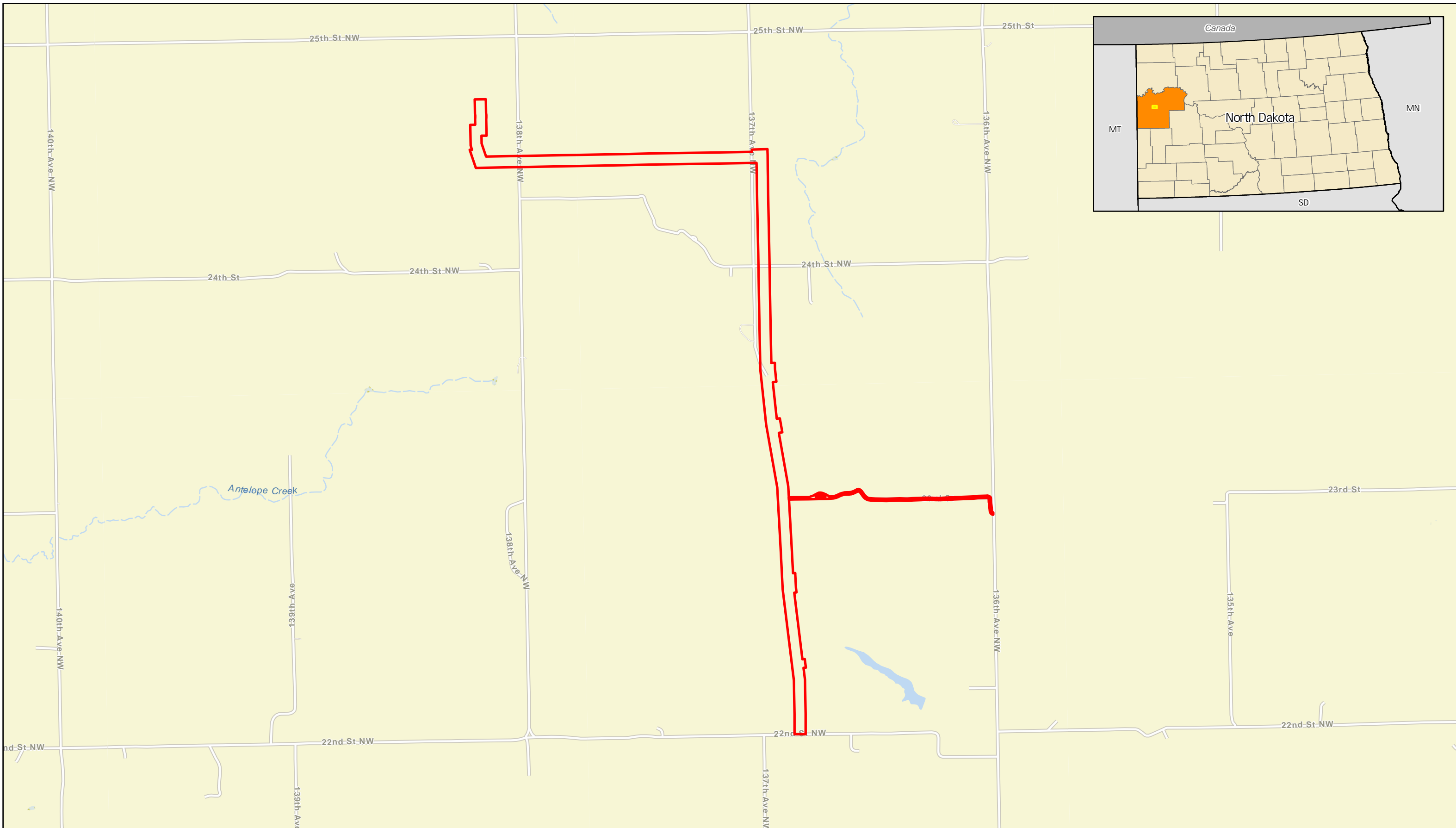
Table 6
Dakota Skipper Habitat

Dakota Skipper Habitat					
Feature ID:	dh01	dh02	dh03	dh04	dh05
Non-native Cover	50-75%	25-50%	25-50%	25-50%	6-25%
Graminoid Cover	50-75%	25-50%	25-50%	50-75%	51-75%
Forb Cover	6-25%	6-25%	6-25%	6-25%	6-25%
Tree/Shrub Cover	0%	0-1%	0%	0%	0%
Percent Exposed	6-25%	25-50%	25-50%	26-50%	1-5%
Grazing	Yes	Yes	Yes	Yes	No
Land Use	Rangeland	Rangeland	Rangeland	Rangeland	Fallow
<i>Amorpha canescens</i>					
<i>Andropogon gerardii</i>					
<i>Anemone patens</i>					
<i>Artemisia frigida</i>	2-5%	2-5%	0-1%	2-5%	1-5%
<i>Astragalus adsurgens</i>					
<i>Astragalus crassicaarpus</i>					
<i>Bouteloua curtipendula</i>	0-1%	2-5%	0-1%		
<i>Calylophus serrulatus</i>					
<i>Campanula rotundifolia</i>					
<i>Dalea candida</i>					
<i>Dalea purpurea</i>					
<i>Echinacea angustifolia</i>	0-1%	0-1%	2-5%	2-5%	1-5%
<i>Erigeron spp.</i>					
<i>Gaillardia aristata</i>					
<i>Geum triflorum</i>					
<i>Hesperostipa comata</i>			2-5%	0-1%	
<i>Hesperostipa spartea</i>					
<i>Hypoxis hirsuta</i>					
<i>Juniperus horizontalis</i>					
<i>Liatris aspera</i>					
<i>Liatris ligulistylis</i>					
<i>Liatris punctata</i>		0-1%			
<i>Lilium philadelphicum</i>					
<i>Packera plattensis</i>					
<i>Pascopyrum smithii</i>					
<i>Ratibida columnifera</i>		0-1%		0-1%	
<i>Rudbeckia hirta</i>					
<i>Schizachyrium scoparium</i>	2-5%	2-5%	5-25%	2-5%	6-25%
<i>Sisyrinchium montanum</i>					
<i>Solidago canadensis</i>					
<i>Sorghastrum nutans</i>					
<i>Sporobolus heterolepis</i>					
<i>Symphyotrichum sericeum</i>		0-1%			
<i>Zigadenus elegans</i>					
<i>Zizia aptera</i>					

Table 7
Invasive Species

Invasive Species				
Feature ID	Species	Density	Estimated Count	Acres
i1	<i>Cirsium arvense</i>	Rare	0-5	0.02
i2	<i>Cirsium arvense</i>	Rare	0-5	0.07

Figure 1
Project Location



4

For Environmental Review Purposes Only

Location
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

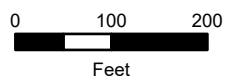
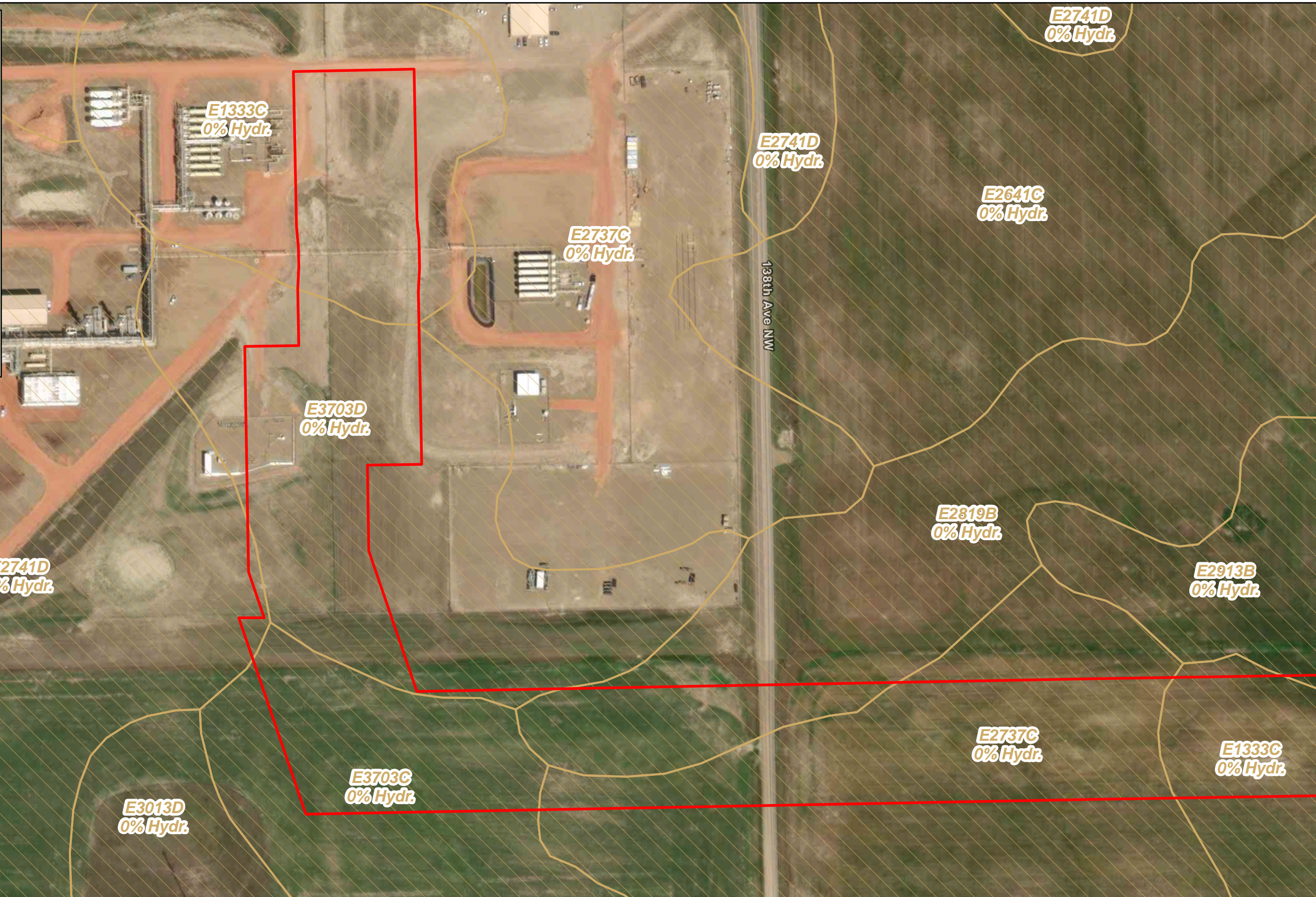
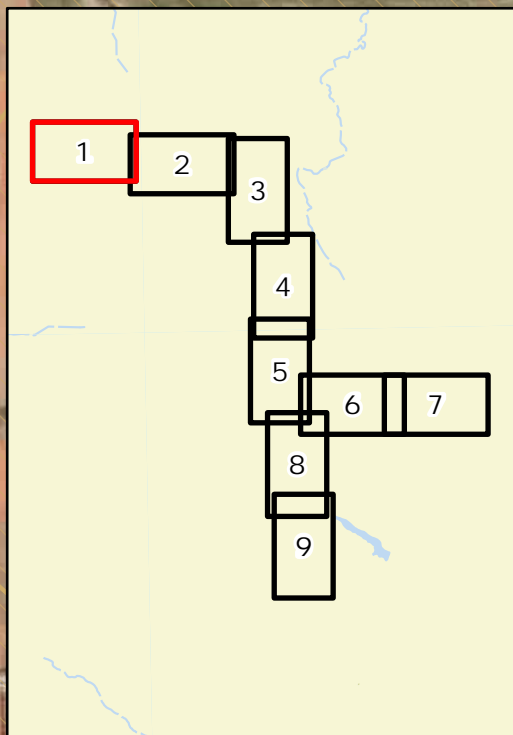
 **Survey Area**



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Figure 2
Topography

Figure 3
Soils

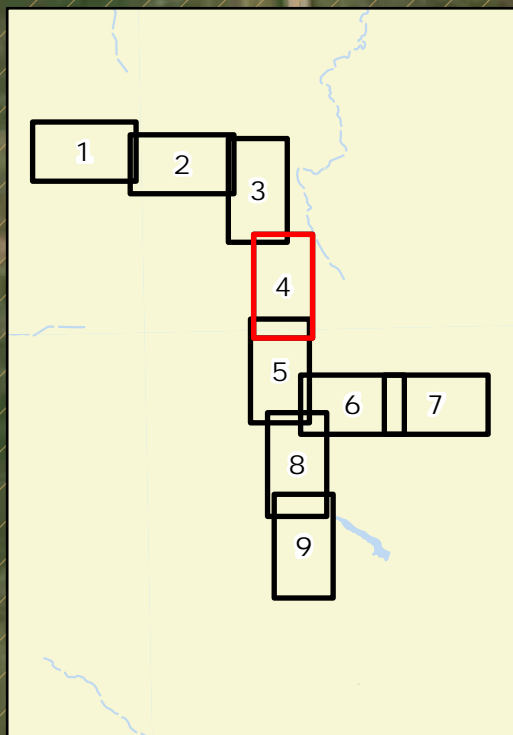


4

SSURGO Soil Type
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

- Survey Area
- Non-Hydric Soil
- Hydric Soil





E0447B
0% Hydr.

E3527B
2% Hydr.

E1025B
0% Hydr.

E3703C
0% Hydr.

E3107F
0% Hydr.

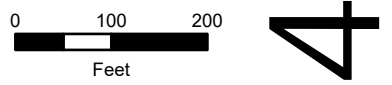
E2913B
0% Hydr.

E3527B
2% Hydr.

137th Ave NW

137th Ave NW

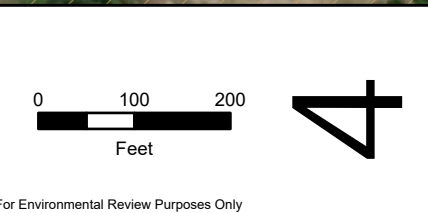
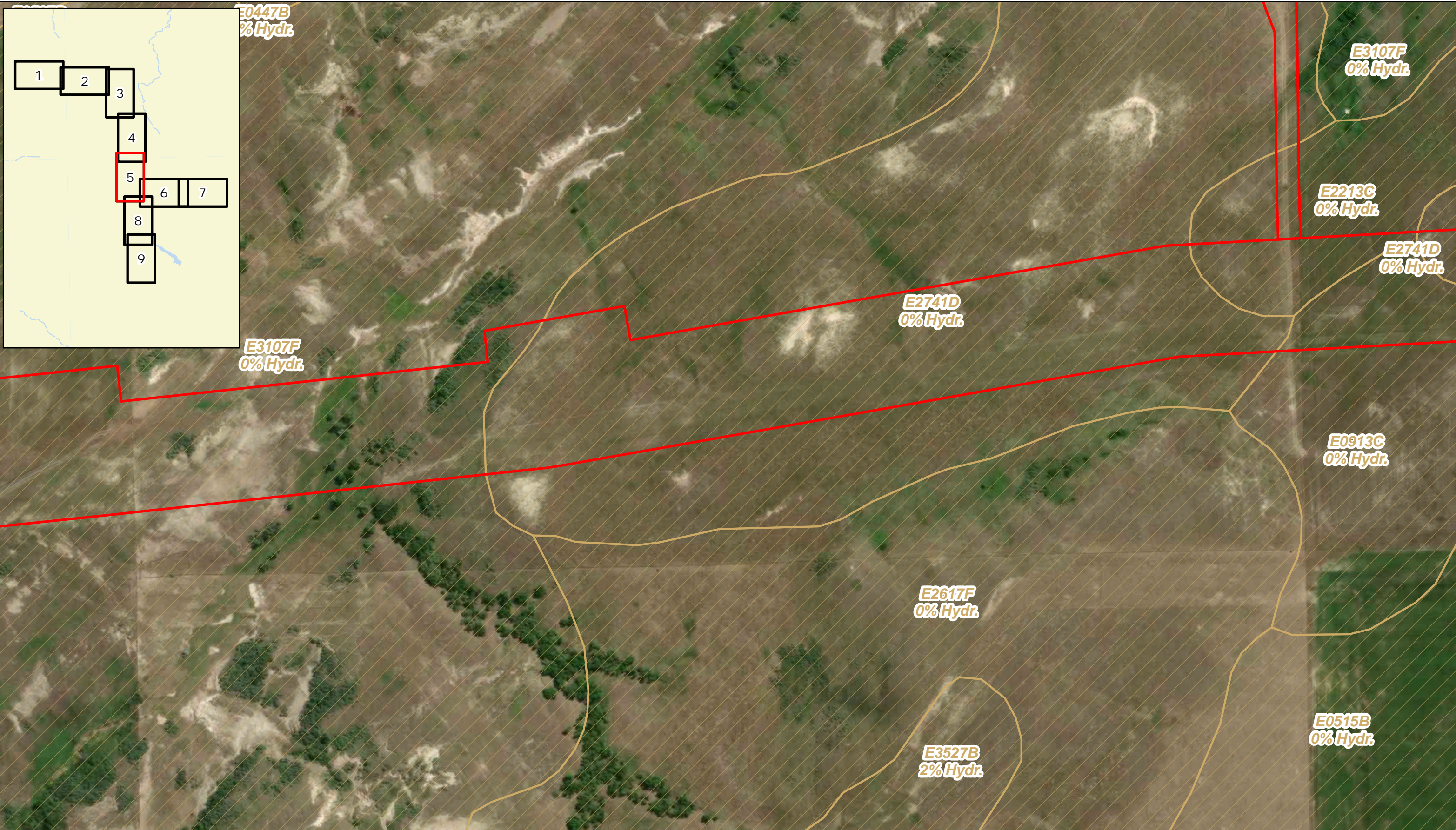
24th St NW



SSURGO Soil Type
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

- Survey Area
- Non-Hydric Soil
- Hydric Soil

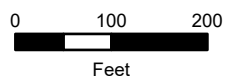
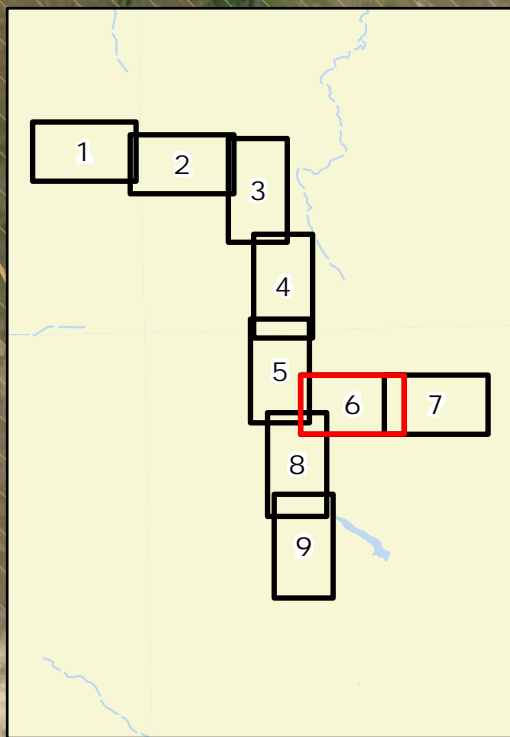




SSURGO Soil Type
 Cherry Creek Extension
 ONEOK Rockies Midstream,
 L.L.C.
 McKenzie County, North Dakota

- Survey Area
- Non-Hydric Soil
- Hydric Soil



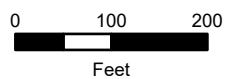
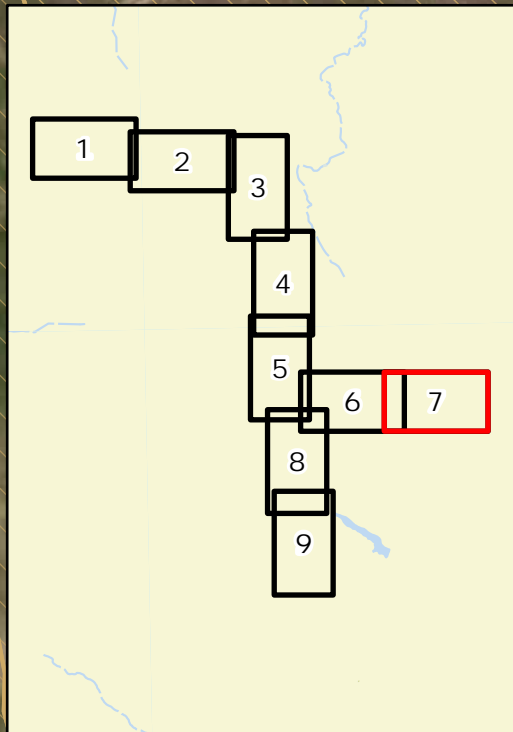


4

SSURGO Soil Type
 Cherry Creek Extension
 ONEOK Rockies Midstream,
 L.L.C.
 McKenzie County, North Dakota

- Survey Area
- Non-Hydric Soil
- Hydric Soil



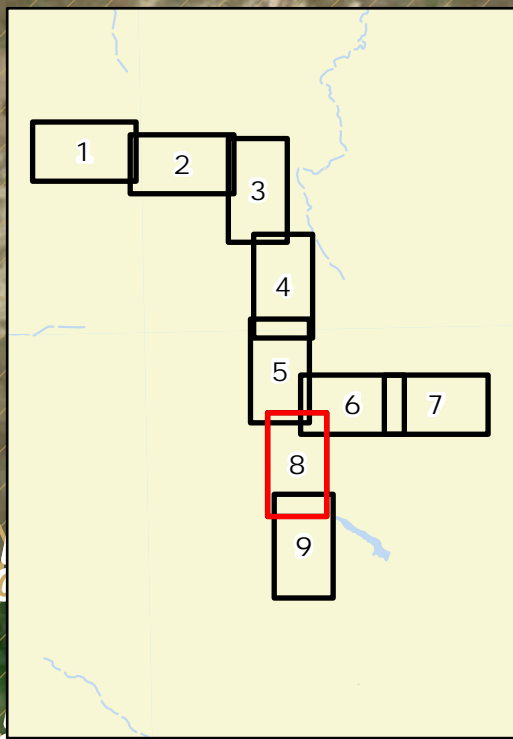


4

SSURGO Soil Type
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

-  Survey Area
-  Non-Hydric Soil
-  Hydric Soil





0% Hydr.

