



January 21, 2022

TriStar Properties
12647 Olive Blvd Suite 510,
St. Louis, MO 67002

Attn: Mr. Matt Segal
P: (314) 749-7440
E: msegal@tristarproperties.com

Re: Preliminary Waters of the U.S. Assessment
Weaver Tract
Lee's Summit, Jackson County, Missouri
Terracon Project No. 01217245

Dear Mr. Ferrell,

Terracon is pleased to submit the enclosed Preliminary Waters of the U.S. Assessment (PWOTUS) for the above referenced project. The PWOTUS was performed in general accordance with Terracon Proposal No. P01217220 dated September 22, 2021. The attached report details our observations and presents an opinion regarding the presence or absence of jurisdictional waters on the site. However, the final jurisdictional determination must be made by the U.S. Army Corps of Engineers (USACE).

Terracon recommends a copy of the enclosed PWOTUS be submitted to the USACE for their review. If desired, Terracon can submit a copy of the PWOTUS report to the USACE on behalf of the client. We appreciate the opportunity to complete this PWOTUS for you. If you have any questions regarding the content of this report, please contact us at 316-448-3985.

Sincerely,

Terracon Consultants, Inc.


John N. Rathgeber
Senior Staff Scientist



for:

Jim W. Baxter
Senior Ecologist



Terracon Consultants, Inc. 1815 South Eisenhower Wichita, Kansas 67209
P [316] 262-0171 F [316] 262-6997 Terracon.com

Environmental

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Geotechnical

Materials

Preliminary Waters of the U.S. Assessment

**Weaver Tract
Jackson County, Missouri**

Date: January 21, 2022

Terracon Project No. 01217245



Prepared for:

TriStar Properties
St. Louis, MO 67002

Prepared by:

Terracon Consultants, Inc.
Wichita, Kansas

terracon.com

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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SCOPE OF SERVICES	1
3.0 PRELIMINARY DATA GATHERING AND ANALYSIS	2
Topographic Map	2
Aerial Photographs	2
National Wetland Inventory Map	3
Soil Survey.....	3
4.0 FIELD TECHNIQUES	4
Wetland Evaluation	4
Water Body Evaluation.....	6
5.0 FIELD OBSERVATIONS	7
General Site Description	7
Wetland Observations.....	7
Stream Observations	7
6.0 Additional Stream Data	8
7.0 Summary	9
8.0 CONCLUSIONS	9
9.0 RECOMMENDATIONS	10
10.0 GENERAL COMMENTS	10
 APPENDIX A – FIGURES	
Figure 1.0 – Topographic Map	
Figure 2.0 – Site Map with Sample Locations	
Figure 3.0 – Drainage Basin Map	
 APPENDIX B – NATIONAL WETLAND INVENTORY MAPS	
 APPENDIX C – USDA WEB SOIL SURVEY MAP	
 APPENDIX D – SITE PHOTOGRAPHS	
 APPENDIX E – WETLAND DETERMINATION DATA FORMS	
 APPENDIX F – STREAM CROSS SECTION DATA FORMS	

**Preliminary Waters of the U.S. Assessment
Weaver Tract
Jackson County, Missouri
Terracon Project No. 01217245
January 21, 2022**

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by TriStar Properties (client) to conduct a Preliminary Waters of the U.S. Assessment (PWOTUS) for the Weaver Tract (hereafter referred to as the site). The site is located approximately north of the intersection of Missouri Highway 150 and Missouri Route 291 in Jackson County, Missouri. The site consists of an approximate 54-acre property located in a portion of Section 29, Township 47 North, Range 31. The eastern portion (main tract) is an approximate 42-acre tract of property and the western portion (corridor) is an access corridor approximately 200-feet wide by 2,000-feet long. The site parcel is generally undeveloped property consisting of a mixture of cropland and treed areas. Portions of the United States Geological Survey (USGS) Pleasant Hill, Missouri topographic map (1954 - Photorevised 1975) depicting the approximate corridor location are provided in Figure 1.0 of Appendix A and a recent aerial photograph of the site area is depicted is provided on Figure 2.0 of Appendix A.

The purpose of this PWOTUS is to determine if jurisdictional Waters of the U.S. (WOTUS) are present on the project site and if so, to identify the approximate extent of the onsite WOTUS. Wetland delineations performed for this PWOTUS were conducted in general accordance with the 1987 Corps of Engineers Wetlands Delineation Manual and the U. S. Corps of Engineers Regional Wetland Delineation Manual: Midwest Region, Version 2.0, August 2010 (Midwest Regional Manual). According to U.S. Army Corps of Engineers (USACE) guidelines, wetlands generally have three essential characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. All three characteristics generally must be present for a location to be classified as a wetland. Other potential jurisdictional waters (streams and ponds) were evaluated following the USACE 2007 Jurisdictional Determination Form Instructional Guidebook and other USACE guidance documents. The jurisdictional status of identified onsite surface waters will be assessed based on USACE regulatory guidance in effect at the time of the review.

2.0 SCOPE OF SERVICES

Terracon conducted the following scope of work:

- Reviewed readily available resources including a USGS topographic map, Google Earth Pro aerial photographs, a U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map, and United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) Web Soil Survey data to assist with identifying suspect WOTUS on the site or in the immediate vicinity of the site;

- Mobilized to the site to collect wetland data and make observations of suspect jurisdictional areas;
- Evaluate physical characteristics for other potential jurisdictional surfaces waters; and
- Completed this PWOTUS report that includes site characterization information, delineation rationale, a discussion of applicable data, and recommendations for the site.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Terracon reviewed readily available resources to assist with identifying suspect WOTUS on the site or in the immediate vicinity of the site. Site specific sources and information gathered from the sources are described below

Topographic Map

The Pleasant Hill, Missouri topographic map (1954 - Photorevised 1975) was reviewed to identify site development as well potential streams, wetlands, and other water features on the site. The site is located in a portion of Section 29, Township 47 North, Range 31. Figure 1.0 in Appendix A illustrates the approximate site boundaries on a portion of the topographic map.

The topographic map depicts generally undeveloped property. An intermittent blue-line stream (Drainage 1) crosses the site from the southwest portion of the site to the northeast corner. The elevation ranges across the site is from approximately 950 to 1,020 feet above mean sea level (msl). The general surface gradient on the eastern portion of the site area is to the northeast and on the western portion of the site is to the north.