13C
hydr.

E3107F
0% Hydr.

E0447B
0% Hydr.

E2601C
0% Hydr.

E2741D
0% Hydr.

E4190F
0% Hydr.

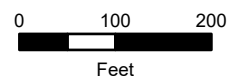
E2737C
0% Hydr.

E2913B
0% Hydr.

E0913C
0% Hydr.


E3107F
0% Hydr.

E0515B
0% Hydr.



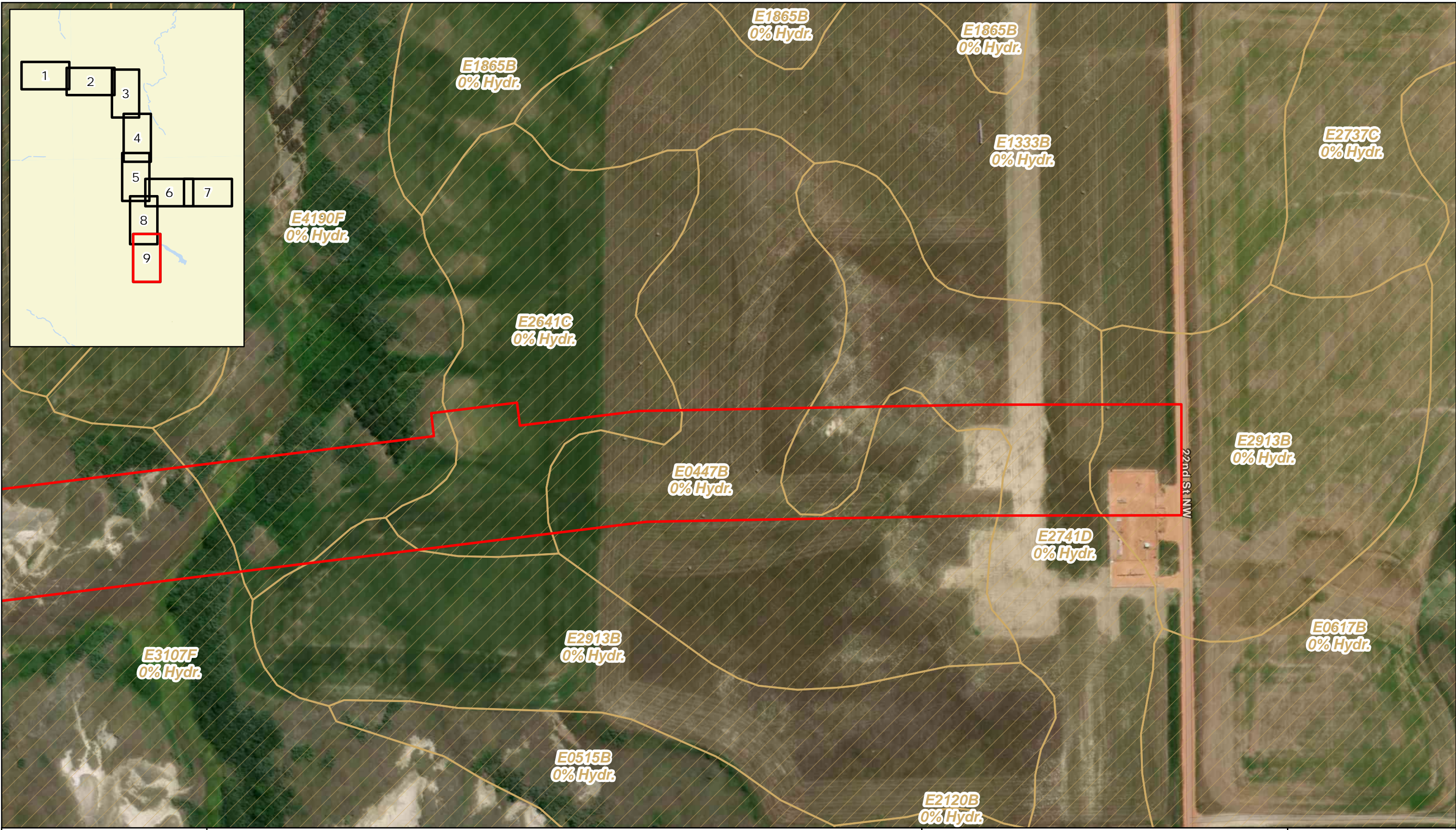
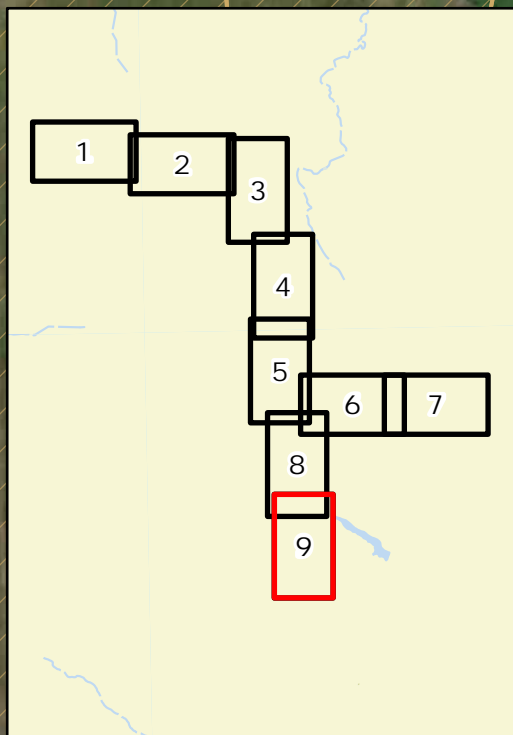
SSURGO Soil Type
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

 Survey Area

 Non-Hydric Soil

 Hydric Soil





SSURGO Soil Type
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota


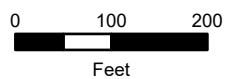
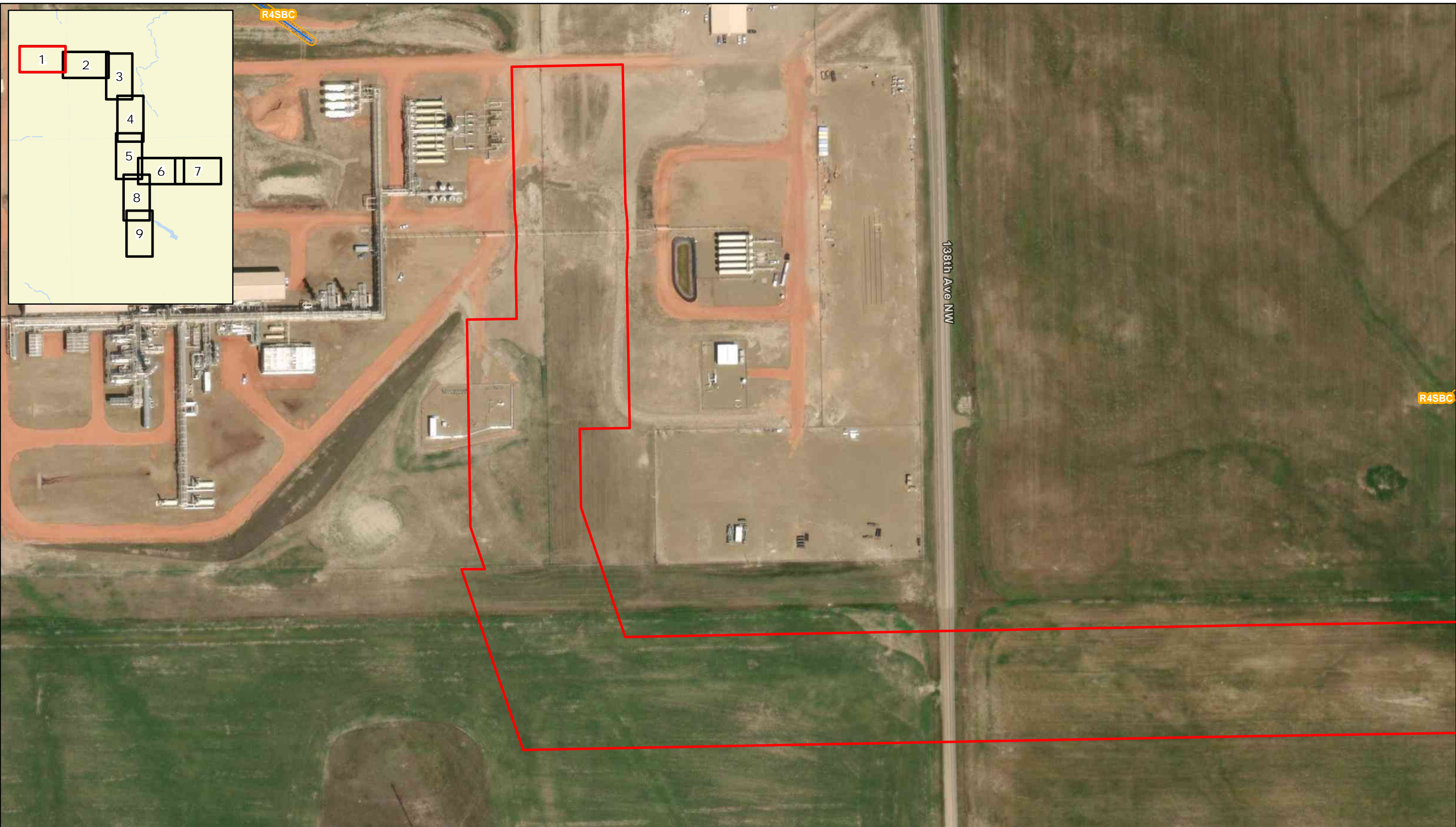
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-  Hydric Soil
-  Non-Hydric Soil



Figure 4
Hydrology



4

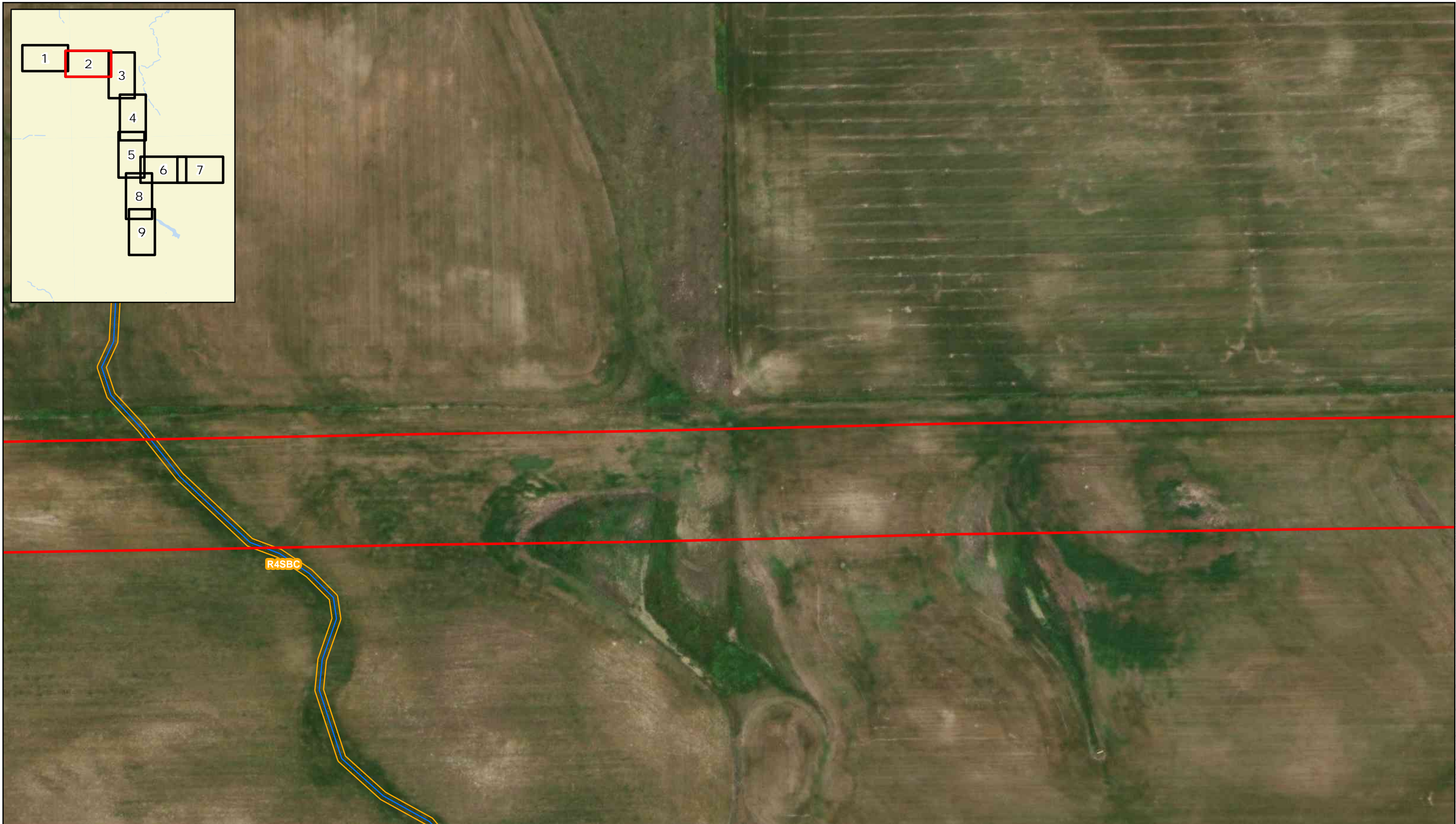
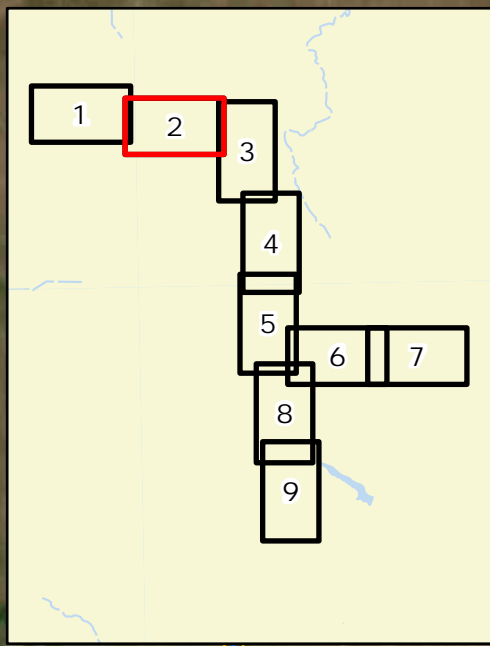
For Environmental Review Purposes Only

Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

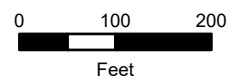
- Survey Area
- Mapped Waterway (NHD)
- Mapped Waterbody (NHD)
- Mapped Wetland (NWI)



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R4SBC



4

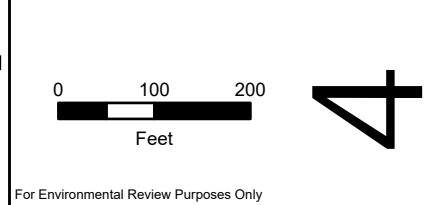
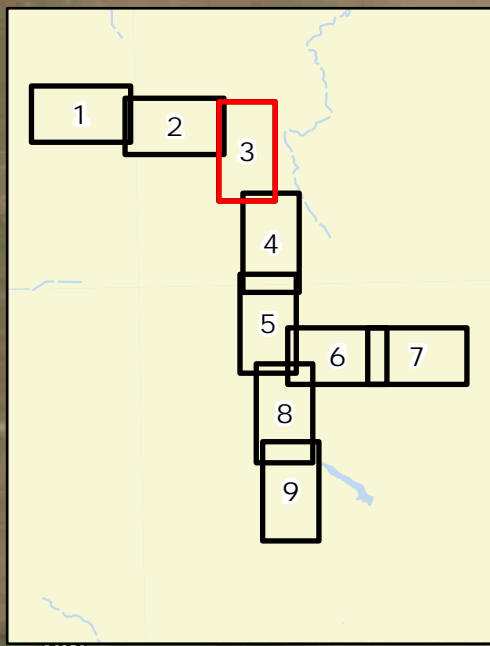
For Environmental Review Purposes Only

Hydrology
 Cherry Creek Extension
 ONEOK Rockies Midstream,
 L.L.C.
 McKenzie County, North Dakota

- Survey Area
- Mapped Waterway (NHD)
- Mapped Waterbody (NHD)
- Mapped Wetland (NWI)



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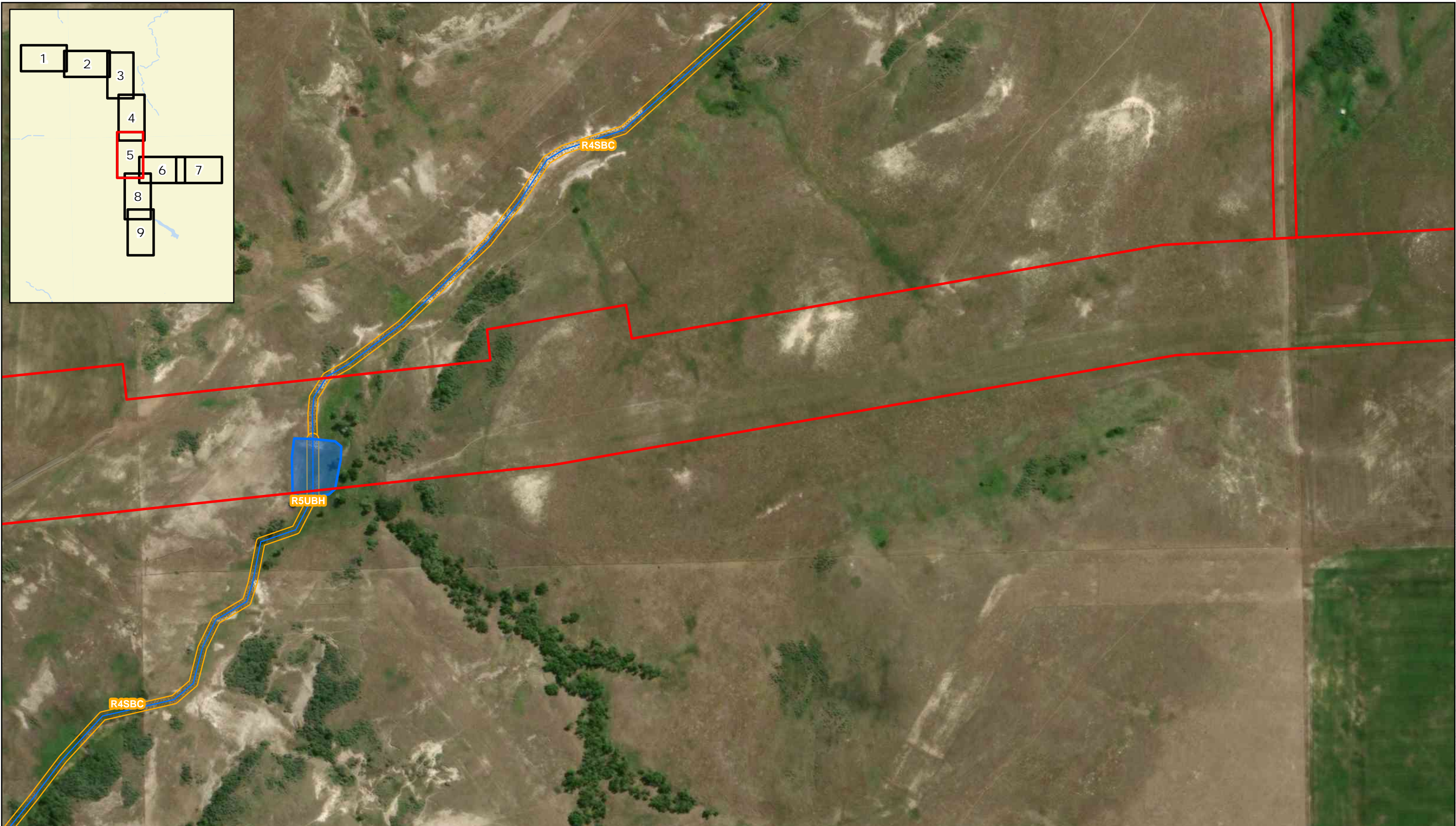
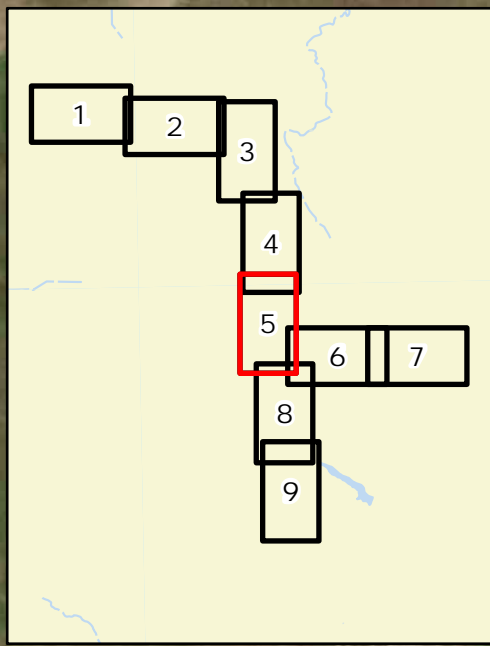
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Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
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McKenzie County, North Dakota