Drainage from the site generally flows to the north-north east. A segment of Big Creek is located approximately 3,800-feet east of the site and collects the site area drainage from several tributaries including Drainage 1. Big Creek converges with the South Grand River approximately 34 miles southeast of the site.

Aerial Photographs

Terracon reviewed select Google Earth aerial photographs from 1990 to 2021 to identify suspect WOTUS that may be present on the site. Evaluation of these aerials may be limited by a photo's quality and scale. Overall site location is included on a portion of a recent aerial photograph in Appendix A as Figure 2.0. Unless otherwise noted, site features described below were observed on the aerials reviewed for this report.

The site appears to be generally agricultural cropland adjacent northwest and southeast of a stream channel with a wooded riparian area (Drainage 1). Drainage 1 is buffered by a wooded riparian corridor that is approximately 150-feet wide. On the northeast portion of the main tract there is an additional three acres of wooded land. Approximately 450 feet from the western boundary of the site a second channel (Drainage 2) within a wooded riparian corridor crosses the site from north to south. Drainage 1 and Drainage 2 appear to originate on the property adjacent south of the site. Within the tilled cropland area there are several areas that are apparent in some aerials that are a color variation that may be potential areas of saturation. In addition, there are several areas in the tilled cropland that appear to be erosional features and the areas of color variation are also located in areas of apparent erosion.

National Wetland Inventory Map

The USFWS NWI map of the subject site was reviewed to identify potential wetland areas. The USFWS publishes the NWI maps to depict probable wetland areas based on stereoscopic analysis of high-altitude aerial photographs. Table 1.0 below summarizes onsite surface waters mapped during the NWI map review:

Table 1.0 Onsite Wetlands Identified by NWI Map Review			
Wetland Class	Wetland Class Identification	Wetland Description	Site Feature
R4SBC	Riverine Intermittent Streambed Seasonally Flooded	Wetlands and deepwater habitats contained in natural or artificial channels periodically or continuously containing flowing water or connecting two bodies of standing water. Channel contains flowing water only part of the year which has a defined streambed and surface water is present for extended periods during the growing season.	Drainage 1

These wetland class associated with Drainage 1 appear generally consistent with the review of other historic data (topographic maps and aerial images). A copy of the NWI map downloaded from the USFWS website is included in Appendix B.

Soil Survey

The USDA – NRCS Web Soil Survey (WSS) was reviewed to identify soil types at the site. The WSS indicated that the site contains three soil types. The table below is a list of the soils identified on the WSS for the site. A copy of the WSS map is included in Appendix C.

Table 2.0 Soil Map Units

Map unit symbol	Map unit name	Hydric Rating*	Acres in AOI**	Percent of AOI**
10000	Arisburg silt loam, 1 to 5 percent slopes	Predominantly Nonhydic	20.3	38.6
10116	Sampsel silty clay loam, 2 to 5 percent slopes	Nonhydic	31.2	59.2
10117	Sampsel silty clay loam, 5 to 9 percent slopes	Nonhydic	1.2	2.2
Totals for Area of Interest			52.7	100

* Based on NRCS database of hydric soils for Missouri.

**Acreages and percentages are approximations.

Arisburg series soils are grey to dark grey silty clay loams. These soils are generally very deep, somewhat poorly drained soils formed in loess. These soils are generally located in upland areas and on stream terraces. Arisburg soils are very friable.

Sampsel series soils are black to dark brown silty clay loams. These soils are generally deep to very deep, poorly drained, with slow permeability. The formation of Sampsel soils are formed alkaline or calcareous shale. These soils are found on sloping uplands. Sampsel soils are moderately friable.

According to the NRCS “predominantly nonhydic” soils indicate no major component listed for a given map unit is rated as hydric, and at least one minor component is rated hydric. A NRCS “nonhydic” soil rating indicates none of the soil components are rated hydric.

4.0 FIELD TECHNIQUES

Field evaluation methods conducted as part of this PWOTUS generally followed the routine on-site determination method referenced in the 1987 Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement and various other USACE guidelines for assessments of surface waters. Suspect jurisdictional WOTUS were evaluated as described in Sections 4.1 and 4.2 below to evaluate if they may be under the regulatory control of the USACE.

Wetland Evaluation

Vegetation, soils, and hydrology were evaluated as indicated below within suspect wetland areas to determine if wetland characteristics were present. As described in the USACE guidelines, the three wetland indicators must generally be present in suspect areas to classify the wetland as jurisdictional under the USACE. If normal conditions exist and the sampling is performed in the growing season as defined by USACE guidelines, the area is not considered a jurisdictional wetland when there is an absence of one or more of the wetland criteria.

Hydrophytic Vegetation Assessment

The guidelines outlined in Midwest Regional Supplement were used to assess if hydrophytic vegetation is present at suspect wetland areas. Based on the guidelines, visual observations of plant communities were conducted at suspect wetland areas to document the dominant plant species present and the absolute percent cover of these species. The wetland indicator status for plant species observed within suspect areas was checked using the 2020 National Wetland Plant List for the Midwest Region. The National Wetland Plant List (NWPL) categorizes plants into one of five wetland indicator statuses. The five wetland indicator status categories identified for plant species are as follows:

- **Obligate Wetland (OBL)** - occur almost always (estimated probability greater than 99%) under natural conditions in wetlands.
- **Facultative Wetland (FACW)** - usually occur in wetlands (estimated probability 67% - 99%) but occasionally found in non-wetlands.
- **Facultative (FAC)** - equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).
- **Facultative Upland (FACU)** - usually occur in non-wetlands (estimated probability 67% - 99%) but occasionally found in wetlands.
- **Obligate Upland (UPL)** – rarely occur in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The number of dominant species with an indicator status of OBL, FACW, and/or FAC was compared to the total number of dominant species across all strata. As indicated in the Regional Supplement Manual, hydrophytic vegetation is present when more than 50 percent of the dominant species have an indicator status of OBL, FACW, and/or FAC.

If the percentage of dominant species with an indicator status of OBL, FACW, and/or FAC was less than 50 percent, prevalence index and morphological adaptations may have been evaluated to confirm if hydrophytic vegetation was present or absent. It should be noted that evaluation of the vegetation outside of the growing season was performed and identification of species was less than optimum conditions and should be considered approximations.

Hydric Soils Assessment

Subsurface soils were evaluated for hydric conditions at suspect areas. The soils samples that were collected in suspect areas were visually compared to Munsell Soil Color Charts (Munsell, 2009), which aided in the evaluation of hydric soil characteristics. The soil samples were further examined for hydric soil indicators as outlined in Section 3 of the Regional Supplement Manual to determine if hydric soils are present.

Wetland Hydrology Assessment

Visual indicators of wetland hydrology were evaluated as outlined in Midwest Regional Supplement to determine if hydrology is present in suspect wetland areas. Examples of primary wetland hydrology indicators observed included, but were not limited to, surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, iron deposits, inundation visible on aerial imagery, sparsely vegetated concave surface, and water-stained leaves.

Water Body Evaluation

Terracon also made observations of site features to identify potential jurisdictional non-wetland water bodies. Characteristics for suspect surface water bodies or drainage features were recorded. Surface water bodies/drainage features were evaluated based on observation of the following characteristics:

- Flow Characteristics:
 - Perennial: contains water at all times except during extreme drought.
 - Intermittent: carries water a considerable portion of the time, but ceases to flow occasionally or seasonally.
 - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.
- Ordinary High Water Mark (OHWM): The limit line on the shore established by the fluctuation of the water surface. It is shown by such things as a clear line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, the presence of litter and debris or other features influenced by the surrounding area.
- Bank Shape Descriptions:
 - Undercut: banks that overhang the stream channel
 - Steep: bank slope of approximately greater than 30 degrees
 - Moderate: bank slope of approximately 20 to 30 degrees
 - Gentle: bank slope of approximately 20 degrees or less
- Aquatic Habitat Descriptions:
 - Pool: deeper portion of a stream where water flow is slower than in neighboring, shallower portions, smooth surface, and finer substrate.
 - Riffle: shallow area in a stream where water flows swiftly over gravel and rock or other coarse substrate resulting in a rough flow and a turbulent surface.
 - Run: section of a stream with a low or high velocity and with little or no turbulence on the surface of the water.

Other surface waters that may be WOTUS are evaluated on physical characteristics for determination of jurisdictional status.

5.0 FIELD OBSERVATIONS

Terracon personnel conducted a reconnaissance of the site on December 21, 2021 to characterize the existing site conditions and observe for the potential presence of jurisdictional WOTUS. Based on the data gathered in Section 3.0 above and on observations in the field, data was collected in the field from suspect wetland areas and surface water bodies/drainage features. Approximate sample locations of suspect wetland areas and surface water bodies/drainage features are shown on Figure 2.1 in Appendix A. Photographs taken during the reconnaissance are included in Appendix D.

General Site Description

The site property consisted of tilled cropland on most of the acres. At the time of the reconnaissance the site did not appear to be planted to a crop (no emergent crop) and had recently been tilled. Channels consistent with Drainage 1 and Drainage 2 observed during the desktop review were observed and were consistent in location and appearance as what was viewed during the review of the aerial images. Both Drainage 1 and 2 had a wooded riparian buffer on both banks that was generally mixed deciduous trees and shrubs with limited herbaceous undergrowth. A wooded area was also observed on the northeast portion of the site and was similar in vegetative composition to the riparian areas. Multiple erosional features were observed in the tilled cropland areas and in some of these areas the erosional cut is over 4 feet deep and 8 to 10 feet wide (see Photograph 12 in Appendix D).

Wetland Observations

Based on some color variations observed on some of the aerial images during the desktop review, suspect areas of potential wetlands were identified in the tilled portions of the site. At the time of the reconnaissance these areas were observed to heavily eroded and generally with apparent drainage. Casual observation did not identify wetland characteristics in these areas. Soils, vegetation and hydrology were recorded at sample plots WC1, WC2 and WC3 to confirm the absence of wetland characteristics. Hydric soils, hydrophytic vegetation or wetland hydrology were not observed at these sample locations. The sample plot locations are depicted on Figure 2.0 in Appendix A. Wetland data sheets for these sample locations are included in Appendix E.

Stream Observations

Drainage 1 and Drainage 2 were observed to have defined bed and bank systems and OHWMs along their onsite reaches. The drainages have approximately the following lengths of channel within the site boundaries:

- Drainage 1 – 2,020 feet
- Drainage 2 – 220 feet

Cross section observations were recorded at three locations on Drainage 1. Cross sections on Drainage1 included upstream location, central location and downstream location (sample locations CS1, CS2 and CS3 respectively). A single cross section location was recorded for Drainage 2 (sample location CS4). Datasheets with details of the cross-section characteristics for the four sample locations are included in Appendix F.

6.0 ADDITIONAL STREAM DATA

Terracon reviewed data from the USGS StreamStats website/mapper, topographic maps, site observations and USACE information to compile stream data for the two onsite drainages. The following tables summarize stream data collected from the various sources:

Table 3.0 Stream ID: Drainage 1	
Stream Classification	Non-Relative Permanent Water
Distance and connection with navigable waters	Converges with an unnamed tributary of the Big Creek north-northeast of the site. The unnamed tributary flows to the east and converges with Big Creek approximately 0.75 miles east of the site. The South Grand River converges with the Osage River approximate 34 southeast of the convergence with the Big Creek. The Osage River is designated as a Traditional Navigable Water (TNW) downstream of the Bagnell Dam. The Bagnell dam is located approximately 80 miles east of the convergence with the South Grand River. In total approximately 166.25 miles southeast of the project area.
Length of Relevant Reach	4,700 feet
Drainage Area of Relevant Reach	260 acres
Drainage Area upstream of site	107 acres
Estimated Channel Volume of Relevant Reach	84,000 cubic feet
Organic Material in Stream Channel	Limited leaf litter
Natural Channel Obstructions	Some sedimentation and tree roots
Man-made Channel Obstructions	Low water crossings on site and on adjacent property to the northeast.
Floodplain connection	Flow generally appears to be constricted channel within OHWM
Evidence of aquatic organisms	None
Adjacent Wetlands	None onsite

Table 3.1 Stream ID: Drainage 2	
Stream Classification	Non-Relative Permanent Water
Distance and connection with navigable waters	Converges with an unnamed tributary of the Big Creek north-northeast of the site. The unnamed tributary flows to the east and converges with Big Creek approximately 1.4 miles east of the site. Big Creek converges with the South Grand River approximately 51 miles southeast of the site. The South Grand River converges with the Osage River approximate 34 southeast of the convergence with the Big Creek. The Osage River is designated as Traditional Navigable Water (TNW) downstream of the Bagnell Dam. The Bagnell dam is located approximately 80 miles east of the convergence with the South

	Grand River. In total approximately 166.4 miles southeast of the project area.
Length of Relevant Reach	3,922 feet
Drainage Area of Relevant Reach	123 acres
Drainage Area upstream of site	38 acres
Estimated Channel Volume of Relevant Reach	31,000 cubic feet
Organic Material in Stream Channel	Limited leaf litter
Natural Channel Obstructions	Some sedimentation and downed tree limbs.
Man-made Channel Obstructions	Low water crossing and impoundments on golf course
Floodplain connection	Limited flow generally appears to be constricted channel within OHWM
Evidence of aquatic organisms	None
Adjacent Wetlands	None onsite

Figure 3.0 in Appendix A depicts the drainage basins and relevant reach of the two onsite streams based on USGS data from the StreamStats mapper.