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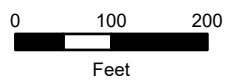
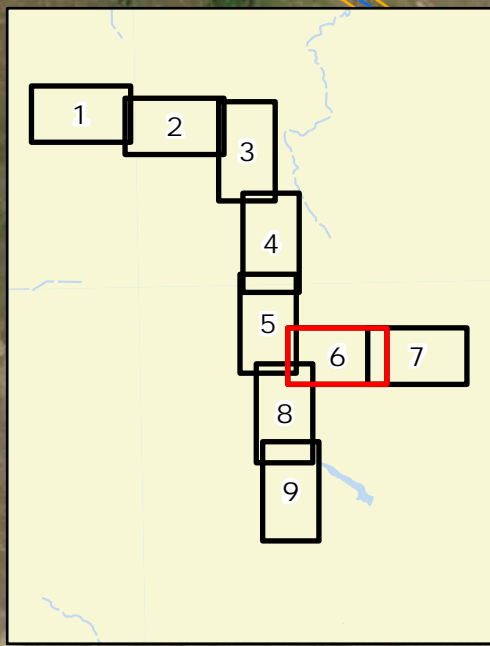
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Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

- Survey Area
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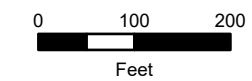
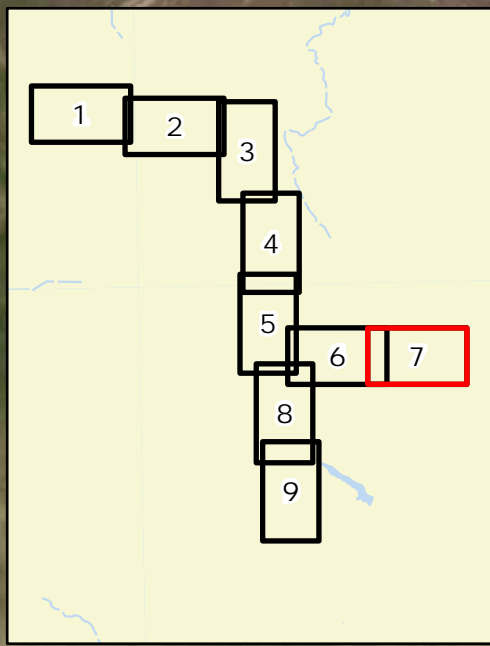
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Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

- Survey Area
- Mapped Waterbody (NHD)
- Mapped Wetland (NWI)
- Mapped Waterway (NHD)



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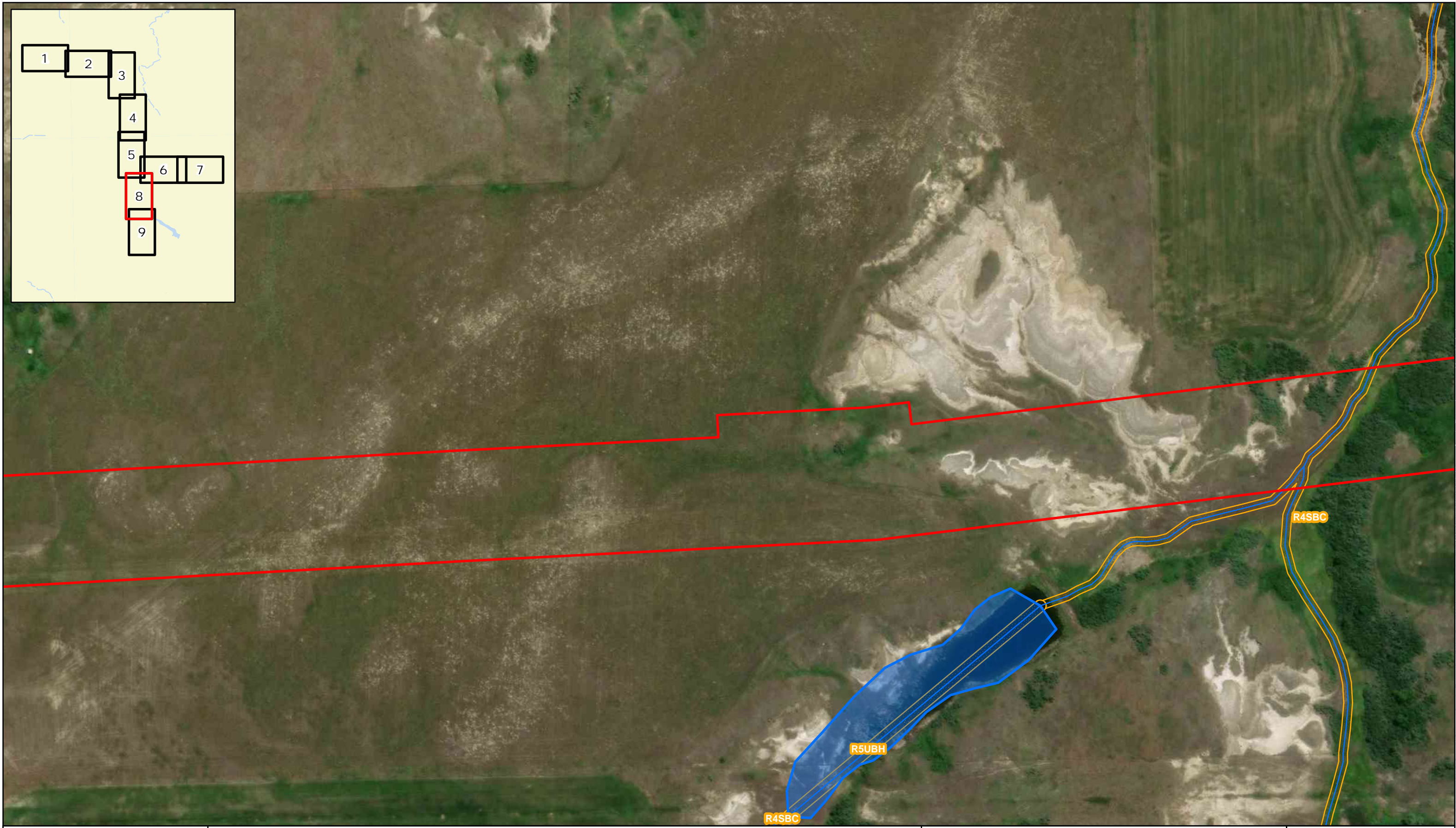
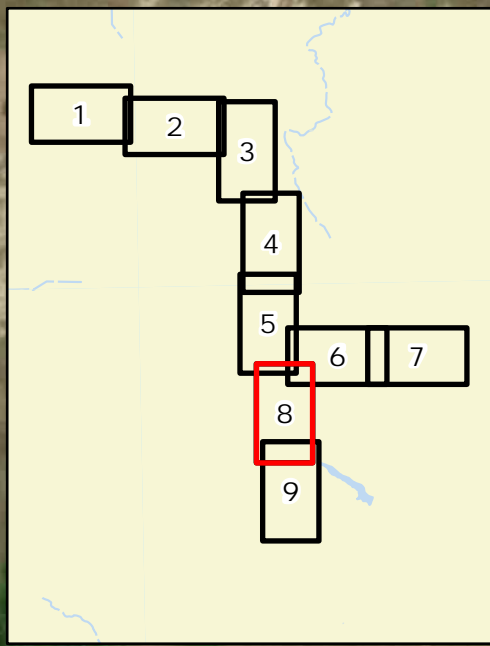
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Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
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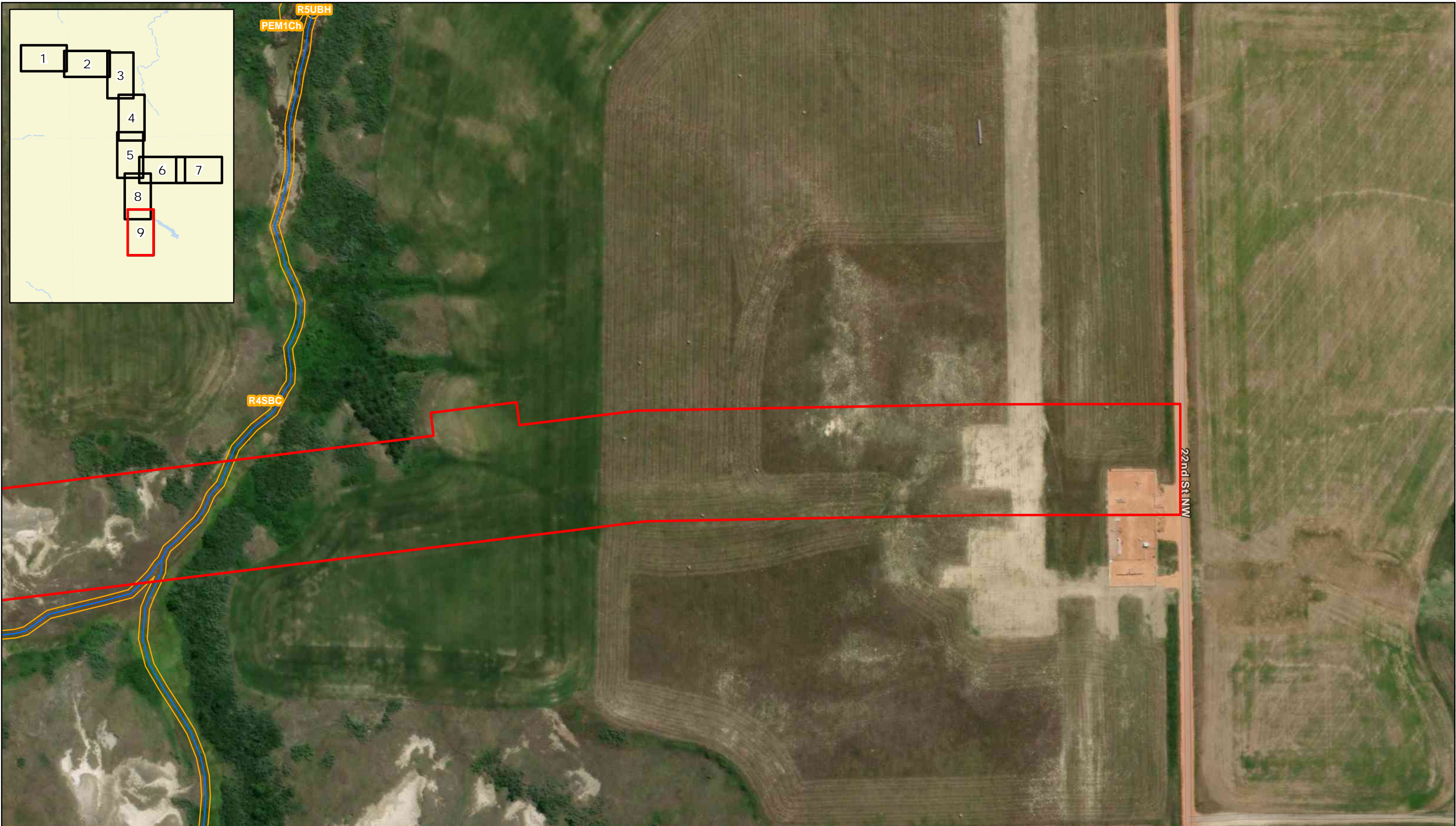
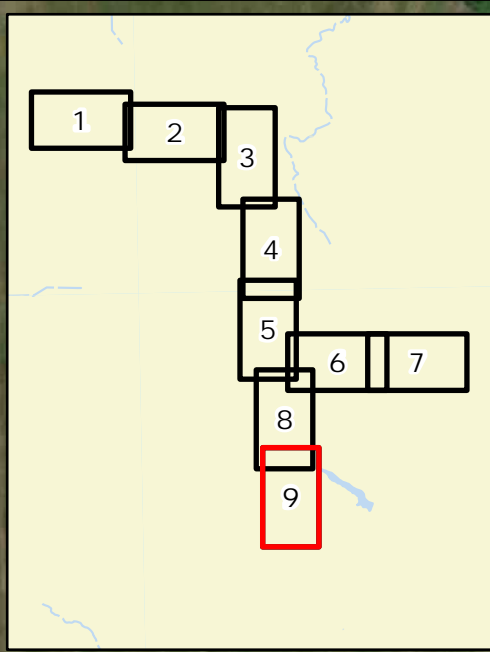
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Hydrology
 Cherry Creek Extension
 ONEOK Rockies Midstream,
 L.L.C.
 McKenzie County, North Dakota

- Survey Area
- Mapped Waterbody (NHD)
- Mapped Waterway (NHD)
- Mapped Wetland (NWI)





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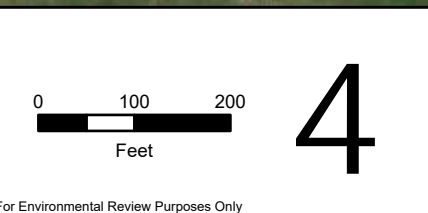
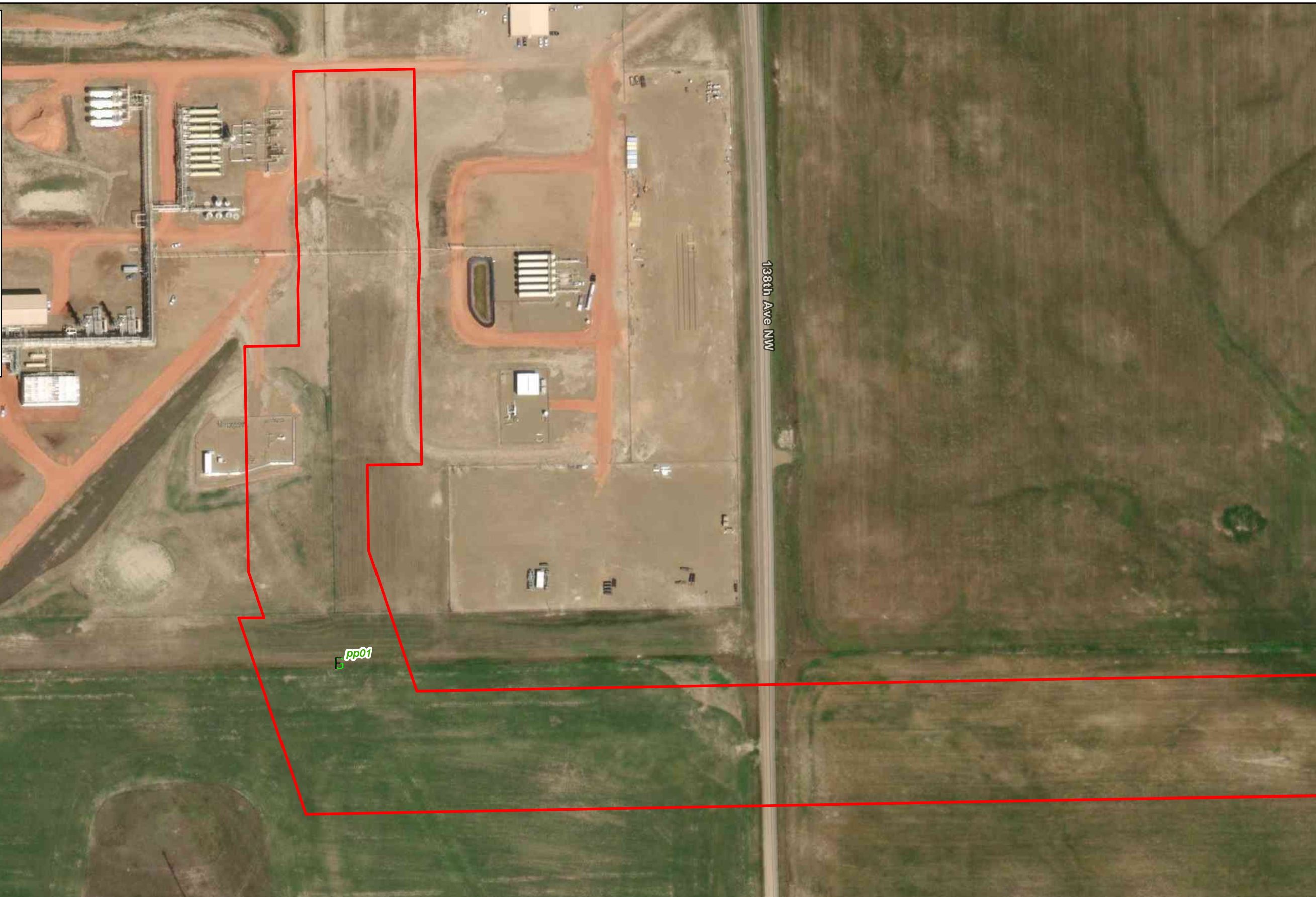
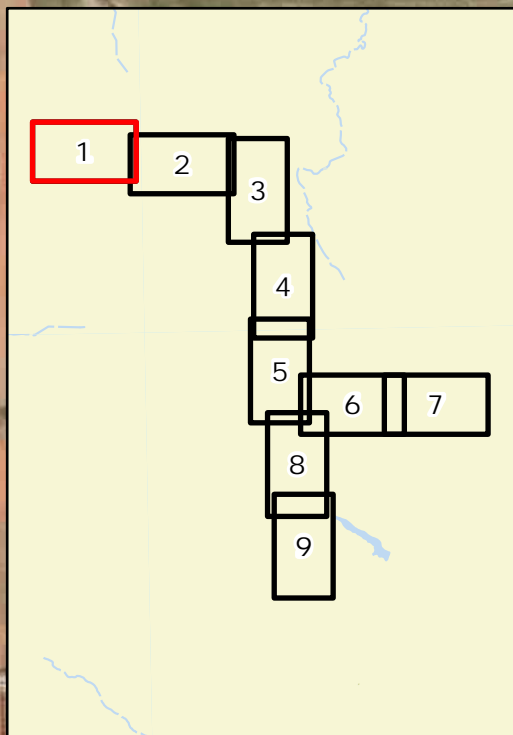
Hydrology
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

- Survey Area
- Mapped Waterway (NHD)
- Mapped Waterbody (NHD)
- Mapped Wetland (NWI)



Source: Z:\Clients\IT_P\Oneok\Cherry_Creek_Extension\Fields_Data\Wetland_Waterbody\AEOU_Script\ONEOK_Cherry_Creek_Extension.aprx - Map: Hydrology Date: 10/31/2024