7.0 SUMMARY

Terracon collected data of wetland and stream characteristics to assist in determining the extent of jurisdictional waters on the site. The data collected is summarized below:

Wetlands

Three suspect areas (surface color variation in aerial review) were sampled to determine presence of wetland characteristics. There were no wetland characteristics observed in the samples collected at the three locations or obvious indications of saturation at these locations.

Streams

Observations made at various locations on Drainage 1 and Drainage 2 identified defined bed and bank characteristics and OHWMs along the onsite reaches. The streams appear to be ephemeral in flow although Drainage 2 was holding standing water that appears to be a result of an obstruction from a low water crossing downstream on the adjacent property. Drainage 1 and Drainage 2 appear to be headwater tributaries that originate on the adjacent (south) property. The relevant reaches of Drainage 1 and Drainage 2 convey stormwater run-off from the surrounding acreage and flow into other apparent jurisdictional streams.

8.0 CONCLUSIONS

A Preliminary Waters of the U.S. Assessment was conducted for the site which consists of an approximate 54-acre property located in a portion of Section 29, Township 47 North, Range 31. in Jackson County, Missouri. This PWOTUS involved a review of the site utilizing readily available

information (e.g. USGS topographic map, aerial photographs, a USFWS NWI map, USGS data and NRCS Web Soil Survey data), and a site reconnaissance to evaluate and document the site for potential jurisdictional WOTUS. The site reconnaissance was conducted on December 21, 2021.

Terracon did not identify areas that met the USACE criteria of a wetland on the site. Two stream channels (Drainage 1 and Drainage 2) were observed on the site. The two channels exhibited physical characteristics of intermittent/ephemeral streams with defined stream channels and OHWMs. These streams have a connection to TNW through various convergences with other downstream stream channels. Based on the physical characteristics of the two onsite drainages and their connectivity to downstream jurisdictional waters, it is Terracon's opinion that USACE will likely consider these channels jurisdictional.

9.0 RECOMMENDATIONS

Terracon recommends a copy of this PWOTUS be submitted to the USACE for their determination of jurisdictional WOTUS on the site. **Only the USACE can make the final determination on the jurisdictional status of wetlands or other waterbodies.** If the USACE concludes there are jurisdictional WOTUS on the site and proposed activities on the site will impact the USACE approved jurisdictional WOTUS, then the USACE should be consulted to determine if a Section 404 Permit would be required for the project.

This report can be submitted to the USACE by mailing a copy to the following address:

US Army Corps of Engineers
Kansas City Regulatory Office
601 East 12th Street
Kansas City, MO 64106

If desired, Terracon can submit this report to the USACE on behalf of TriStar Properties upon authorization.

10.0 GENERAL COMMENTS

Terracon has performed a PWOTUS in general accordance with Terracon Proposal No. P01217245 dated October 27, 2021 and under guidance from the 1987 Corps of Engineers Wetlands Delineation Manual, the U. S. Corps of Engineers Regional Wetland Delineation Manual: Midwest Region, Version 2.0, August 2010 and other USACE guidance documents. The manuals provide assistance for delineating wetlands based on the three criteria discussed herein and surface waters for physical characteristics. However, the manuals alone may not have provided enough information to document whether or not the three criteria were met. Various

Appendix A Figures

Figure 1.0 – Topographic Map

Figure 2.0 – Site Map with Sample Locations

Figure 3.0 – Drainage Basin Map



Portions of the 1975 Pleasant Hill, Missouri USGS topographic map

— — — — — Approximate Site Boundaries

Project Manager:	JNR	Project No.	01217245
Drawn by:	JNR	Scale:	NTS
Checked by:	JWB	File Name:	01217245
Approved by:	JWB	Date:	12-22-2021

Terracon
 Consulting Engineers & Scientists
 1815 South Eisenhower Wichita, Kansas 67209
 Phone (316) 262 0171 Fax (316) 262 6997

TOPOGRAPHIC MAP
WEAVER TRACT
Jackson County, Missouri

Figure:
1.0

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



— — — — — Approximate Site Boundaries

— — — — — Intermittent Channels

— — — — — Erosional Features

● Stream Cross Section Samples

▲ Wetland Sample Plots

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

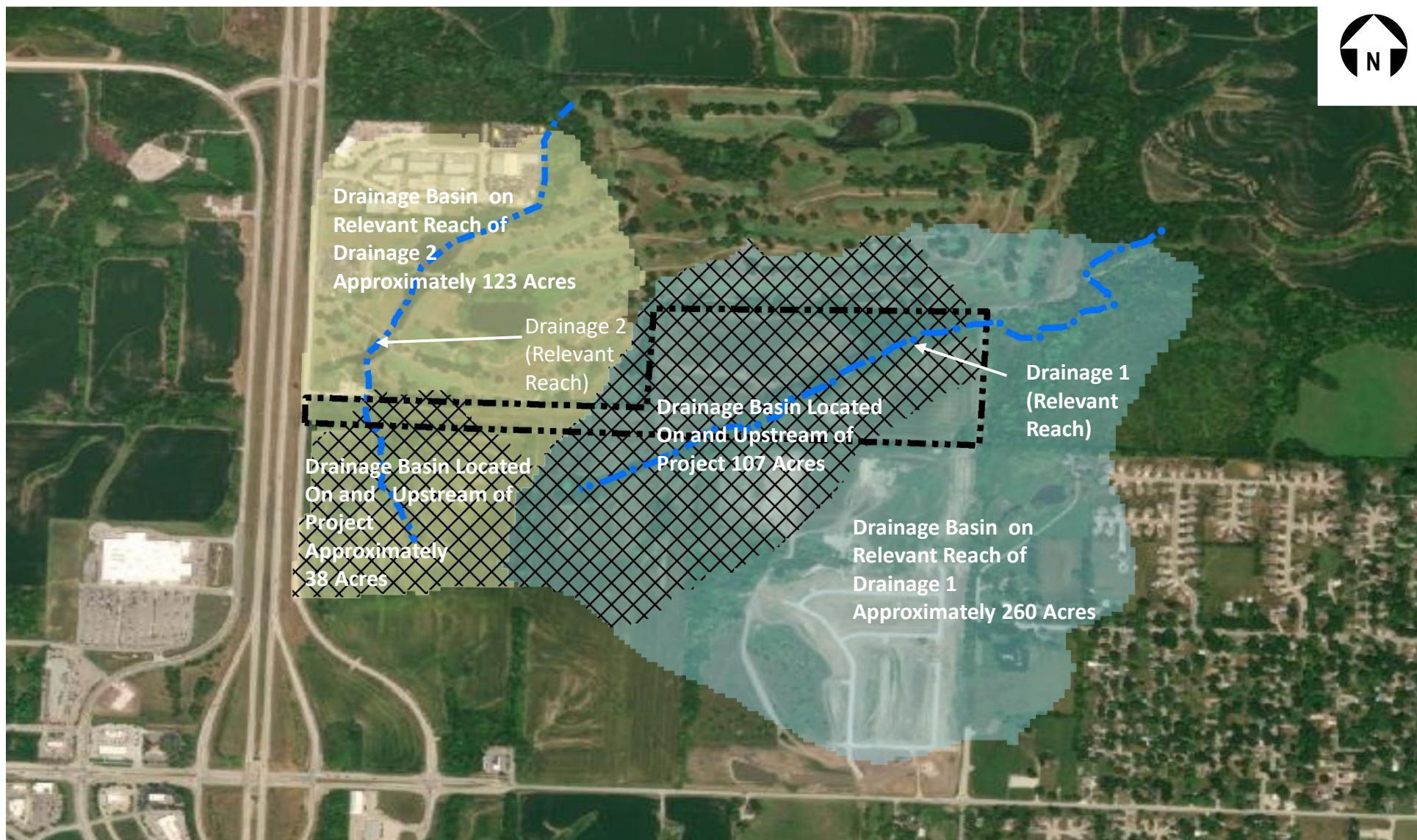
AERIAL PHOTOGRAPHY PROVIDED BY ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

Project Manager:	JNR	Project No.	01217245
Drawn by:	JNR	Scale:	NTS
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Terracon
 Consulting Engineers & Scientists
 1815 South Eisenhower Wichita, Kansas 67209
 Phone (316) 262 0171 Fax (316) 262 6997

SITE MAP WITH SAMPLE LOCATIONS
WEAVER TRACT
Jackson County, Missouri

Figure:
2.0



AREAS WERE OBTAINED THROUGH THE USGS ONLINE STREAMSTATS CALCULATOR.

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

THE DRAINAGE BASIN FOR DRAINAGE 1 IS DEPICTED IN BLUE AND THE DRAINAGE BASIN FOR DRAINAGE 2 IS DEPICTED IN GREEN. THE AREAS THAT ARE CROSS HATCHED DEPICT DRAINAGE BASINS UPSTREAM OF THE POINT WHERE THE DRAINAGES FLOW OFF PROPERTY.