Figure 5
Wetland Delineation



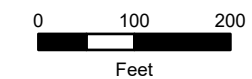
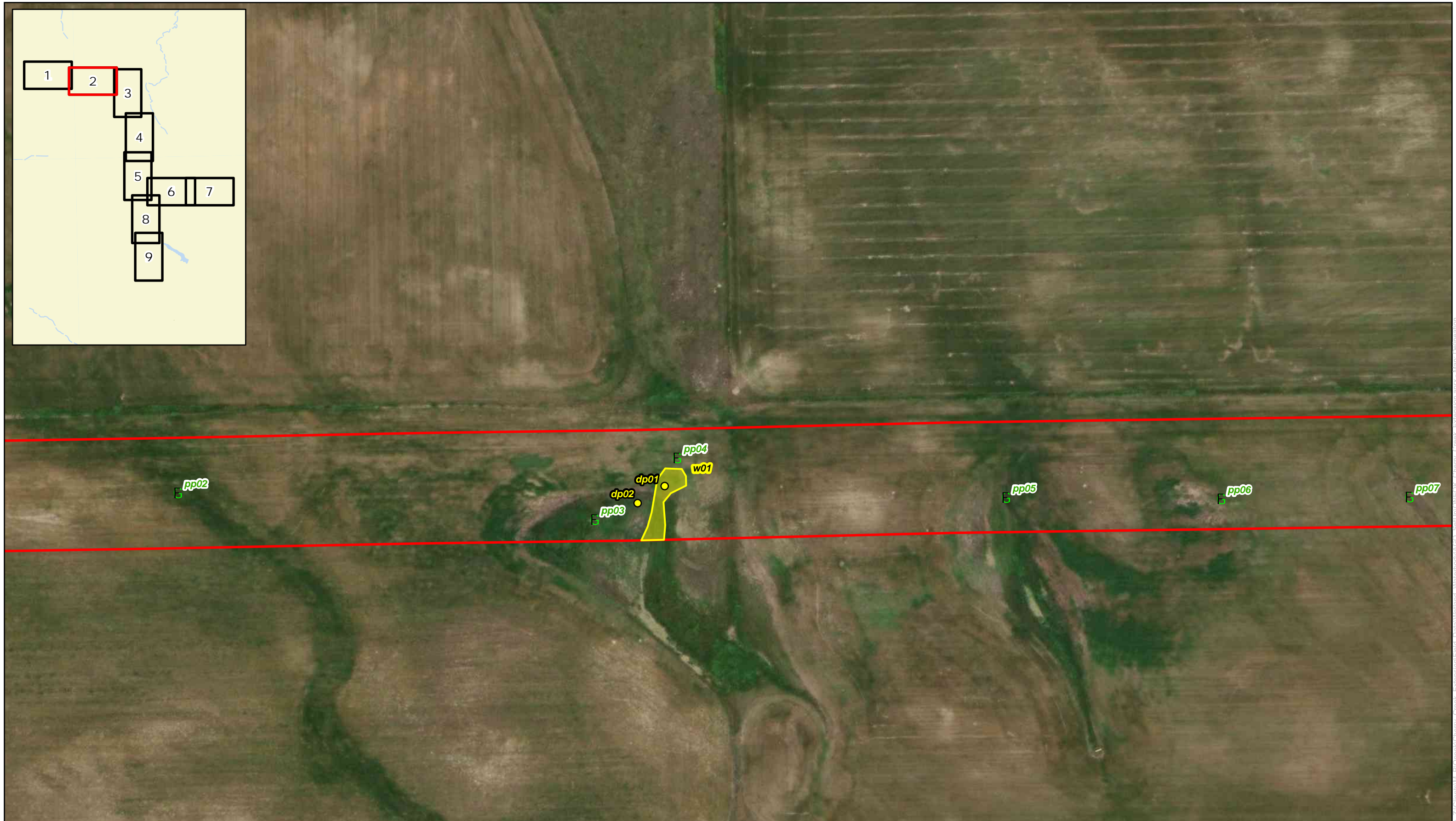
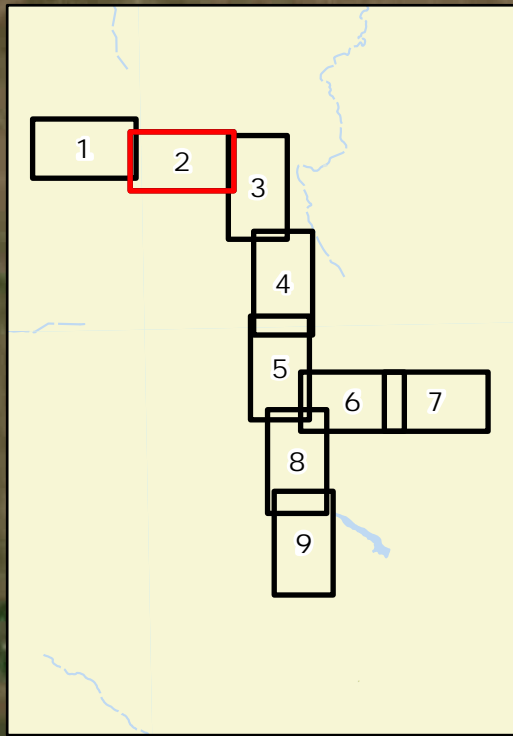
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
Photo Point	Delineated Wetland (PEM)	Ulmus americana	Crataegus chrysoarpa	Populus tremuloides
Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		



Source: Z:\Clients\M_P\Oneok\Cherry_Creek_Extension\Final_Data\Wetland_Data\Wetland_Cherry_Creek_Extension.aprx - Map: Delineation

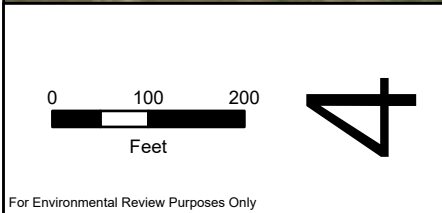
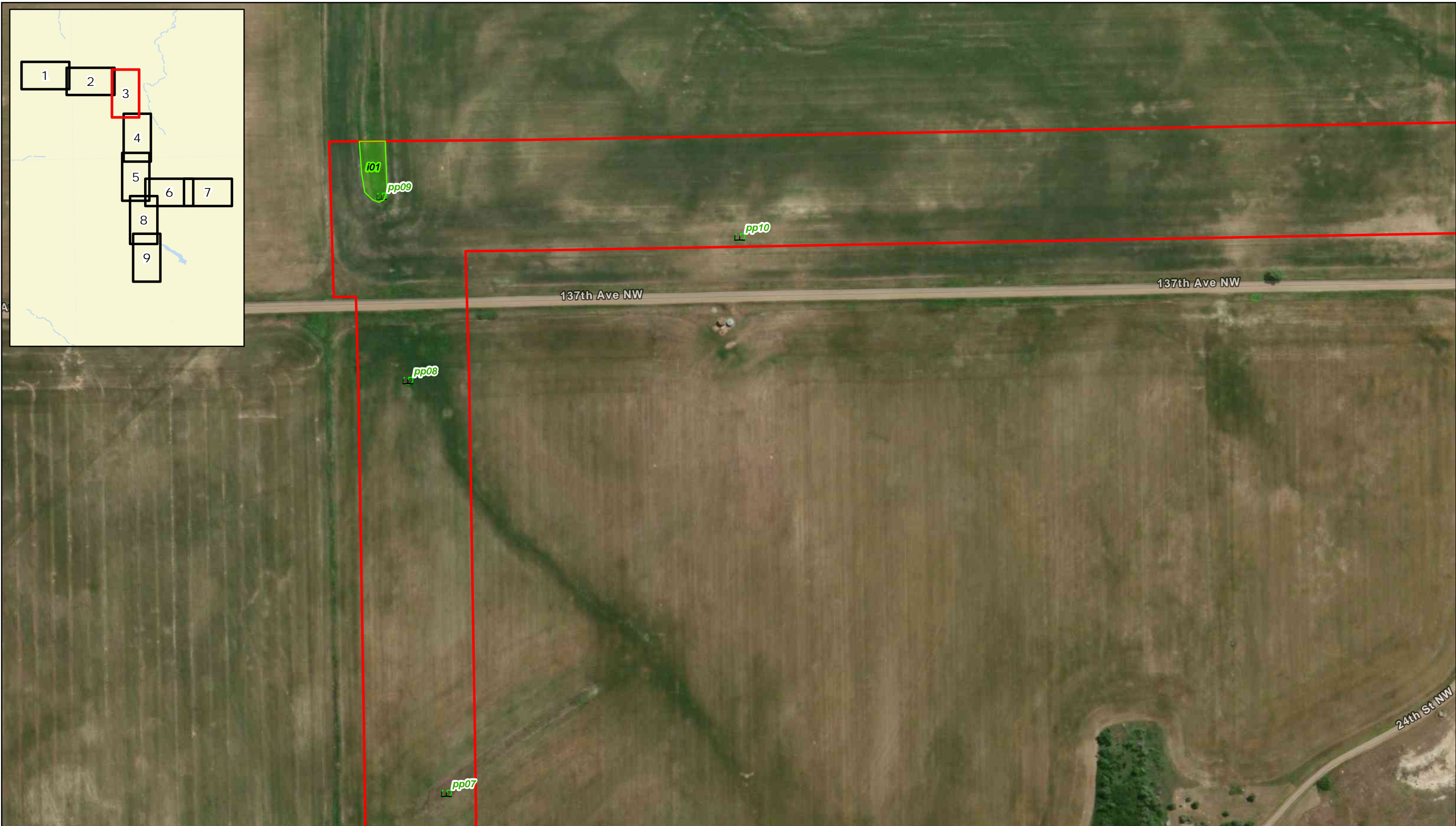
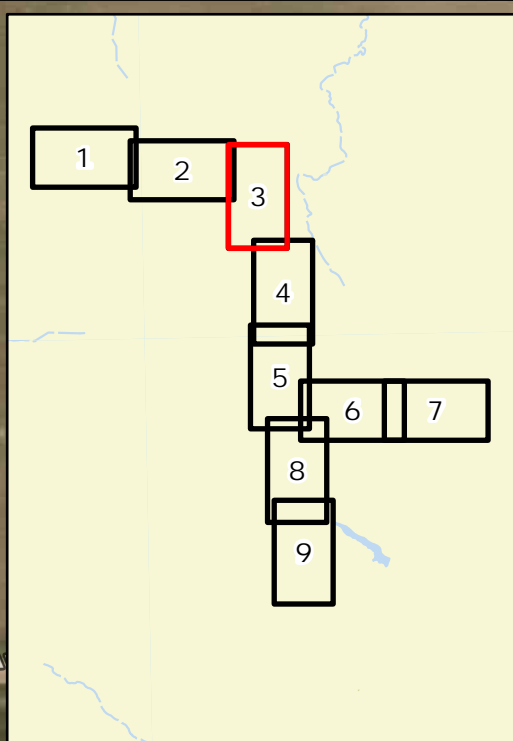


4

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
Photo Point	Delineated Wetland (PEM)	Ulmus americana	Crataegus chrysocarpa	Populus tremuloides
Wetland Data Point	Invasive Species (Cirsium arvense)	Eleaagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		

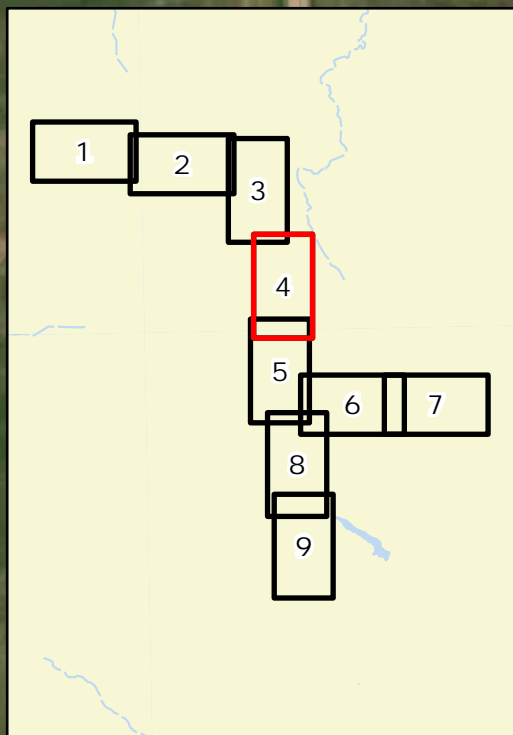




Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
Photo Point	Delineated Wetland (PEM)	Ulmus americana	Crataegus chrysocarpa	Populus tremuloides
Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		





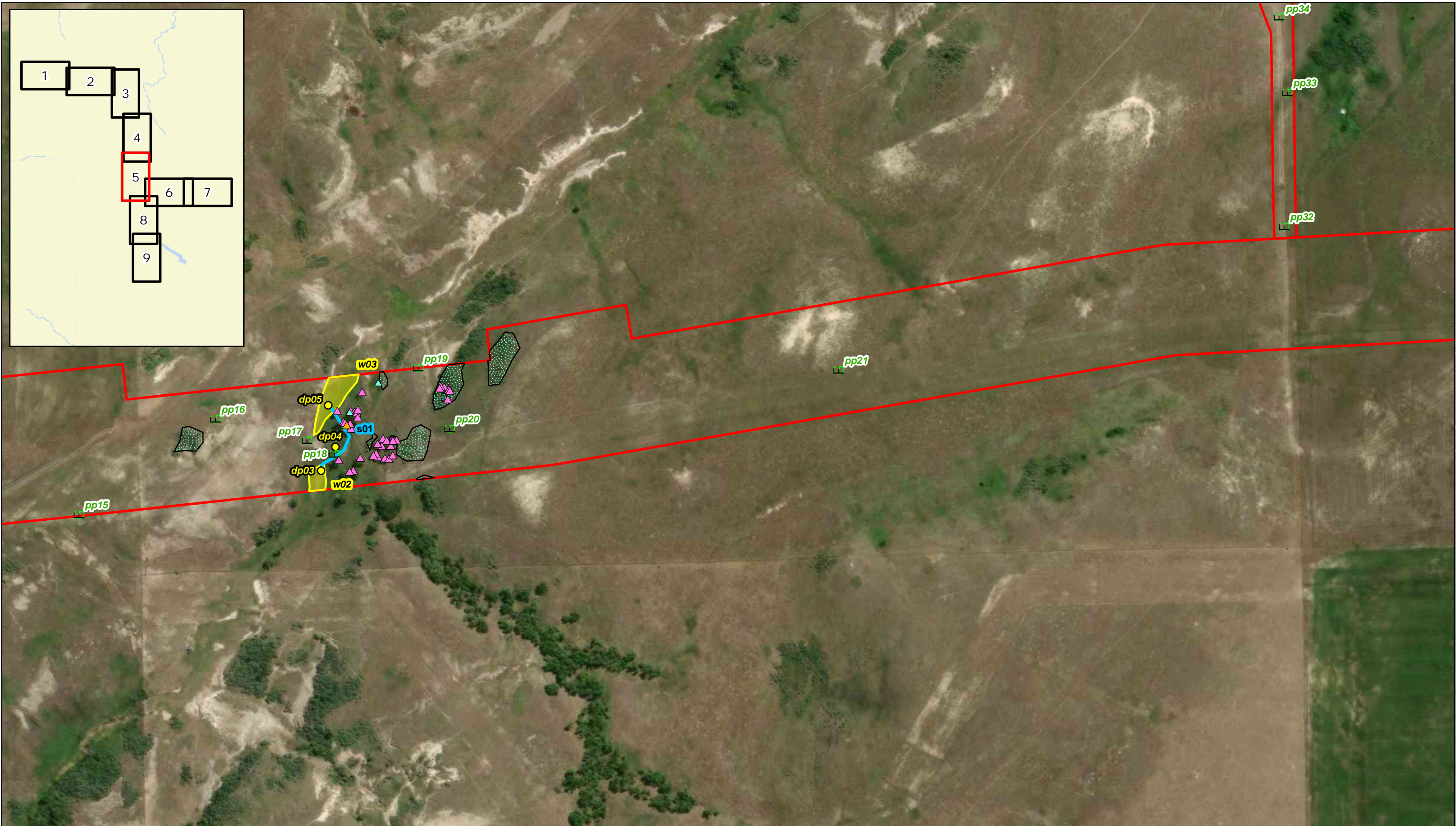
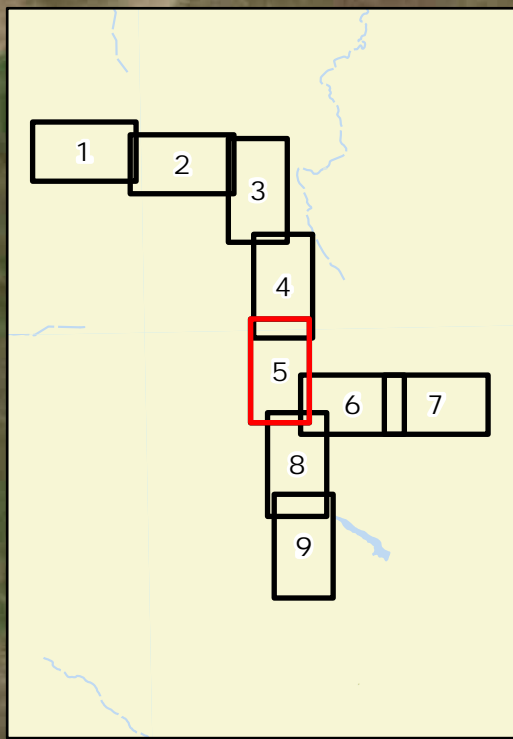
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
Photo Point	Delineated Wetland (PEM)	Ulmus americana	Crataegus chrysocarpa	Populus tremuloides
Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		



Source: Z:\Clients\W\POneok\Cherry_Creek_Extension\Map_Delineation.aprx - Map: Delineation



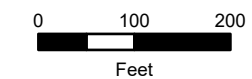
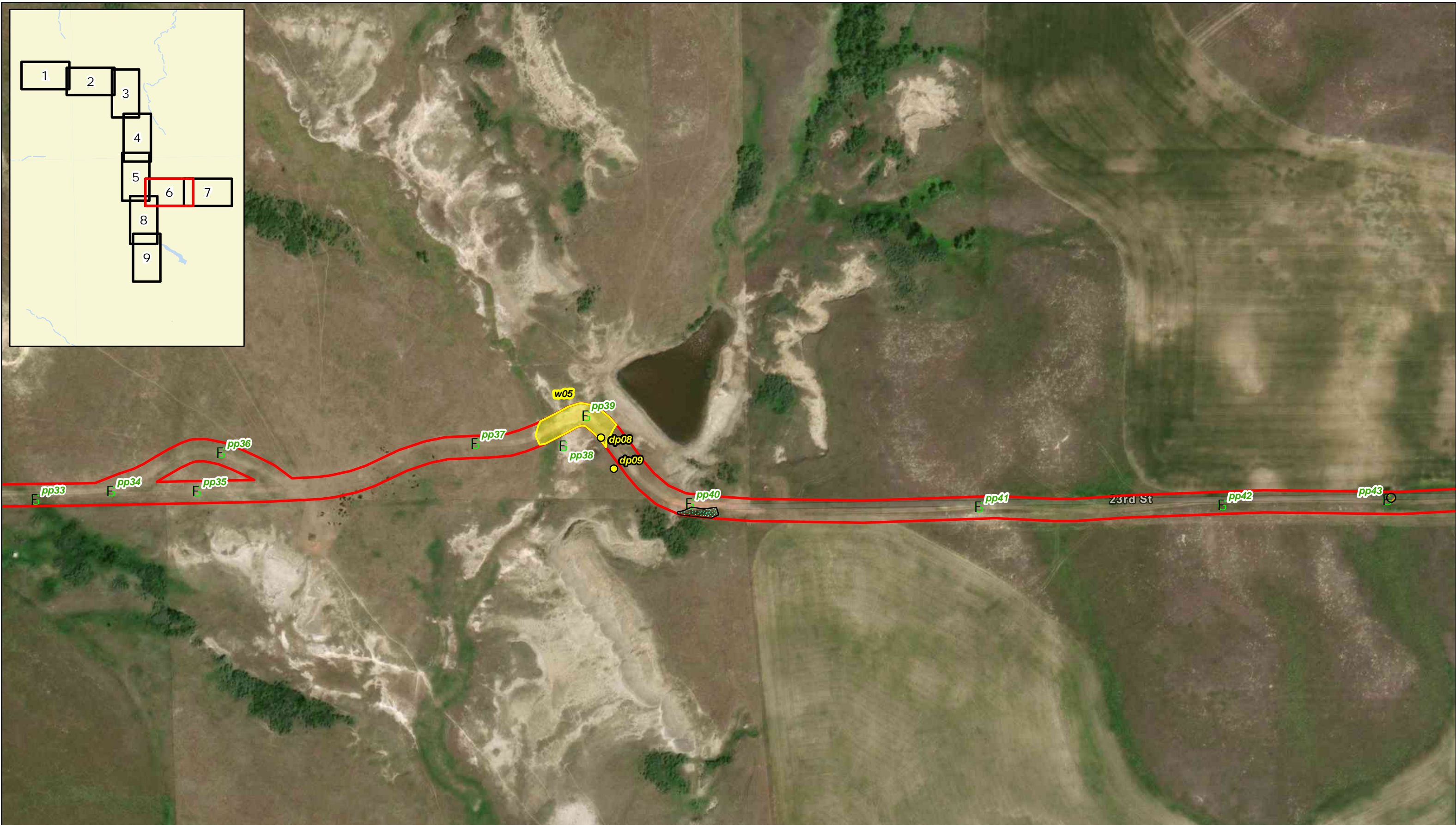
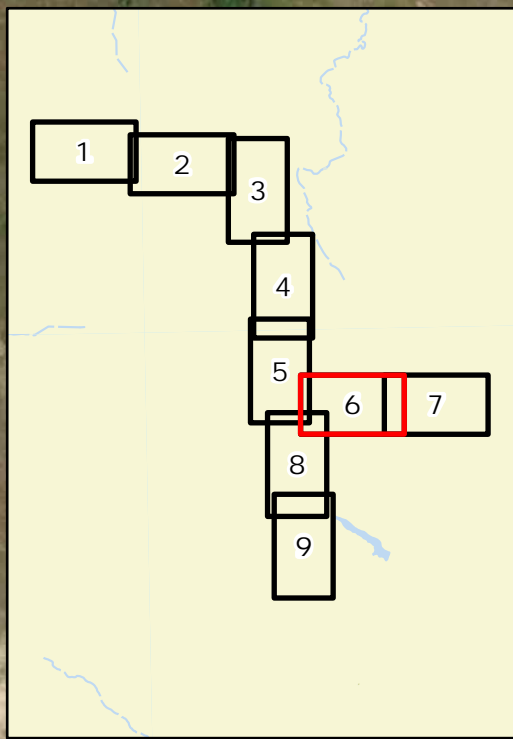
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
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Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		