- Approximate Site Boundaries
- Stream Channels

Project Manager:	JNR
Drawn by:	JNR
Checked by:	JWB
Approved by:	JWB

Project No.	01217245
Scale:	NTS
File Name:	01217245
Date:	1-3-2022

Terracon
Consulting Engineers & Scientists

1815 South Eisenhower Wichita, Kansas 67209
Phone (316) 262 0171 Fax (316) 262 6997

DRAINAGE BASIN MAP

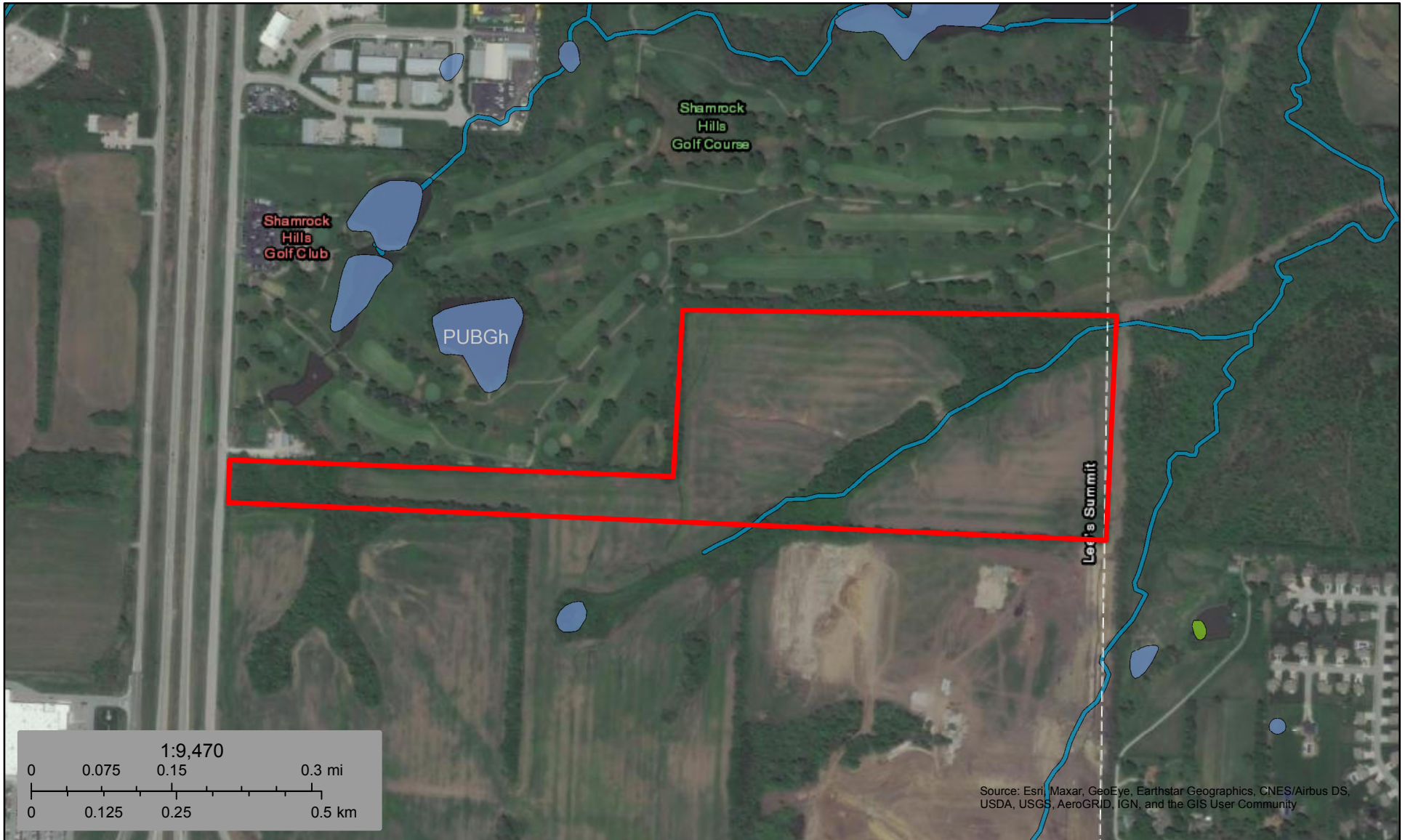
WEAVER TRACT
Jackson County, Missouri

Figure:

3.0

Appendix B

National Wetland Inventory Map



December 20, 2021

Wetlands

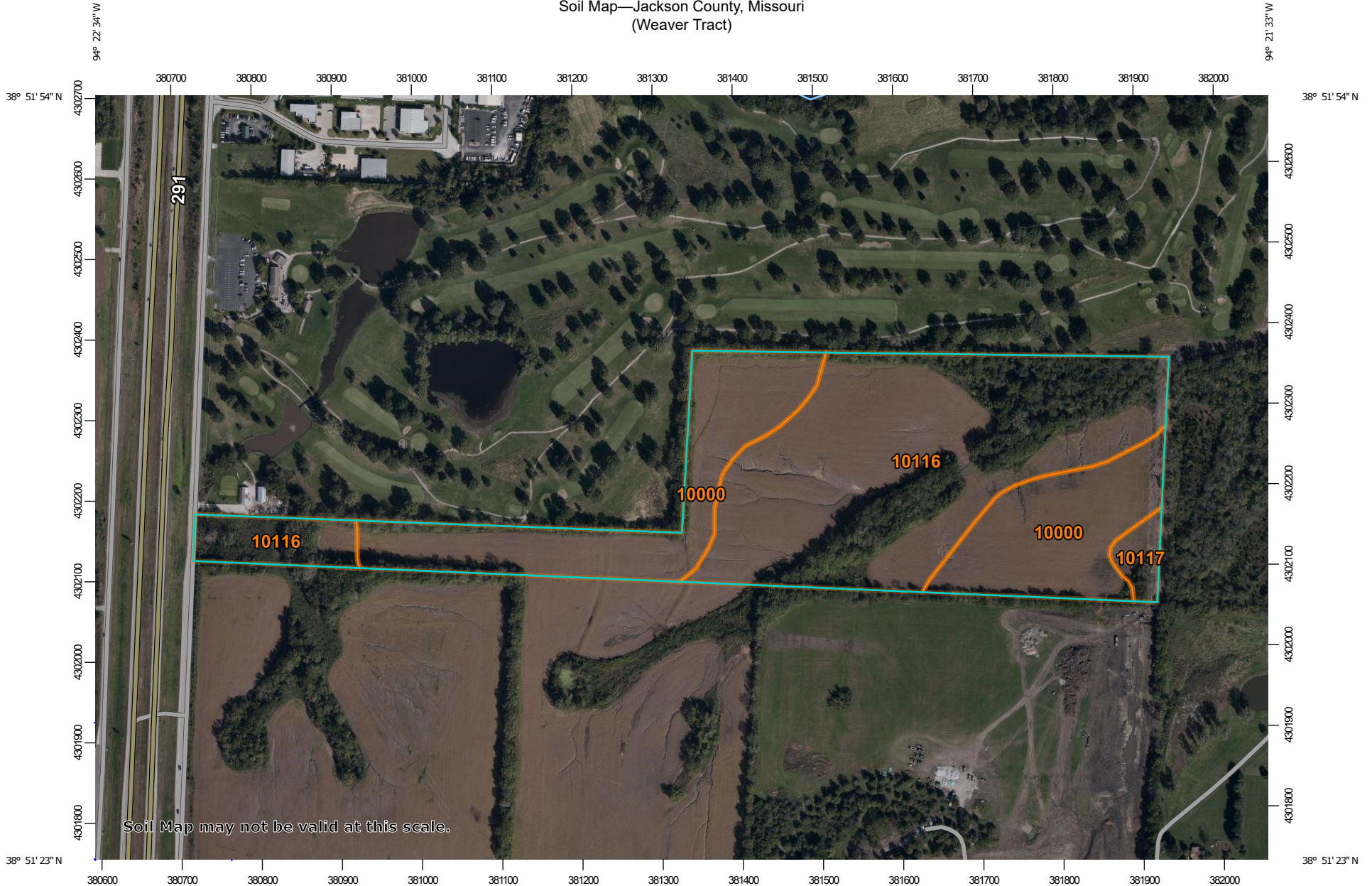
- Estuarine and Marine Deepwater
- Freshwater Emergent Wetland
- Lake
- Freshwater Forested/Shrub Wetland
- Other
- Estuarine and Marine Wetland
- Freshwater Pond
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

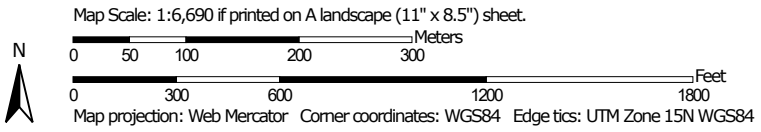
Appendix C

USDA Web Soil Survey Map

Soil Map—Jackson County, Missouri
(Weaver Tract)



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jackson County, Missouri

Survey Area Data: Version 23, Sep 1, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 6, 2019—Nov 16, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10000	Arisburg silt loam, 1 to 5 percent slopes	20.3	38.6%
10116	Sampsel silty clay loam, 2 to 5 percent slopes	31.2	59.2%
10117	Sampsel silty clay loam, 5 to 9 percent slopes	1.2	2.2%
Totals for Area of Interest		52.7	100.0%

Appendix D
Site Photographs



Photo #1 View looking east along western portion of the site property.



Photo #2 View looking east from the northwest portion of the site property.



Photo #3 .View looking north from the central portion of the site at crossing on Drainage 1.



Photo #4 View looking northeast from the southeast portion of the site property.



Photo #5 .View looking upstream near Cross Section CS1 on Drainage 1



Photo #6 View looking downstream near Cross Section CS-2 on Drainage 1.



Photo #7 View looking upstream near Cross Section CS3 on Drainage 1.



Photo #8 View looking downstream near Cross Section CS4 on Drainage 2.



Photo #9 View looking at area where Sample Plot WC1 was collected.



Photo #10 View looking across area where Sample Plot WC1 was collected (near erosion with cedars in back ground).



Photo #11 View looking at area where Sample Plot WC3 was collected.



Photo #12 View of erosional feature on the central portion of the site.

Appendix E
Wetland Determination Data Forms

WETLAND DETERMINATION FORM - Midwest Region

Project/Site: Weaver Tract City/County: Lee's Summit/Jackson Sample Date: 12/21/2021
 Applicant/Owner: Tri-Star State: MO Sample Point: WC1
 Investigator(s): J. Rathgeber Section, Township, Range: Section 29, Township 47 North, Range 31
 Landform (hillslope, terrace, etc.): mild Local relief (concave,convex,none) slope
 Slope (%): <5% Lat: 38.861582° Long: -94.363528° Datum: WGS 84
 Soil Map Unit Name: Sampsel silty clay loam, 2 to 5 percent slopes NWI classification: None
 Are Climatic / Hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks:)
 Are Vegetation No Soil, Yes or Hydrology, No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No Soil, No or Hydrology, No naturally problematic? (If needed, explain any answers in Remarks:)

SUMMARY OF FINDINGS - Attach site map showing sampling prior locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the sampled area within a Wetland? Yes _____ No <u>X</u>
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VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1 _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC _____ (A) Total Number of Dominant Species Across all Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC _____ (A/B)
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____ = Total Cover	
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ X 1 = _____ FACW species _____ X 2 = _____ FAC species _____ X 3 = _____ FACU species _____ X 4 = _____ UPL species _____ X 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____ = Total Cover	
Herb Stratum (Plot size: 5' radius)				Hydrophytic Vegetation Indicators: _____ Dominance Test > 50% _____ Prevalence Index is < 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1 <u>See note below</u> _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
9 _____	_____	_____	_____	
10 _____	_____	_____	_____ = Total Cover	
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
1 _____	_____	_____	_____	
2 _____	_____	_____	_____ = Total Cover	

Remarks: Sample are in historically tilled cropland with surface disturbance of soils to approximately 6 inches from tillage.
Area was recently tilled and it appears from stubble that was previously planted to soy beans which does not have a wetland status.

SOIL

Sampling Point: WC1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	5YR 4/2	100					silty clay loam	

¹Type C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 5cm Mucky Peat or Peat (S3)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³</p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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³Indications of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):
 Type: none encountered
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

<p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Gauge or Well Data (D9)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Tilled cropland

WETLAND DETERMINATION FORM - Midwest Region

Project/Site: Weaver Tract City/County: Lee's Summit/Jackson Sample Date: 12/21/2021
 Applicant/Owner: Tri-Star State: MO Sample Point: WC2
 Investigator(s): J. Rathgeber Section, Township, Range: Section 29, Township 47 North, Range 31
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave,convex,none) none
 Slope (%): 15% Lat: 38.860761° Long: -94.362128° Datum: WGS 84
 Soil Map Unit Name: Arisburg silt loam, 1 to 5 percent slopes NWI classification: None
 Are Climatic / Hydrologic conditions on the site typical for this time of year? Yes X No _____ (if no, explain in Remarks:)
 Are Vegetation No Soil, Yes or Hydrology, No significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No Soil, No or Hydrology, No naturally problematic? (If needed, explain any answers in Remarks:)

SUMMARY OF FINDINGS - Attach site map showing sampling prior locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No <u>X</u> Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the sampled area within a Wetland? Yes _____ No <u>X</u>
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VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1 _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC <u>0</u> (A) Total Number of Dominant Species Across all Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC <u>0%</u> (A/B)
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1 _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> X 1 = <u>0</u> FACW species <u>0</u> X 2 = <u>0</u> FAC species <u>10</u> X 3 = <u>30</u> FACU species <u>60</u> X 4 = <u>240</u> UPL species <u>0</u> X 5 = <u>0</u> Column Totals: <u>70</u> (A) <u>270</u> (B) Prevalence Index = B/A = <u>3.86</u>
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: 5' radius)				
1 <u>Annual ragweed (<i>Ambrosia artemisiifolia</i>)</u>	<u>60%</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: _____ Dominance Test > 50% _____ Prevalence Index is < 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2 <u>Foxtail (<i>Setaria pumila</i>)</u>	<u>10%</u>	<u>No</u>	<u>FAC</u>	
3 <u>Dormant grasses</u>	<u>10%</u>	<u>No</u>	<u>unknown</u>	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
9 _____	_____	_____	_____	
10 _____	_____	_____	_____	
= Total Cover				
Woody Vine Stratum (Plot size: _____)				
1 _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2 _____	_____	_____	_____	
= Total Cover				

Remarks: Sample are in historically tilled cropland with surface disturbance of soils to approximately 6 inches from tillage.

Sample area appears on some aerial photos as a color variation that during some years appears as potential saturation; however, observations in the field indicate this area is heavily eroded and the color variation in aerial images likely reflect the erosion and variations in tillage in avoiding the eroded areas.

SOIL

Sampling Point: WC2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	100					silty clay loam	
6-18	10YR 4/2	100					silty clay loam	

¹Type C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 5cm Mucky Peat or Peat (S3)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³</p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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³Indications of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<p>Restrictive Layer (if present):</p> <p>Type: <u>none encountered</u></p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

<p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Gauge or Well Data (D9)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Tilled cropland with erosional features draining to the north.