Source: Z:\Clients\McKenzie\Cherry_Creek_Extension\MapData\Wetland_Data\Wetland_AGO_Setup\ONEOK_Cherry_Creek_Extension.aprx - Map: Delineation



4

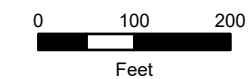
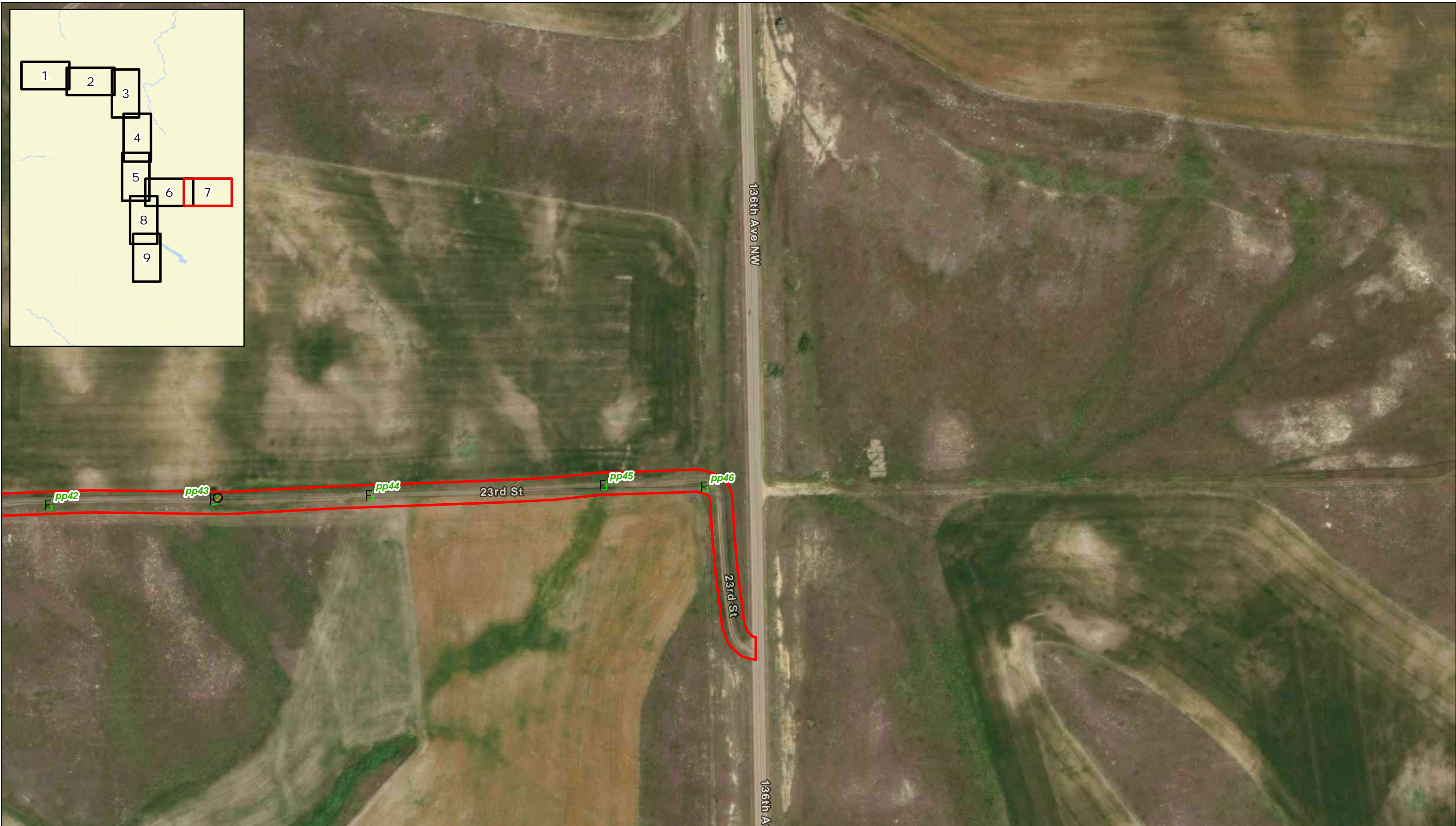
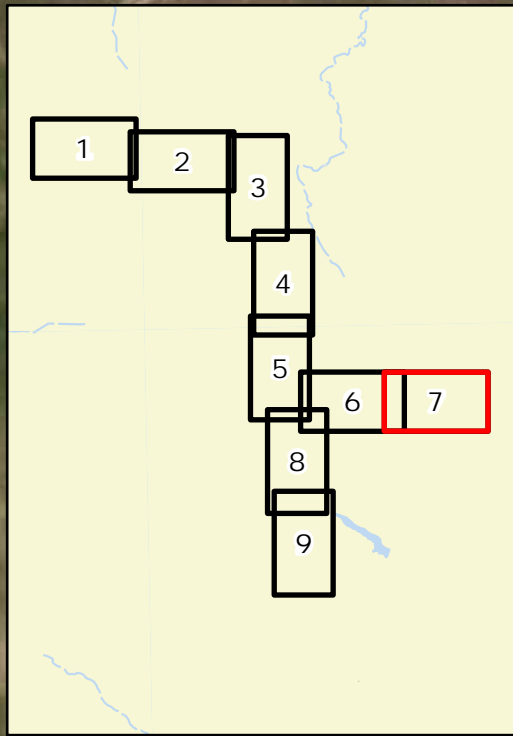
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
Photo Point	Delineated Wetland (PEM)	Ulmus americana	Crataegus chrysoarpa	Populus tremuloides
Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		



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4

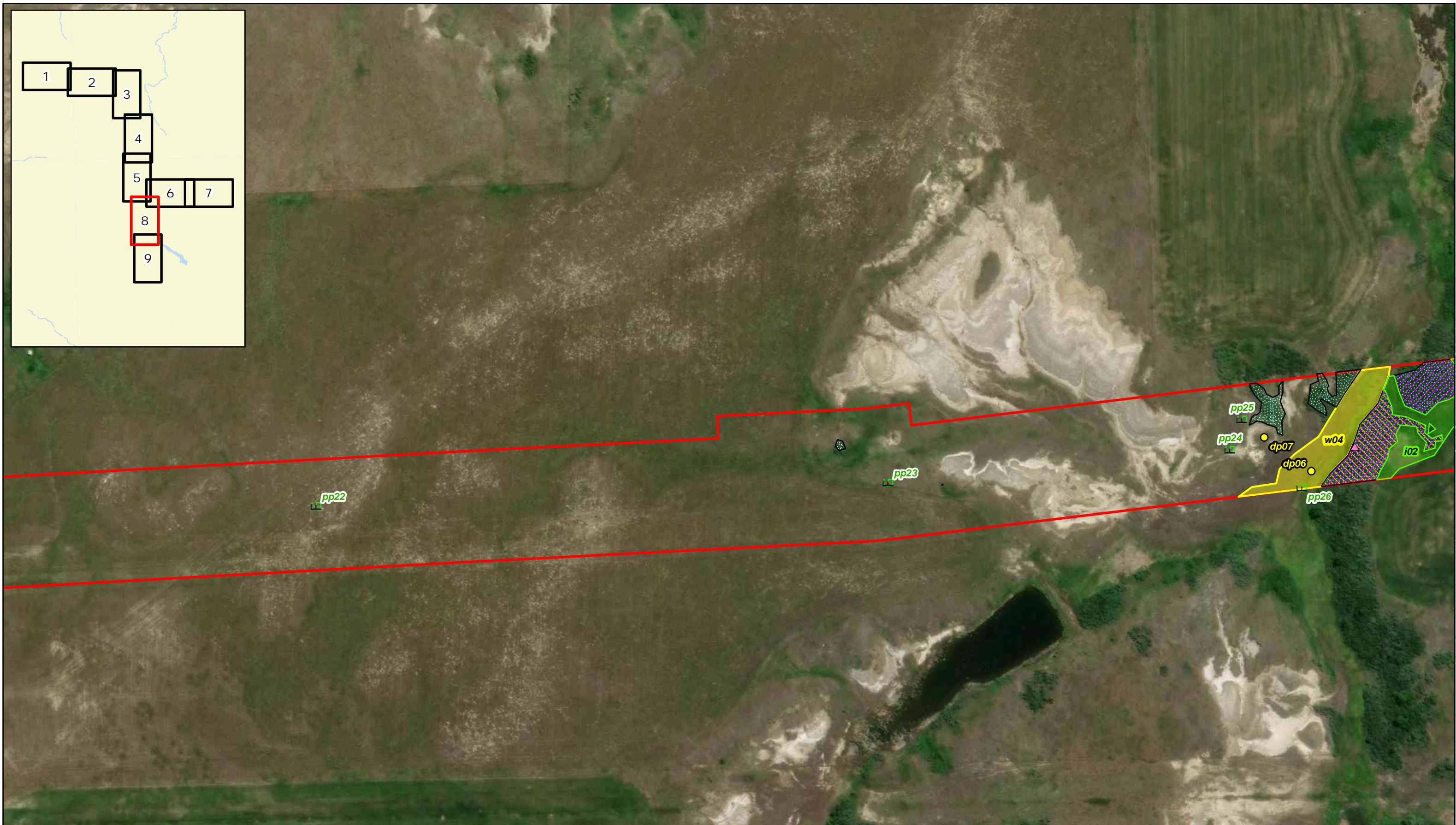
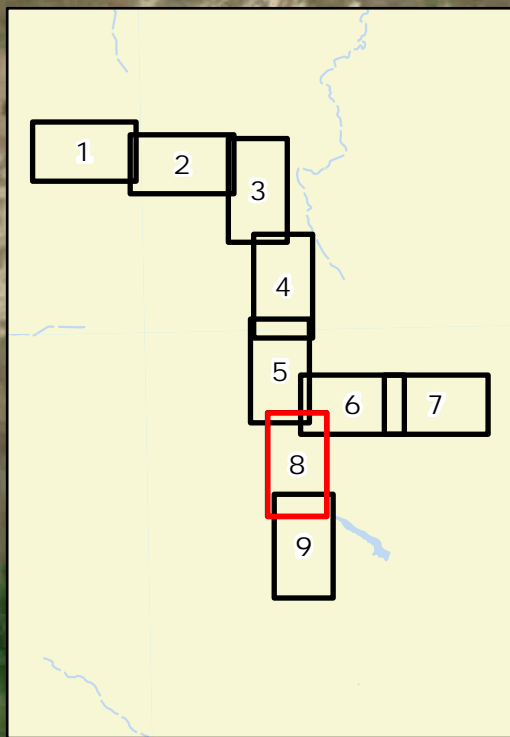
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
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Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		



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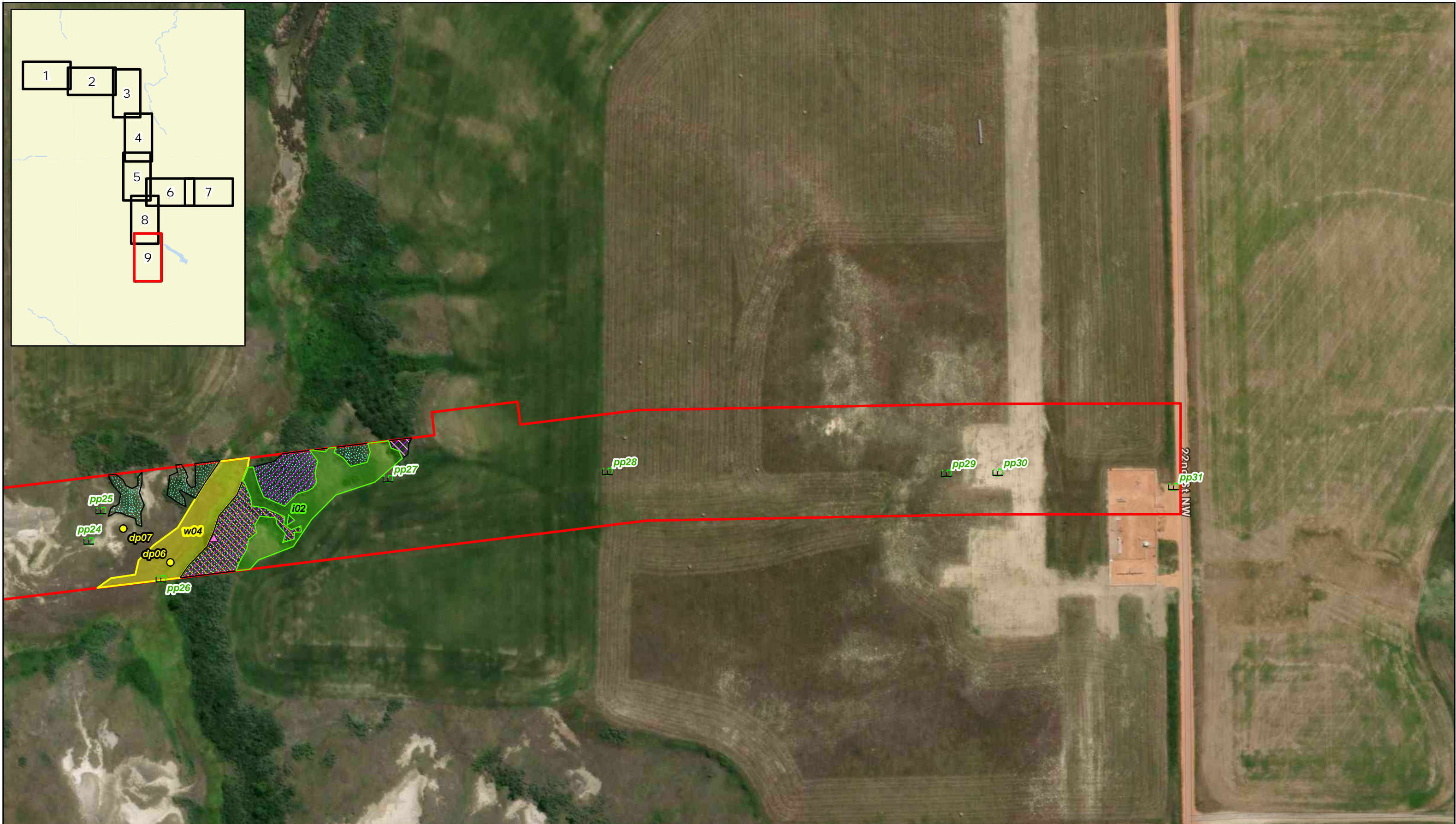
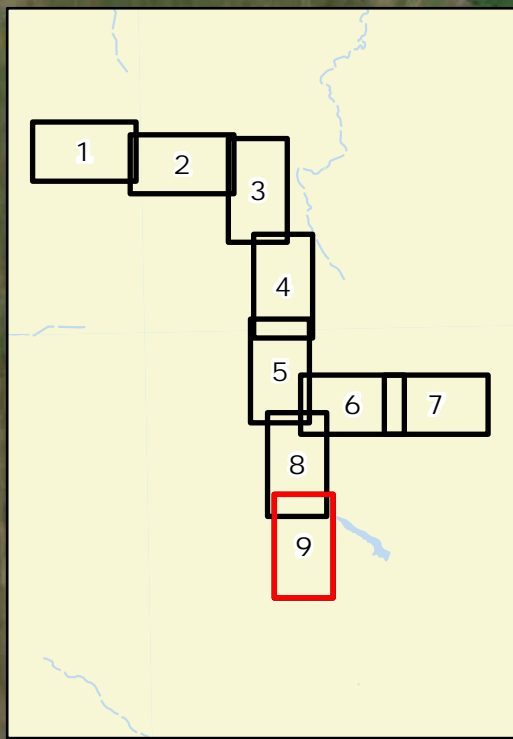
For Environmental Review Purposes Only

Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota

Survey Area	Delineated Waterway	Non-Clonal Species	Delineated Wetland (PEM)	Clonal Species	Prunus virginiana
Photo Point	Invasive Species (Cirsium arvense)	Ulmus americana	Wetland Data Point	Crataegus chrysocarpa	Populus tremuloides
Wetland Data Point		Elaeagnus angustifolia		Shepherdia argentea	
		Fraxinus pennsylvanica			



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For Environmental Review Purposes Only

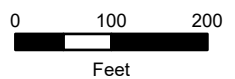
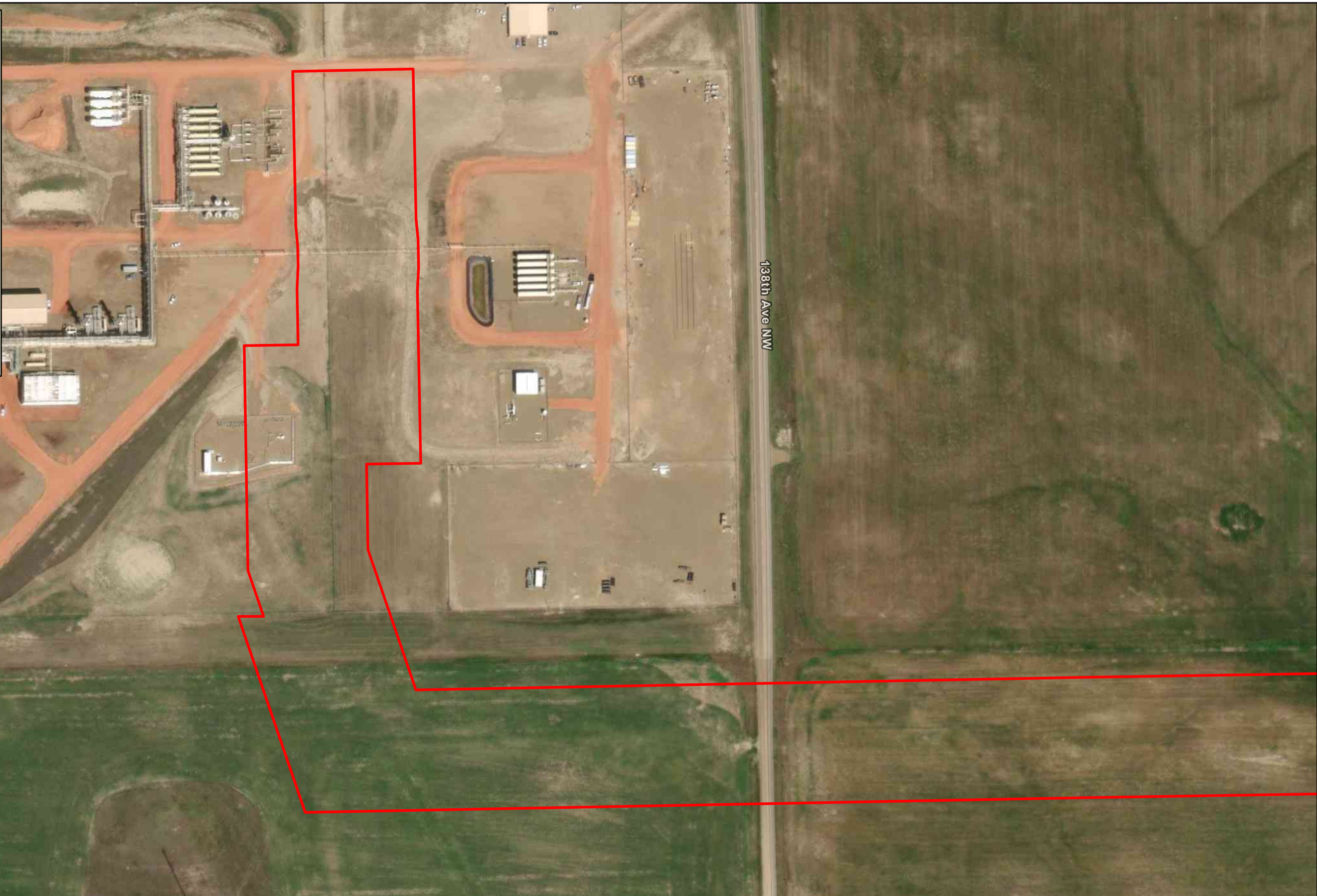
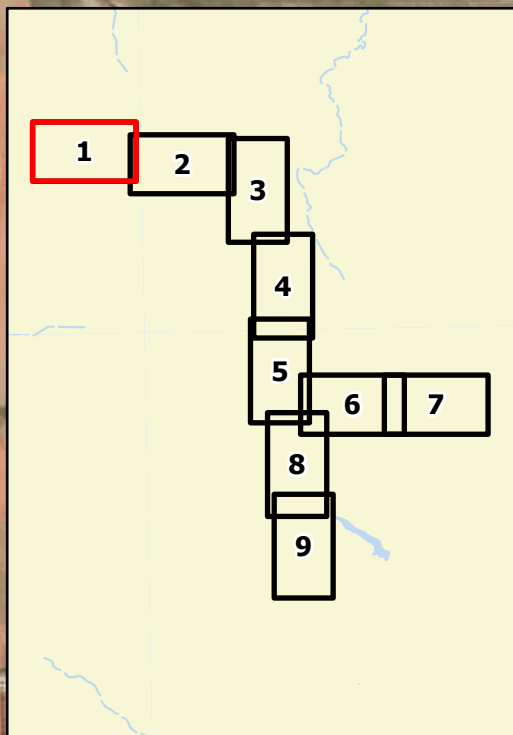
**Natural Resources
Cherry Creek Extension
ONEOK Rockies Midstream,
L.L.C.
McKenzie County, North Dakota**