WETLAND DETERMINATION FORM - Midwest Region

Project/Site: Weaver Tract City/County: Lee's Summit/Jackson Sample Date: 12/21/2021
 Applicant/Owner: Tri-Star State: MO Sample Point: WC3
 Investigator(s): J. Rathgeber Section, Township, Range: Section 29, Township 47 North, Range 31
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave,convex,none) none
 Slope (%): 10% Lat: 38.859812° Long: -94.361759° Datum: WGS 84
 Soil Map Unit Name: Arisburg silt loam, 1 to 5 percent slopes NWI classification: None
 Are Climatic / Hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks:)
 Are Vegetation No Soil, Yes or Hydrology, No significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No Soil, No or Hydrology, No naturally problematic? (If needed, explain any answers in Remarks:)

SUMMARY OF FINDINGS - Attach site map showing sampling prior locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u> Hydric Soil Present? Yes <u> </u> No <u>X</u> Wetland Hydrology Present? Yes <u> </u> No <u>X</u>	Is the sampled area within a Wetland? Yes <u> </u> No <u>X</u>
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VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1 _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC <u>0</u> (A) Total Number of Dominant Species Across all Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC <u>0%</u> (A/B)
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ X 1 = _____ FACW species _____ X 2 = _____ FAC species _____ X 3 = _____ FACU species _____ X 4 = _____ UPL species _____ X 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: 5' radius)				Hydrophytic Vegetation Indicators: _____ Dominance Test > 50% _____ Prevalence Index is < 3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1 <u>Annual ragweed (Ambrosia artemisiifolia)</u>	<u>60%</u>	<u>Yes</u>	<u>FACU</u>	
2 <u>*Corn (Zea Mays)</u>	<u>15%</u>	<u>No</u>	<u>NI</u>	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
9 _____	_____	_____	_____	
10 _____	_____	_____	_____	
= Total Cover <u>75%</u>				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
= Total Cover				

Remarks: Sample are in historically tilled cropland with surface disturbance of soils to approximately 6 inches from tillage. *There is corn stubble from a former crop in this area. Corn does not have an indicator status (NI = No Indicator).
 Sample area appears on some aerial photos as a color variation that during some years appears as potential saturation; however, observations in the field indicate this area is heavily eroded and the color variation in aerial images likely reflect the erosion and variations in tillage in avoiding the eroded areas.

SOIL

Sampling Point: WC3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8	5YR 3/2	100					silty clay loam	
8-20	5YR 4/2	100					silty clay loam	

¹Type C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1)</p> <p><input type="checkbox"/> 5cm Mucky Peat or Peat (S3)</p>	<p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p>Indicators for Problematic Hydric Soils³</p> <p><input type="checkbox"/> Coast Prairie Redox (A16)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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³Indications of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):
 Type: none encountered
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

<p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p><u>Secondary Indicators (minimum of two required)</u></p> <p><input type="checkbox"/> Water-Stained Leaves (B9)</p> <p><input type="checkbox"/> Aquatic Fauna (B13)</p> <p><input type="checkbox"/> True Aquatic Plants (B14)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Gauge or Well Data (D9)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ <small>(includes capillary fringe)</small></p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Tilled cropland with erosional features draining to the southeast.

Appendix F
Stream Cross Section Data

The following descriptions of the stream cross sections were made by general observations and limited measurements at the time of the site visit. Reported measurements are not a product of a technical survey or detailed measurements of width, depth, etc.

CROSS SECTION ID: CS1
DRAIANGE 1

Coordinates	Lat-Long: 38.861878°, -94.360987°
Flow Characteristics	Intermittent
Ordinary High Water Mark (OHWM)	Yes
Channel Width Across OHWM	14'
Channel Width Across Bottom	5'
Bank Height at OHWM	2'
Approximate Bank Slope (left)	35°
Approximate Bank Slope (right)	35°
Bank Substrate	Silty clay
Bed Substrate	Silty clay over rock
Riparian Corridor	Wooded



Photograph of CS1 looking upstream.

CROSS SECTION ID: CS2
DRAINAGE 1

Coordinates	Lat-Long: 38.861077°, -94.363322°
Flow Characteristics	Intermittent
Ordinary High Water Mark (OHWM)	Yes
Channel Width Across OHWM	12'
Channel Width Across Bottom	5'
Bank Height	18"
Approximate Bank Slope (left)	40°
Approximate Bank Slope (right)	40°
Bank Substrate	Silty clay
Bed Substrate	Silty clay
Riparian Corridor	Wooded



Photograph of CS2 looking downstream.

CROSS SECTION ID: CS3
DRAINAGE 1

Coordinates	Lat-Long: 38.859746°, -94.365613°
Flow Characteristics	Intermittent
Ordinary High Water Mark (OHWM)	Yes
Channel Width Across OHWM	16'
Channel Width Across Bottom	4'
Bank Height at OHWM	3"
Approximate Bank Slope (left)	45°
Approximate Bank Slope (right)	45°
Bank Substrate	Silty clay
Bed Substrate	Silty clay
Riparian Corridor	Wooded



Photograph of CS3 looking downstream.

CROSS SECTION ID: CS4
DRAINAGE 2

Coordinates	Lat-Long: 38.859961°, -94.373192°
Flow Characteristics	Ephemeral
Ordinary High Water Mark (OHWM)	Yes
Channel Width Across OHWM	12'
Channel Width Across Bottom	4'
Bank Height at OHWM	2'
Approximate Bank Slope (left)	60°
Approximate Bank Slope (right)	35°
Bank Substrate	Silty clay
Bed Substrate	Silty clay
Riparian Corridor	Wooded



Photograph of CS4 looking downstream.

Preliminary Waters of the U.S. Assessment

Weaver Tract ■ Jackson County, MO

January 21, 2022 ■ Terracon Project No.01217245



physical properties or other visual signs used to evaluate whether the three wetland identification criteria areas were satisfied may not be straightforward, especially in disturbed or problem areas. The manuals guide the user on how to visually estimate certain indicators such as the percentage of area covered by dominant species for the entire community. Terracon did not attempt to identify every possible plant species and did not classify soil type by laboratory methods. Due to seasonal changes, Terracon cannot guarantee the area to exhibit or not to exhibit wetland characteristics at all times of the year. The limitations of this wetland delineation should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. Use or reliance by any other party is prohibited without the written authorization from the client and Terracon. Other entities drawing from the results of this assessment should recognize the limitations of the assessment methods used. No warranties, either express or implied, are intended or made.