Survey Area	Delineated Waterway	Non-Clonal Species	Clonal Species	Prunus virginiana
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Wetland Data Point	Invasive Species (Cirsium arvense)	Elaeagnus angustifolia	Shepherdia argentea	
		Fraxinus pennsylvanica		





Source: (1/15/2022) Z:\Clients\M_P\Oneok\Cherry_Creek_Extension\Final_Data\Wetland_Waterbody\AGO_Setup\ONEOK_Cherry_Creek_Extension.aprx - Map: Delineation

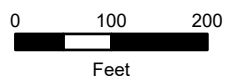
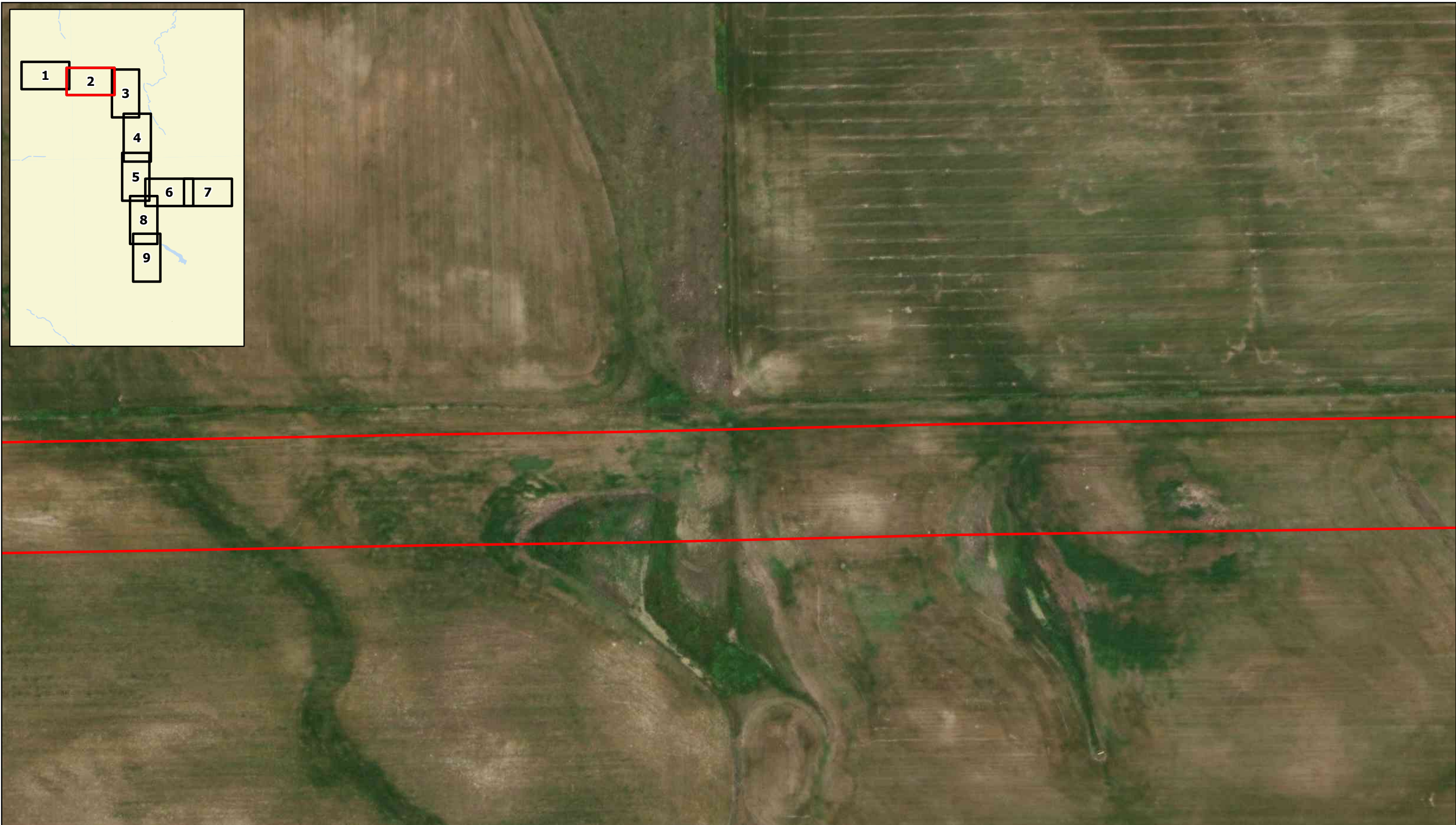
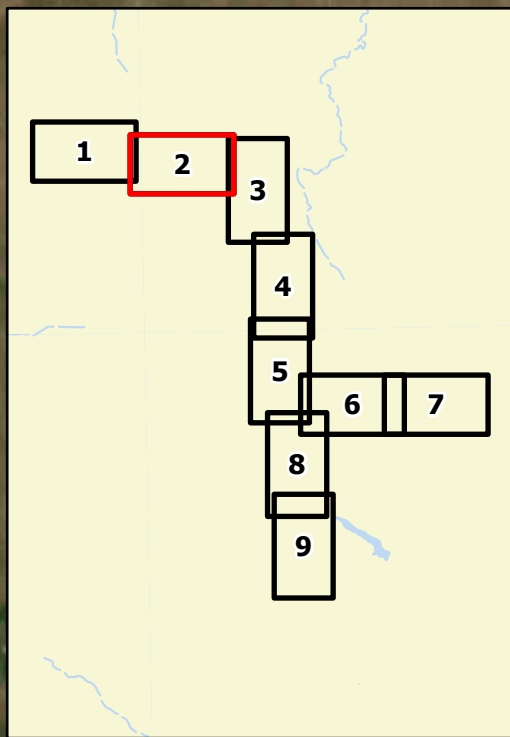
Figure 6
Dakota Skipper Potential Suitable
Habitat





Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

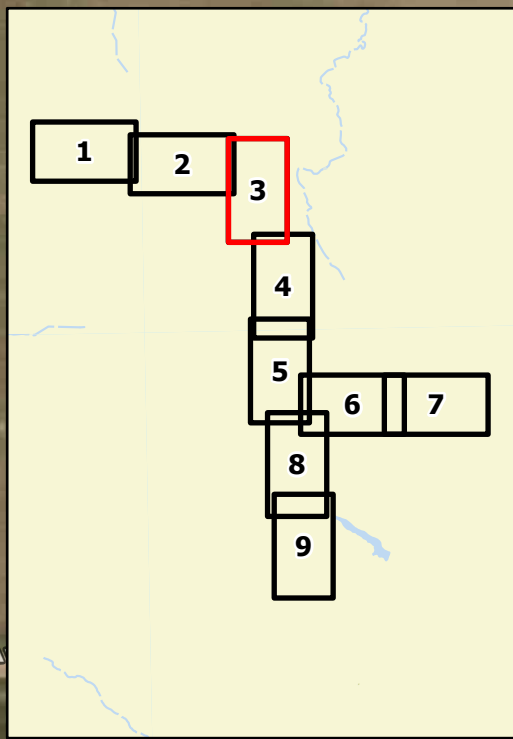






**Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota**

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

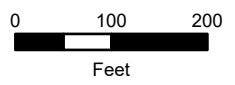
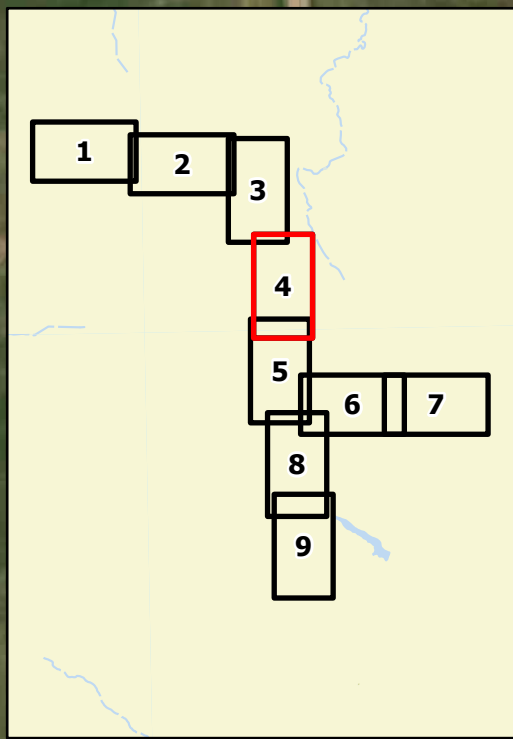






Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

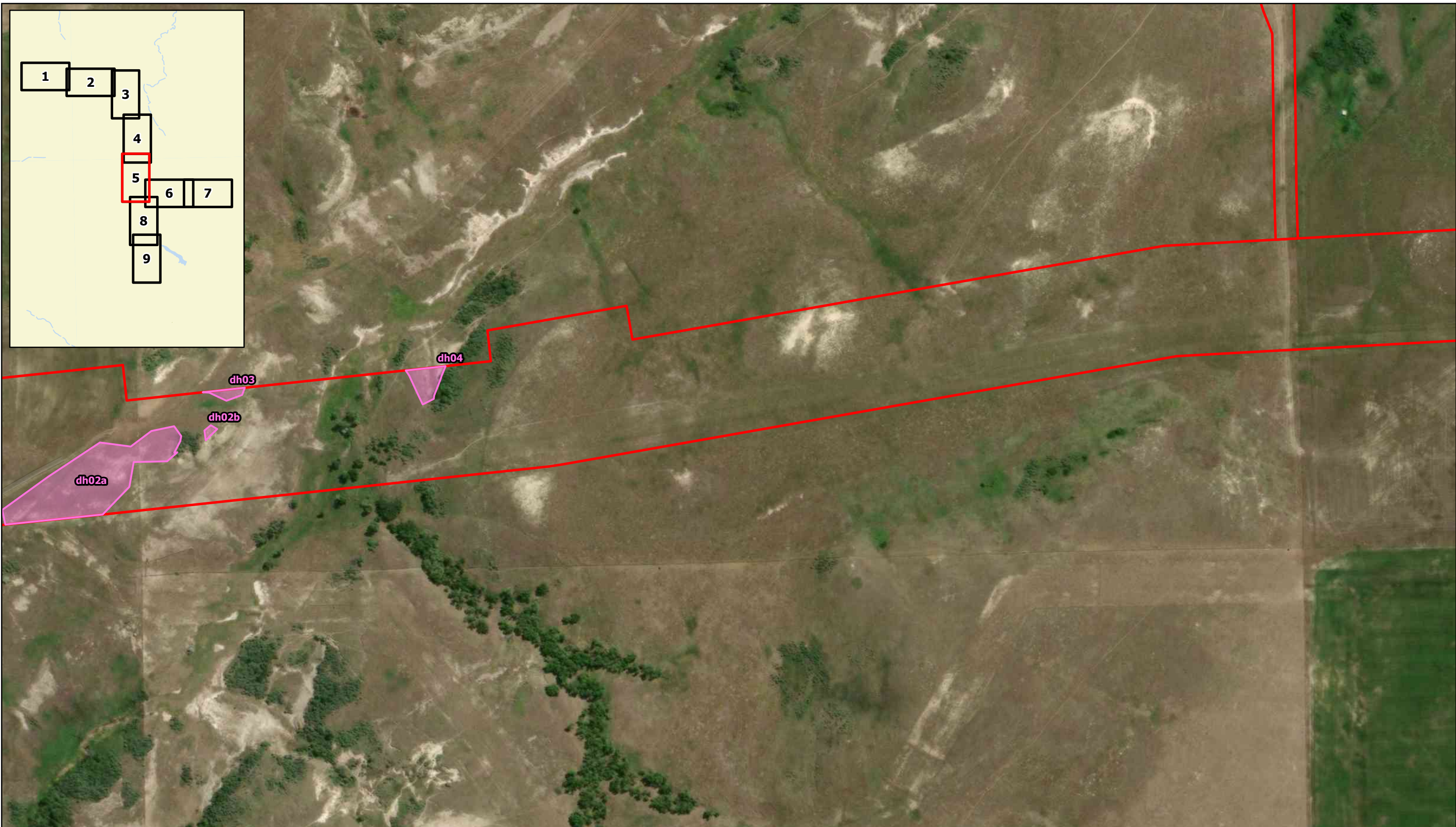
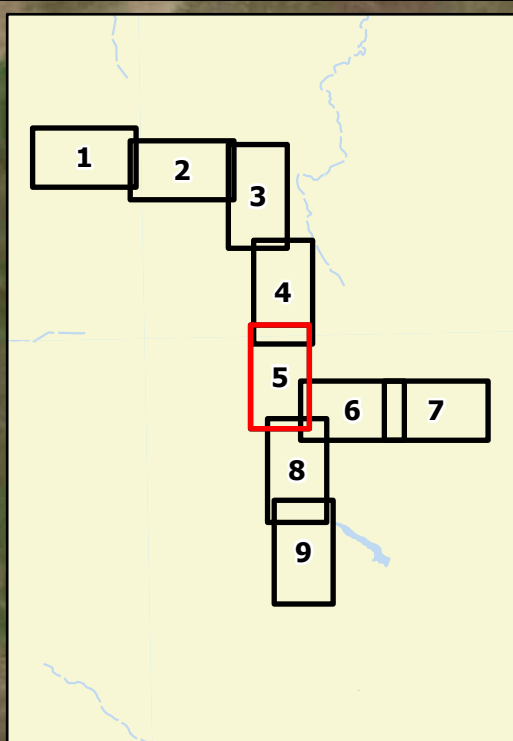






**Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota**

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

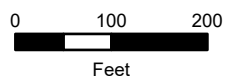
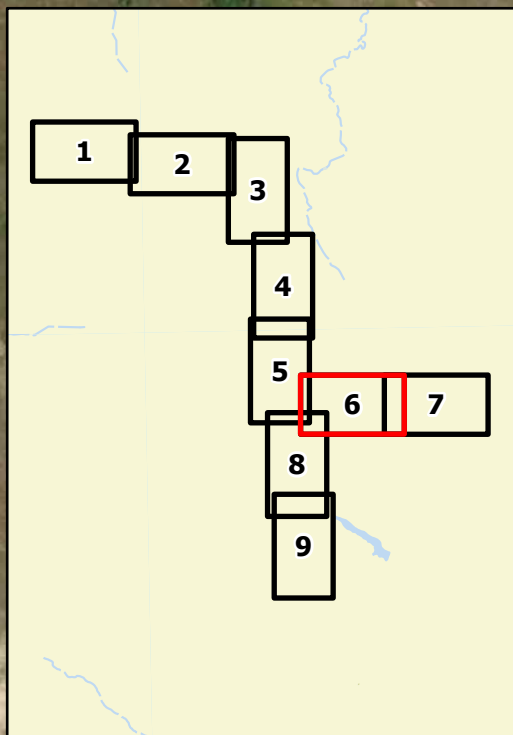






Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

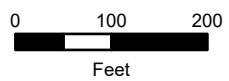
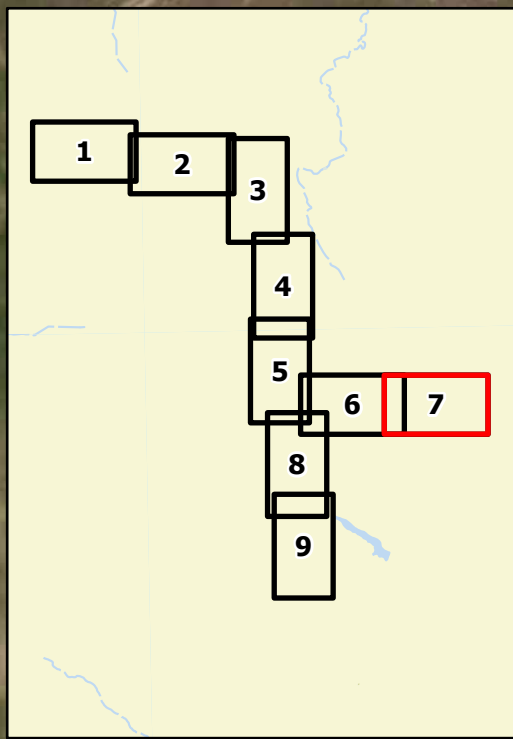






**Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota**

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

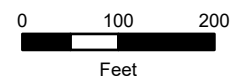
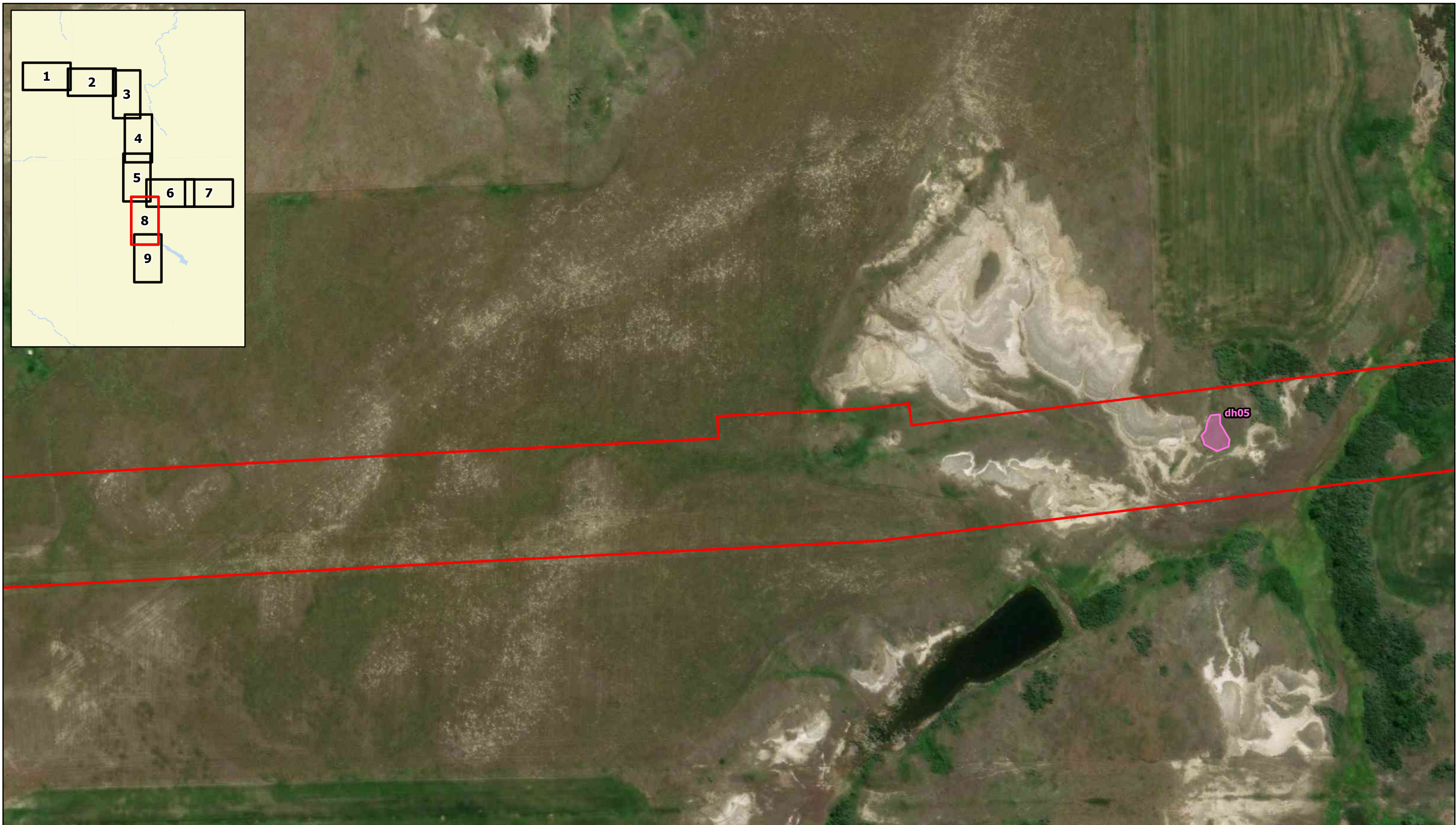
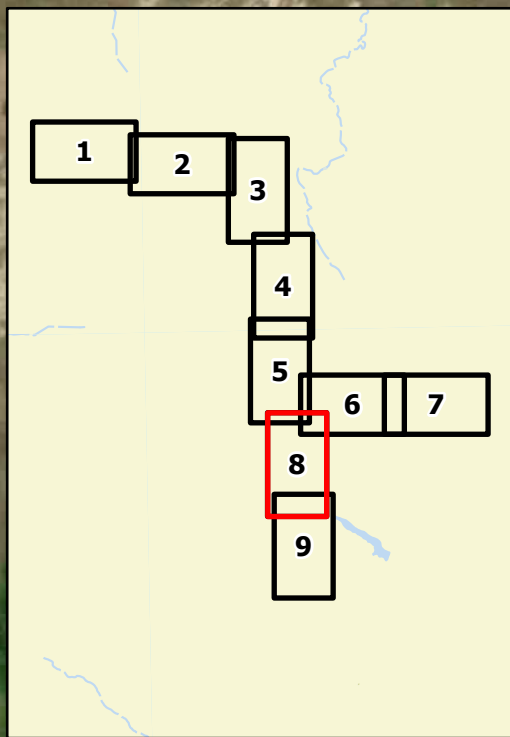






**Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota**

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat

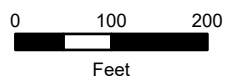
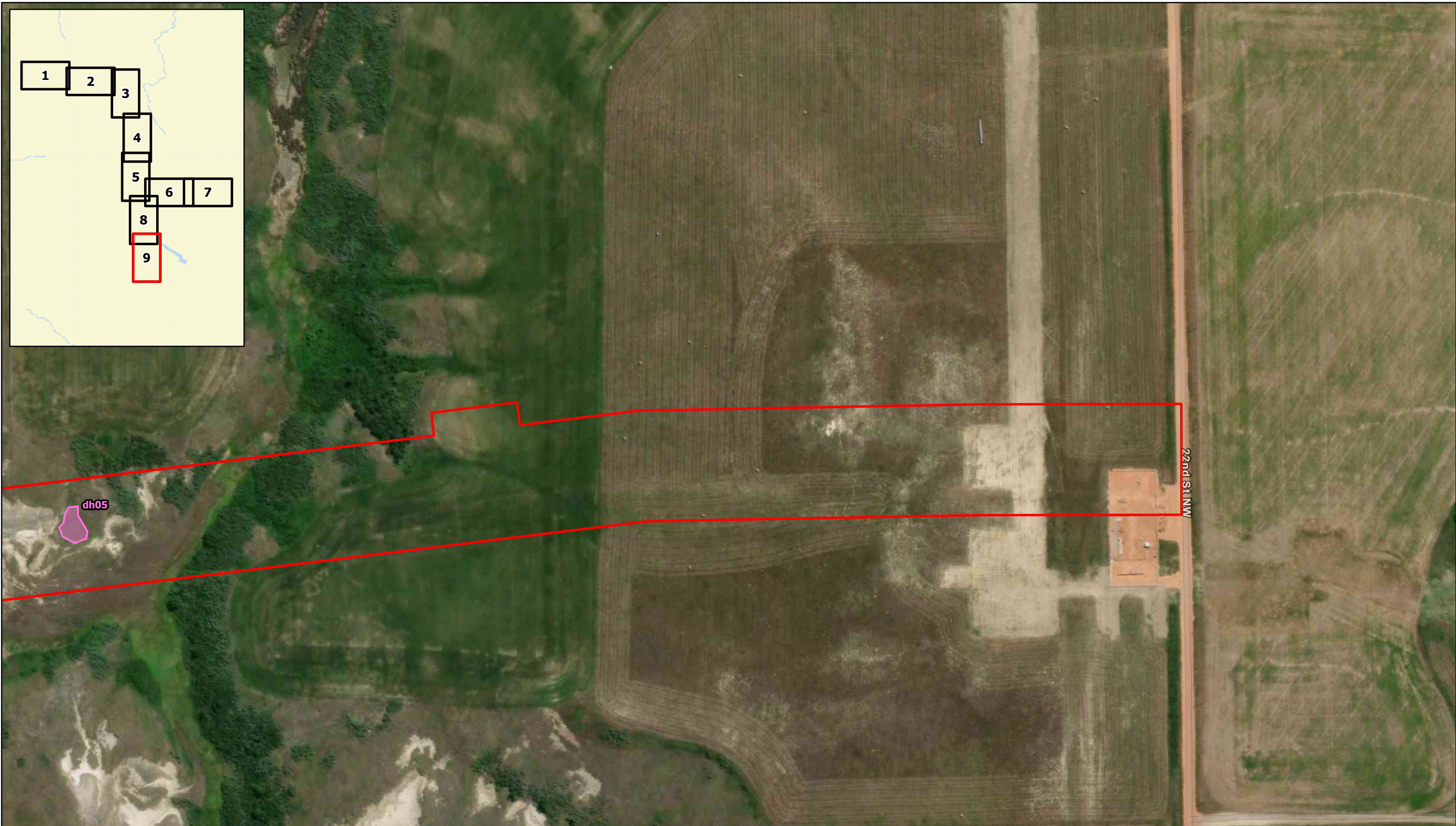
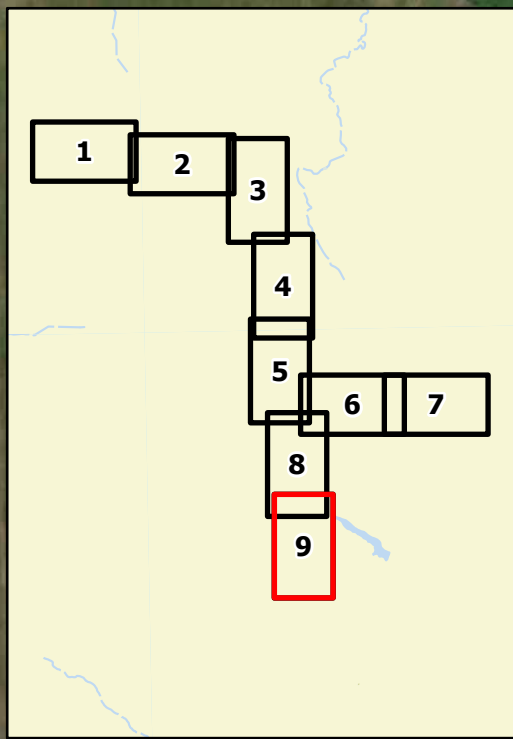






**Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota**

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat





Dakota Skipper Potential Suitable Habitat
Cherry Creek Extension
ONEOK Rockies Midstream, L.L.C.
McKenzie County, North Dakota

-  Survey Area
-  Dakota Skipper Potential Suitable Habitat



Appendix A
Survey Photograph



Photograph pp01 view North



Photograph pp01 view South



Photograph pp01 view Southeast



Photograph pp02 view East



Photograph pp02 view Northeast



Photograph pp02 view Southwest



Photograph pp02 view West



Photograph pp03 view East



Photograph pp03 view North



Photograph pp03 view West



Photograph pp04 view Southwest



Photograph pp05 view North



Photograph pp05 view South



Photograph pp05 view West



Photograph pp06 view Southwest



Photograph pp07 view Northwest



Photograph pp07 view Southeast



Photograph pp08 view East



Photograph pp08 view Southwest



Photograph pp09 view East



Photograph pp09 view Southeast



Photograph pp10 view East



Photograph pp10 view South



Photograph pp10 view West



Photograph pp11 view East



Photograph pp11 view West



Photograph pp12 view East



Photograph pp12 view North



Photograph pp12 view South



Photograph pp12 view West



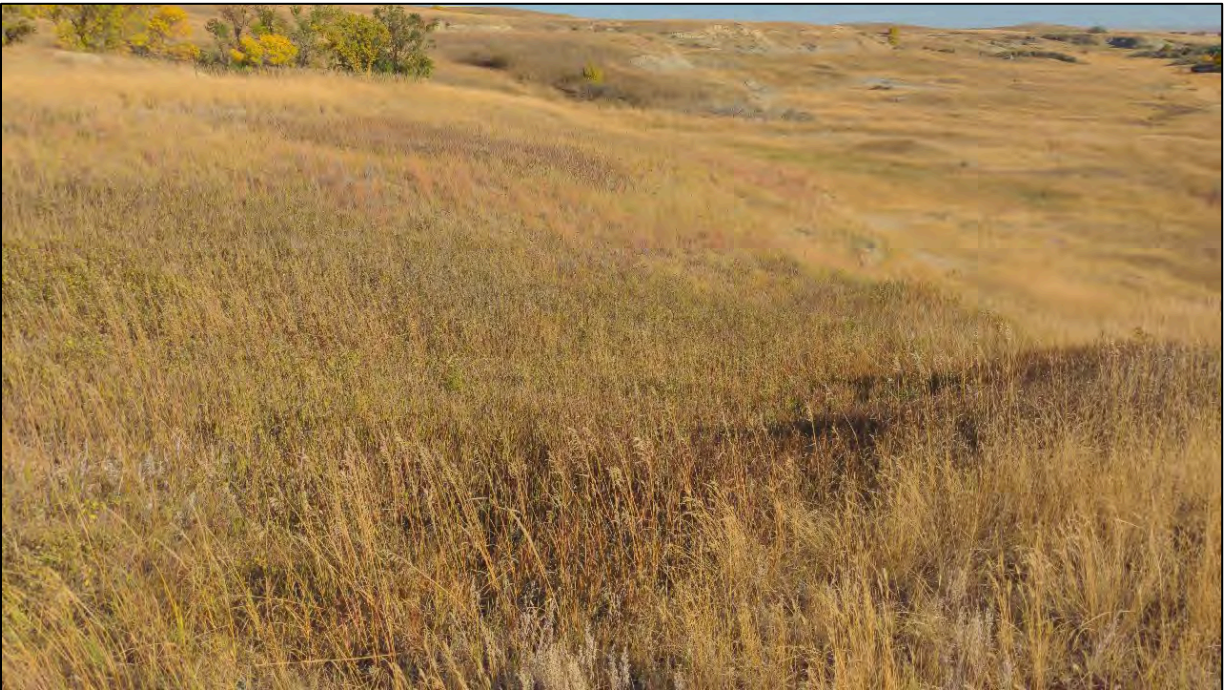
Photograph pp13 view South



Photograph pp14 view Northeast



Photograph pp15 view Southeast



Photograph pp16 view Southeast



Photograph pp16 view West



Photograph pp17 view Southeast



Photograph pp17 view Southwest



Photograph pp18 view Northwest



Photograph pp18 view Southeast



Photograph pp18 view Southwest



Photograph pp19 view Southwest



Photograph pp20 view East



Photograph pp20 view North



Photograph pp20 view South



Photograph pp20 view West



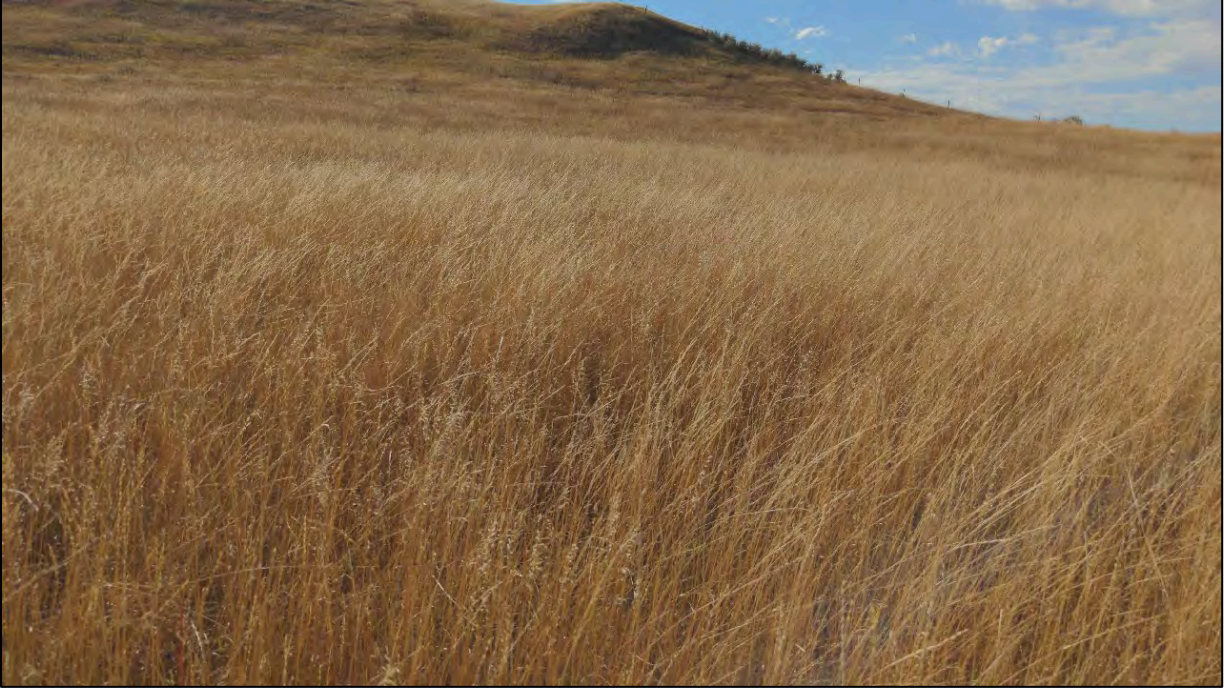
Photograph pp21 view East



Photograph pp21 view North



Photograph pp21 view South



Photograph pp21 view West



Photograph pp22 view East



Photograph pp22 view North



Photograph pp22 view South



Photograph pp22 view West



Photograph pp23 view East



Photograph pp23 view North



Photograph pp23 view South



Photograph pp23 view West



Photograph pp24 view Northeast



Photograph pp25 view Southeast



Photograph pp26 view East



Photograph pp26 view North



Photograph pp26 view South



Photograph pp27 view North



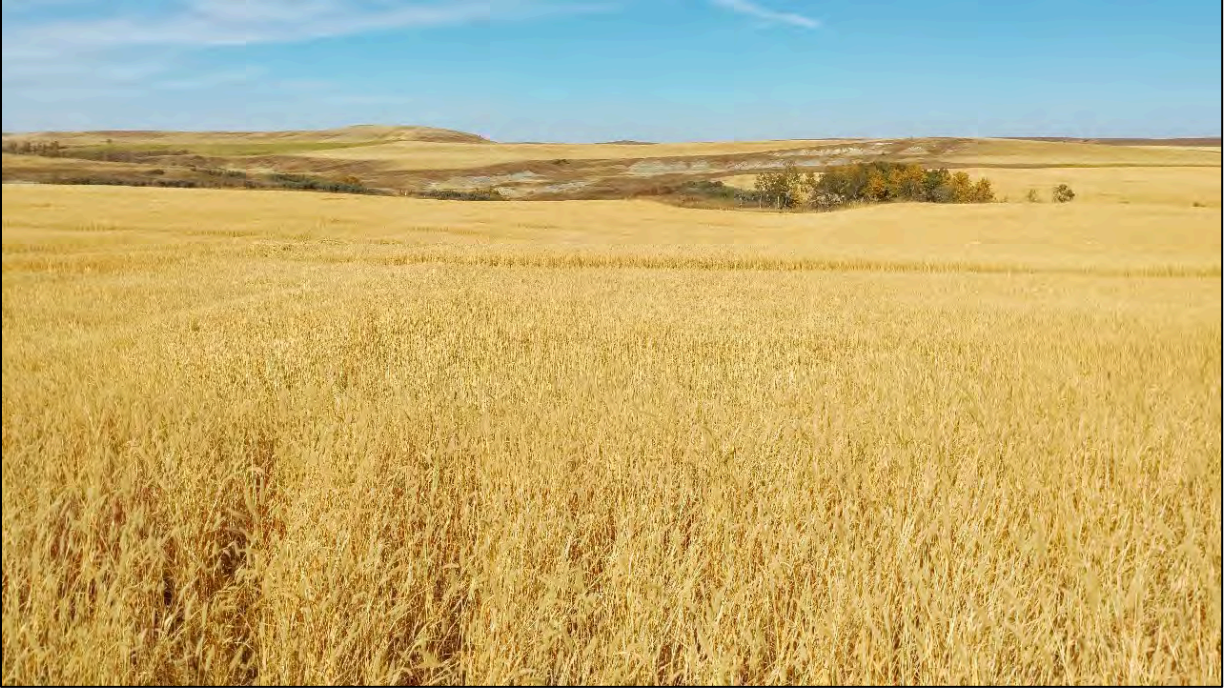
Photograph pp27 view Southeast



Photograph pp27 view Southwest



Photograph pp28 view East



Photograph pp28 view North



Photograph pp28 view South



Photograph pp28 view West



Photograph pp29 view East



Photograph pp29 view North



Photograph pp29 view West



Photograph pp30 view South



Photograph pp31 view East



Photograph pp32 view East



Photograph pp32 view North



Photograph pp32 view South



Photograph pp32 view West



Photograph pp33 view East



Photograph pp33 view North



Photograph pp33 view South



Photograph pp33 view West



Photograph pp34 view East



Photograph pp34 view North



Photograph pp34 view South



Photograph pp34 view West



Photograph pp35 view North



Photograph pp35 view South



Photograph pp35 view West



Photograph pp36 view East



Photograph pp36 view North



Photograph pp36 view South



Photograph pp36 view West



Photograph pp37 view East



Photograph pp37 view North



Photograph pp37 view South



Photograph pp37 view West



Photograph pp38 view East



Photograph pp38 view North



Photograph pp38 view South



Photograph pp38 view West



Photograph pp39 view East



Photograph pp39 view North



Photograph pp39 view South



Photograph pp39 view West



Photograph pp40 view North



Photograph pp40 view South



Photograph pp40 view West



Photograph pp41 view East



Photograph pp41 view North



Photograph pp41 view South



Photograph pp41 view West



Photograph pp42 view East



Photograph pp42 view North



Photograph pp42 view South



Photograph pp42 view West



Photograph pp43 view North



Photograph pp44 view East



Photograph pp44 view North



Photograph pp44 view South



Photograph pp44 view West



Photograph pp45 view East



Photograph pp45 view North



Photograph pp45 view South



Photograph pp45 view West



Photograph pp46 view East



Photograph pp46 view North



Photograph pp46 view South



Photograph pp46 view West

Appendix B
Wetland Determination Data Forms –
Great Plains Region

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASym	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Chama-Cabba-Sen silt loams, 6 to 9 percent slopes	NWI Classification:	N/A	Wetland ID:	w01
Landform:	Toeslope	Local Relief:	Concave	Sample Point:	dp01
Slope (%):	3 - 7%	Latitude:	47.768195	Longitude:	-103.53053
		Datum:	1983 HAR	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are Vegetation <input checked="" type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?		Section: 31	
Are Vegetation <input checked="" type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Township: 150N	
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes	Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes	Is This Sampling Point Within A Wetland?	Yes

Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input checked="" type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:	Wetland Hydrology Present?
Surface Water Present? Yes <input type="checkbox"/> Depth: _____ (in.)	Y
Water Table Present? Yes <input type="checkbox"/> Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/> Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)
(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
15	Hue_10YR	2/1	90	Hue_5YR	3/4	10	C	M	CL
24	Hue_10YR	3/1	95	Hue_5YR	3/4	5	C	M	CL

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input checked="" type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	<p>Indicators for Problematic Soils¹</p> <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer	Type: _____	Depth: _____	Hydric Soil Present?
			Y

Remarks:

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: w01 Sample Point dp01

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<i>Hordeum jubatum</i>	20	Y	FACW
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 20

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

40% total cover at this datapoint; remaining species unidentified due to dormancy.

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>		<u>Multiply by:</u>		
OBL spp.	<u>0</u>	x 1 =	<u>0</u>	
FACW spp.	<u>20</u>	x 2 =	<u>40</u>	
FAC spp.	<u>0</u>	x 3 =	<u>0</u>	
FACU spp.	<u>0</u>	x 4 =	<u>0</u>	
UPL spp.	<u>0</u>	x 5 =	<u>0</u>	

Total 20 (A) 40 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASym	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Chama-Cabba-Sen silt loams, 6 to 9 percent slopes	NWI Classification:	N/A	Wetland ID:	
Landform:	Backslope	Local Relief:	Convex	Sample Point:	dp02
Slope (%):	8 - 15%	Latitude:	47.768092	Longitude:	-103.530782
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present?		
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Section:	31
				Township:	150N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	No	Hydric Soils Present?	No
Wetland Hydrology Present?	No	Is This Sampling Point Within A Wetland?	No

Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

Primary: <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	Secondary: <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u> N </u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
14	Hue 10YR	3/3	100					SIL	
24	Hue 2.5YR	5/3	100					SIC	

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	Indicators for Problematic Soils¹ <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____	Depth: _____	Hydric Soil Present? <u> N </u>
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Remarks:

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: 0 Sample Point **dp02**

VEGETATION

Tree Stratum (Plot size: 30 ft)

Species Name	% Cover	Dominant	Ind.Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.			#N/A
2.			#N/A
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Total Cover = 0

Woody Vine Stratum (Plot size: 30 ft)

1.			
2.			
3.			
5.			
4.			

Total Cover = 0

Remarks:

Additional Remarks:

Bromus inermis - 40%
Thinopyrum intermedium - 40%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: N/A (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL spp. <u>0</u>	x 1 =	<u>0</u>
FACW spp. <u>0</u>	x 2 =	<u>0</u>
FAC spp. <u>0</u>	x 3 =	<u>0</u>
FACU spp. <u>0</u>	x 4 =	<u>0</u>
UPL spp. <u>0</u>	x 5 =	<u>0</u>

Total 0 (A) 0 (B)

Prevalence Index = B/A = NA

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASym	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	w02
Landform:	Depression	Local Relief:	Concave	Sample Point:	dp03
Slope (%):	0 - 2%	Latitude:	47.7531028	Longitude:	-103.5182841
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?		Section:	5
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes	Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes	Is This Sampling Point Within A Wetland?	Yes
Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.			

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u>Y</u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
14	Hue_10YR	2/1	90	Hue_5YR	3/4	10	C	M	CL
24	Hue_10YR	3/4	90	Hue_5YR	3/4	10	C	M	C

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input checked="" type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	<p>Indicators for Problematic Soils¹</p> <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____	Depth: _____	Hydric Soil Present? <u>Y</u>
Remarks:		

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: w02 Sample Point dp03

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<i>Spartina pectinata</i>	80	Y	FACW
2.	<i>Hordeum jubatum</i>	10	N	FACW
3.	<i>Elymus repens</i>	10	N	FACU
4.				
5.				
6.				#N/A
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 100

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>		<u>Multiply by:</u>		
OBL spp.	<u>0</u>	X 1 =	<u>0</u>	
FACW spp.	<u>90</u>	X 2 =	<u>180</u>	
FAC spp.	<u>0</u>	X 3 =	<u>0</u>	
FACU spp.	<u>10</u>	X 4 =	<u>40</u>	
UPL spp.	<u>0</u>	X 5 =	<u>0</u>	
Total		<u>100</u> (A)	<u>220</u> (B)	

Prevalence Index = B/A = 2.200

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	
Landform:	Shoulder	Local Relief:	Convex	Sample Point:	dp04
Slope (%):	8 - 15%	Latitude:	47.7530112	Longitude:	-103.5180681
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?		Section: 5	
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Township: 149N	
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	No	Hydric Soils Present?	No
Wetland Hydrology Present?	No	Is This Sampling Point Within A Wetland?	No

Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:	Wetland Hydrology Present?
Surface Water Present? Yes <input type="checkbox"/> Depth: _____ (in.)	N
Water Table Present? Yes <input type="checkbox"/> Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/> Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
10	Hue_10YR	2/2	100					L	
24	Hue_10YR	3/1	60	Hue_7.5YR	4/6	30	C	M	L
				Hue_10YR	5/1	10	D	M	

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

- | | | |
|---|---|--|
| <input type="checkbox"/> A1- Histosol
<input type="checkbox"/> A2 - Histic Epipedon
<input type="checkbox"/> A3 - Black Histic
<input type="checkbox"/> A4 - Hydrogen Sulfide
<input type="checkbox"/> A5 - Stratified Layers (LRR F)
<input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H)
<input type="checkbox"/> A11 - Depleted Below Dark Surface
<input type="checkbox"/> A12 - Thick Dark Surface
<input type="checkbox"/> S1 - Sandy Muck Mineral
<input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H)
<input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F)
<input type="checkbox"/> S4 - Sandy Gleyed Matrix | <input type="checkbox"/> S5 - Sandy Redox
<input type="checkbox"/> S6 - Stripped Matrix
<input type="checkbox"/> F1 - Loamy Muck Mineral
<input type="checkbox"/> F2 - Loamy Gleyed Matrix
<input type="checkbox"/> F3 - Depleted Matrix
<input type="checkbox"/> F6 - Redox Dark Surface
<input type="checkbox"/> F7 - Depleted Dark Surface
<input type="checkbox"/> F8 - Redox Depressions
<input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H) | <p>Indicators for Problematic Soils¹</p> <input type="checkbox"/> A9 - 1cm Muck (LRR I, J)
<input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H)
<input type="checkbox"/> S7 - Dark Surface (LRR G)
<input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73)
<input type="checkbox"/> F18 - Reduced Vertic
<input type="checkbox"/> F21 - Red Parent Material
<input type="checkbox"/> F22 - Very Shallow Dark Surface
<input type="checkbox"/> Other (Explain in Remarks) |
|---|---|--|

¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer	Type: _____	Depth: _____	Hydric Soil Present?
			N

Remarks:

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: 0 Sample Point **dp04**

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<u>Cirsium arvense</u>	<u>5</u>		<u>FACU</u>
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 5

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

Sapling/shrub: *Symphoricarpos occidentalis* - 20%
Herb: *Bromus inermis* - 80%, *Sporobolus heterolepis* - 5%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: N/A (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>0</u>	x 2 =	<u>0</u>
FAC spp.	<u>0</u>	x 3 =	<u>0</u>
FACU spp.	<u>5</u>	x 4 =	<u>20</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>

Total 5 (A) 20 (B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	w03
Landform:	Depression	Local Relief:	Concave	Sample Point:	dp05
Slope (%):	0 - 2%	Latitude:	47.7530518	Longitude:	-103.5176853
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?		Are normal circumstances present?		Section:	5
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes	Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes	Is This Sampling Point Within A Wetland?	Yes
Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.			

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u>Y</u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
8	Hue_10YR 2/1	85		Hue_7.5YR 4/6	15	C	M	L	
24	Hue_10YR 2/1	70		Hue_7.5YR 4/6	15	C	M	L	
				Hue_10YR 5/1	15	D	M		

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input checked="" type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	<p>Indicators for Problematic Soils¹</p> <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____	Depth: _____	Hydric Soil Present? <u>Y</u>
Remarks:		

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: w03 Sample Point dp05

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.		20	Y	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 20

Herb Stratum (Plot size: 5 ft)

1.	<i>Spartina pectinata</i>	70	Y	FACW
2.	<i>Elymus repens</i>	30	Y	FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 100

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
4.				
5.				
6.				

Total Cover = 0

Remarks:

Additional Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index Worksheet

Total % Cover of: Multiply by:

OBL spp. 0 x 1 = 0

FACW spp. 70 x 2 = 140

FAC spp. 0 x 3 = 0

FACU spp. 30 x 4 = 120

UPL spp. 0 x 5 = 0

Total 100 (A) 260 (B)

Prevalence Index = B/A = 2.600

Hydrophytic Vegetation Indicators:

 Rapid Test for Hydrophytic Vegetation

 Dominance Test is > 50%

X Prevalence Index is ≤ 3.0 *

 Morphological Adaptations (Explain) *

 Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	w04
Landform:	Toeslope	Local Relief:	Concave	Sample Point:	dp06
Slope (%):	3 - 7%	Latitude:	47.7388169	Longitude:	-103.5164878
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present?		
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Section:	8
				Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes	Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes	Is This Sampling Point Within A Wetland?	Yes
Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.			

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

Primary: <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	Secondary: <input checked="" type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u>Y</u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
1	Hue_10YR	6/1	100					SICL	
24	Hue_10YR	4/1	95	Hue_5YR	4/6	5	C	M	SICL

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input checked="" type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	Indicators for Problematic Soils¹ <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____	Depth: _____	Hydric Soil Present? <u>Y</u>
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Remarks:

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: w04 Sample Point dp06

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<i>Spartina pectinata</i>	40	Y	FACW
2.	<i>Agrostis scabra</i>	40	Y	FAC
3.	<i>Hordeum jubatum</i>	10	N	FACW
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 90

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>		<u>Multiply by:</u>	
OBL spp.	<u>0</u>	x 1 =	<u>0</u>
FACW spp.	<u>50</u>	x 2 =	<u>100</u>
FAC spp.	<u>40</u>	x 3 =	<u>120</u>
FACU spp.	<u>0</u>	x 4 =	<u>0</u>
UPL spp.	<u>0</u>	x 5 =	<u>0</u>

Total 90 (A) 220 (B)

Prevalence Index = B/A = 2.444

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	09/27/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Andy Kranz			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	
Landform:	Footslope	Local Relief:	Convex	Sample Point:	dp07
Slope (%):	8 - 15%	Latitude:	47.7391049	Longitude:	-103.5161698
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Are Vegetation <input checked="" type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present?		
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Section:	8
				Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	No	Hydric Soils Present?	No
Wetland Hydrology Present?	No	Is This Sampling Point Within A Wetland?	No

Remarks: WETS analysis of antecedent precipitation conditions indicates drier than normal conditions at the time of the survey.

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

Primary: <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	Secondary: <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u> N </u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
24	Hue_5Y	7/1	100					SI	

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	Indicators for Problematic Soils¹ <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____ Depth: _____ **Hydric Soil Present?** N

Remarks: Parent material color.

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: 0 Sample Point **dp07**

VEGETATION

Tree Stratum (Plot size: 30 ft)

Species Name	% Cover	Dominant	Ind.Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	80	Y	#N/A
2.	5	N	#N/A
3.			#N/A
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Total Cover = 85

Woody Vine Stratum (Plot size: 30 ft)

1.			
2.			
3.			
5.			
4.			

Total Cover = 0

Remarks:

Additional Remarks:

Bromus inermis - 80%
Ratibida columnifera - 5%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index Worksheet

Total % Cover of:	Multiply by:	
OBL spp. <u>0</u>	x 1 =	<u>0</u>
FACW spp. <u>0</u>	x 2 =	<u>0</u>
FAC spp. <u>0</u>	x 3 =	<u>0</u>
FACU spp. <u>0</u>	x 4 =	<u>0</u>
UPL spp. <u>0</u>	x 5 =	<u>0</u>

Total 0 (A) 0 (B)

Prevalence Index = B/A = NA

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? N

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	10/21/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Adam Weishair			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	w05
Landform:	Depression	Local Relief:	Concave	Sample Point:	dp08
Slope (%):	0 - 2%	Latitude:	47.7473928	Longitude:	-103.5097893
		Datum:	1983 HARN		
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present?		
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Section:	5
				Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	Yes	Hydric Soils Present?	Yes
Wetland Hydrology Present?	Yes	Is This Sampling Point Within A Wetland?	Yes
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<u>Primary:</u> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input checked="" type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<u>Secondary:</u> <input checked="" type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input checked="" type="checkbox"/> D2 - Geomorphic Position <input checked="" type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u>Y</u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)		%	Color (Moist)		%	Type		
8	Hue_10YR	3/2	70	Hue_2.5Y	6/2	30	D	M	SIC
16	Hue_10YR	3/3	85	Hue_2.5Y	6/2	15	D	M	SIC

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input checked="" type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	Indicators for Problematic Soils¹ <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer	Type: _____	Depth: _____	Hydric Soil Present? <u>Y</u>
Remarks:			

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: w05 Sample Point **dp08**

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<i>Spartina pectinata</i>	45	Y	FACW
2.	<i>Phalaris arundinacea</i>	15	Y	FACW
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 60

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>	<u>Multiply by:</u>	
OBL spp. <u>0</u>	X 1 =	<u>0</u>
FACW spp. <u>60</u>	X 2 =	<u>120</u>
FAC spp. <u>0</u>	X 3 =	<u>0</u>
FACU spp. <u>0</u>	X 4 =	<u>0</u>
UPL spp. <u>0</u>	X 5 =	<u>0</u>

Total 60 (A) 120 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? Y

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site:	Cherry Creek Extension	Subregion (MLRA or LRR):	MLRASYM	Date:	10/21/22
Applicant:	ONEOK			County:	McKenzie
Investigators:	Adam Weishair			State:	North Dakota
Soil Unit:	Cabba-Badland complex, 6 to 70 percent slopes	NWI Classification:	N/A	Wetland ID:	
Landform:	Backslope	Local Relief:	Convex	Sample Point:	dp09
Slope (%):	3 - 7%	Latitude:	47.7471994	Longitude:	-103.5096756
		Datum:	1983 HARN	Community ID:	
Are climatic/hydrologic conditions on the site typical for this time of year? (If no, explain in remarks)				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> significantly disturbed?			Are normal circumstances present?		
Are Vegetation <input type="checkbox"/> Soil <input type="checkbox"/> or Hydrology <input type="checkbox"/> naturally problematic?			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
				Section:	5
				Township:	149N
				Range:	100 Dir: W

SUMMARY OF FINDINGS

Hydrophytic Vegetation Present?	No	Hydric Soils Present?	No
Wetland Hydrology Present?	No	Is This Sampling Point Within A Wetland?	No
Remarks:			

HYDROLOGY

Wetland Hydrology Indicators (Check all that apply; Minimum of one primary or two secondary required):

<p><u>Primary:</u></p> <input type="checkbox"/> A1 - Surface Water <input type="checkbox"/> A2 - High Water Table <input type="checkbox"/> A3 - Saturation <input type="checkbox"/> B1 - Water Marks <input type="checkbox"/> B2 - Sediment Deposits <input type="checkbox"/> B3 - Drift Deposits <input type="checkbox"/> B4 - Algal Mat or Crust <input type="checkbox"/> B5 - Iron Deposits <input type="checkbox"/> B7 - Inundation Visible on Aerial Imagery <input type="checkbox"/> B9 - Water-Stained Leaves	<input type="checkbox"/> B11 - Salt Crust <input type="checkbox"/> B13 - Aquatic Fauna <input type="checkbox"/> C1 - Hydrogen Sulfide Odor <input type="checkbox"/> C2 - Dry Season Water Table <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (not tilled) <input type="checkbox"/> C4 - Presence of Reduced Iron <input type="checkbox"/> C7 - Thin Muck Surface <input type="checkbox"/> Other (Explain)	<p><u>Secondary:</u></p> <input type="checkbox"/> B6 - Surface Soil Cracks <input type="checkbox"/> B8 - Sparsely Vegetated Concave Surface <input type="checkbox"/> B10 - Drainage Patterns <input type="checkbox"/> C3 - Oxidized Rhizospheres on Living Roots (tilled) <input type="checkbox"/> C8 - Crayfish Burrows <input type="checkbox"/> C9 - Saturation Visible on Aerial Imagery <input type="checkbox"/> D2 - Geomorphic Position <input type="checkbox"/> D5 - FAC-Neutral Test <input type="checkbox"/> D7 - Frost-Heaved Hummocks (LRR F)
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Field Observations:

Surface Water Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	Wetland Hydrology Present? <u> N </u>
Water Table Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	
Saturation Present? Yes <input type="checkbox"/>	Depth: _____ (in.)	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOILS

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered/Coated Sand Grains; Location: PL=Pore Lining, M=Matrix)

Depth (In.)	Matrix			Mottles				Texture	Remarks
	Color (Moist)	%		Color (Moist)	%	Type	Location		
16	Hue_10YR	3/2	100					SIL	

NRCS Hydric Soil Field Indicators (check here if indicators are not present):

<input type="checkbox"/> A1- Histosol <input type="checkbox"/> A2 - Histic Epipedon <input type="checkbox"/> A3 - Black Histic <input type="checkbox"/> A4 - Hydrogen Sulfide <input type="checkbox"/> A5 - Stratified Layers (LRR F) <input type="checkbox"/> A9 - 1 cm Muck (LRR F, G, H) <input type="checkbox"/> A11 - Depleted Below Dark Surface <input type="checkbox"/> A12 - Thick Dark Surface <input type="checkbox"/> S1 - Sandy Muck Mineral <input type="checkbox"/> S2 - 2.5 cm Mucky Peat or Peat (LRR G, H) <input type="checkbox"/> S3 - 5 cm Mucky Peat or Peat (LRR F) <input type="checkbox"/> S4 - Sandy Gleyed Matrix	<input type="checkbox"/> S5 - Sandy Redox <input type="checkbox"/> S6 - Stripped Matrix <input type="checkbox"/> F1 - Loamy Muck Mineral <input type="checkbox"/> F2 - Loamy Gleyed Matrix <input type="checkbox"/> F3 - Depleted Matrix <input type="checkbox"/> F6 - Redox Dark Surface <input type="checkbox"/> F7 - Depleted Dark Surface <input type="checkbox"/> F8 - Redox Depressions <input type="checkbox"/> F16 - High Plains Depressions (MLRA 72, 73 of LRR H)	<p>Indicators for Problematic Soils¹</p> <input type="checkbox"/> A9 - 1cm Muck (LRR I, J) <input type="checkbox"/> A16 - Cost Prairie Redox (LRR F, G, H) <input type="checkbox"/> S7 - Dark Surface (LRR G) <input type="checkbox"/> F16 - High Plains Depressions (LRR H, outside MLRA 72, 73) <input type="checkbox"/> F18 - Reduced Vertic <input type="checkbox"/> F21 - Red Parent Material <input type="checkbox"/> F22 - Very Shallow Dark Surface <input type="checkbox"/> Other (Explain in Remarks)
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¹Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer Type: _____	Depth: _____	Hydric Soil Present? <u> N </u>
Remarks:		

WETLAND DETERMINATION DATA FORM
Great Plains Region

Project/Site: Cherry Creek Extension Wetland ID: 0 Sample Point **dp09**

VEGETATION

Tree Stratum (Plot size: 30 ft)

	<u>Species Name</u>	<u>% Cover</u>	<u>Dominant</u>	<u>Ind.Status</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Sapling/Shrub Stratum (Plot size: 15 ft)

1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

Total Cover = 0

Herb Stratum (Plot size: 5 ft)

1.	<i>Schizachyrium scoparium</i>	50	Y	FACU
2.	<i>Pascopyrum smithii</i>	25	Y	FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

Total Cover = 75

Woody Vine Stratum (Plot size: 30 ft)

1.				
2.				
3.				
5.				
4.				

Total Cover = 0

Remarks:

Additional Remarks:

Bromus inermis - 15%
Echinacea angustifolia - 10%

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index Worksheet

<u>Total % Cover of:</u>	<u>Multiply by:</u>	
OBL spp. <u>0</u>	x 1 =	<u>0</u>
FACW spp. <u>0</u>	x 2 =	<u>0</u>
FAC spp. <u>0</u>	x 3 =	<u>0</u>
FACU spp. <u>75</u>	x 4 =	<u>300</u>
UPL spp. <u>0</u>	x 5 =	<u>0</u>

Total 75 (A) 300 (B)

Prevalence Index = B/A = 4.000

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is > 50%
- Prevalence Index is ≤ 3.0 *
- Morphological Adaptations (Explain) *
- Problem Hydrophytic Vegetation (Explain) *

* Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub - Woody plants less than 3 in. DBH, regardless of height.

Herb - All herbaceous (non-woody) plants, regardless of size.

Woody Vines - All woody vines, regardless of height.

Hydrophytic Vegetation Present? N



MEMO

Date:
12/12/2023

To:
Lucas Bicknell, Project Manager, Merjent

From:
Chris Firkus, Biological Technical Lead, Merjent

Subject:
ONEOK Rockies Midstream, LLC – Cherry Creek Extension: Fireberry Hawthorn Mitigation

Background

ONEOK is required to mitigate for removal of woody species in North Dakota for their Cherry Creek Extension project, as part of the Public Service Commission's requirements. Per USACE Garrison Project Office Standard Operating Procedure #14, ONEOK has calculated clonal shrub impacts by assigning a value of one plant individual per square foot of colony; however, fireberry hawthorn (*Crataegus chrysocarpa*), while not always a clonal species, can occasionally exhibit a clonal growth form making an adaptive methodology for determining density appropriate. Nonetheless, it was later determined that this adaptive methodology was insufficiently reliable and a direct count of the number of individuals in the field would be necessary. The direct count was performed within the final, approved right of way.

Methods & Results

On October 21, 2023, twenty-six individual fireberry hawthorn shrubs were recorded within the survey area.

Discussion

Fireberry hawthorn, and hawthorns in general, can be difficult to quantify in-field and standardized methodology is lacking. While the species is not always clonal, an individual may have 10 or more stems arising from the soil, and where individuals may be in close proximity to each other, it can at times be difficult to discern where one individual begins and another ends. Yet, others may have one, or perhaps two stems as an isolated individual. Therefore, applying a standardized density is difficult. The methodology and results here are based on standardized methodology, coupled with direct field observations and are specific to this project.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Chris Firkus".

Chris Firkus
Merjent