

ITEM #: 37  
DATE: 04-14-20

**COUNCIL ACTION FORM**

**SUBJECT: PRELIMINARY PLAT FOR CORNER OF SE 16<sup>TH</sup> STREET AND S DAYTON AVENUE AT 1499 S DAYTON AVENUE.**

**BACKGROUND:**

Wheelock Corner Subdivision is a proposed 16.47-acre development on the northwest corner of the intersection at SE 16<sup>th</sup> Street and S Dayton Avenue. See a location map in Attachment A. The property owner, DW Holdings, LLC., requests approval of a preliminary plat creating 6 lots. There are six developable parcels and proposed public – right-way, Isaac Newton Drive, that will provide access throughout the development. (Lot Layout-Attachment B)

All six lots will have access off of the newly extended Isaac Newton Drive. Direct access to SE 16<sup>th</sup> Street and S Dayton Avenue will be prohibited. Shared access to the Theisen’s will also remain.

The entire site is located within the floodplain and are subject to requirements of Chapter 9 of the Ames Municipal Code. At the western end of the site, a portion of Lots 2 and 3 (3.66 Acres) lie within the Floodway. No development is proposed in this area; however, storm water management features are located in this area. Development within the Fringe area is required to have a building’s finished floor three feet above the base flood elevation. Grading and fill for the individual lots will occur at the time of their development. Any disturbance in the Floodway is required to meet a no-rise standard for the base flood elevation.

The floodway area of Lots 2 and 3 are located in the Environmentally Sensitive Overlay District, O-E. This site is the first project to request approval of grading or improvements that lie within the O-E District. The standards of Ames *Municipal Code*, Section 29.1103, intend to protect designated natural resource areas by using an environmental assessment (Attachment F) and requiring mitigation of significant issues related to identified environmental conditions. In this case, consideration of potential flooding, wetlands, riparian habitat, and woodland impacts. Based upon the biological assessment and review of Chapter 9 Flood Plain regulations, the proposed storm water detention facilities do not cause and significant adverse impact on the identified resources. Note that in the site exhibits of Attachment F, the study area includes lands to the west of the proposed subdivision.

Water, sanitary, and storm sewer are all proposed within the subdivision. Five-foot sidewalks are proposed on both sides of Isaac Newton Drive and along S Dayton Avenue. A shared use path already exists along SE 16<sup>th</sup> Street. Future street improvements are planned for S Dayton and SE 16<sup>th</sup> Street that are not related to the proposed subdivision.

**Planning and Zoning Commission:** At its meeting on March 18, 2020, the Ames Planning and Zoning Commission voted 4-0 to recommend approval of the preliminary plat to the City Council **with a condition** that the applicant clarify the preservation of the oak woodlands that were identified in the inventory. The applicant was not in attendance at the meeting.

After Commission's discussion of the Environmental Assessment Report, a **recommendation for approval was made with the condition that the applicant clarify the preservation of the oak woodlands** that were identified in the Environmental Assessment Report. Staff has responded to this recommendation of the Planning and Zoning Commission by adding a condition for creation of a conservation easement related to tree preservation prior to approval of the final plat.

**ALTERNATIVES:**

1. The City Council can approve the Preliminary Plat for Wheelock Corner Subdivision, subject to approval of Flood Plain Permit by the City of Ames and other affected agencies and with the condition that the applicant provide a Conservation Easement prior to final plat approval related to preservation of Oak woodlands that were identified in the inventory.
2. The City Council can approve the Preliminary Plat for Wheelock Corner Subdivision, subject to approval of Flood Plain Permit by the City of Ames and other affected agencies.
3. The City Council can deny the Preliminary Plat for Wheelock Corner Subdivision, by finding that the Preliminary Plat does not meet the requirements of Section 23.302(3)(b) or Section 23.603 of the Ames Municipal Code and by setting forth its reasons to disprove or modify the proposed preliminary plat as required by Section 23.302(4) of the Ames Municipal Code.
4. The City Council can defer action on this request to the next regular meeting and refer it back to City staff and/or the applicant for additional information.

**CITY MANAGER'S RECOMMENDED ACTION:**

This preliminary plat proposal includes six developable commercial lots. The preliminary plat identifies all the necessary infrastructure to serve the proposed commercial lots, reserves the Floodway from any development, and dedicates a portion of right-of-way for sidewalk extension to the City's trail system. The Environmental Assessment Report shows no adverse impact to environmentally sensitive areas, e.g. wetlands and established woodlands, in the floodway due to the design and location of the improvements as well as no rise in the base flood elevation as the result of the construction of the storm water detention basin. However, an additional step of providing a Conservation Easement that prohibits the removal of healthy and mature trees provides additional support towards preserving the identified oak woodland resources consistent with the intent of the Overlay.

City staff has reviewed the proposed plat and find it conforms to the requirements of the Ames Subdivision regulations in meeting infrastructure requirements with appropriately designed lots for commercial use. Prior to final plat approval the applicant will seek additional permits for flood plain improvements and each site development permit will also require individual flood plain permits.

Therefore, it is the recommendation of the City Manager that the City Council support Alternative #1 thereby approving the Preliminary Plat for Wheelock Corner Subdivision, subject to approval of Flood Plain Permit by the City of Ames and other affected agencies and with the condition that the applicant provide a Conservation Easement prior to final plat approval related to preservation of Oak woodlands that were identified in the inventory.

## Addendum

### **General Site Info**

The site is currently an unplatted parcel of about 16.4 acres. The site is zoned Highway Oriented Commercial, HOC and has the Southeast Gateway Overlay District designation. The site is relatively flat although, approximately 3.6 acres, is located within the Environmental Sustainability Overlay. Attachment F includes the required Environmental Assessment Report.

The site has commercial development on the north, east, and south sides and all are zoned Highway Oriented Commercial (HOC). The Southeast Gateway Overlay designations exists on the properties to the east and south. The adjacent land to the west is located within the Floodplain and undeveloped at this time. See Attachment C.

### **Lots**

The proposed preliminary plat will yield six developable lots. The lot sizes range from .75 acres to 4.70 acres. The approximate western half of Lots 2 and 3 will not be developable since they are located within the Environmentally Sensitive Overlay District. Note that by having this area as part of the individual lots rather than as a separate outlot, it allows for calculation of development standards for floor area ratio to occur across the gross lot area, therefore allowing for more development potential in relation to floor area ratio limitations.

Notably, Theisen's has an existing driveway access through the site. This existing access is incorporated into area of proposed Lot 1.

Along the southern boundary of the proposed plat, there is a 0.45 acre parcel owned by Story County. This parcel will remain as is in ownership and size. This parcel was purchased by Story County with federal funds under a flood mitigation buyout program with the condition that no changes can be made to it or construction upon it. The applicant will landscape this lot and includes drainage swale through this area with acceptance by Story County. The lot will function as "front yard" area along SE 16<sup>th</sup> Street.

### **Streets**

A new street, Isaac Newton Drive will run through the site, providing a connection between SE 16<sup>th</sup> Street and S Dayton Avenue. It will be designed as a Commercial Collector street, with a 66-foot right-of-way, with a paving width of 31 feet. Access to all lots will be off Isaac Newton Drive. Direct access to SE 16<sup>th</sup> and S Dayton Avenue will be prohibited. The City is in the process of planning for street improvements at the intersection of S Dayton Avenue and SE 16<sup>th</sup> Street. These improvements are unrelated to the proposed development but spacing and right-of-way needs have been coordinated with the proposed plat layout.

### **Water**

An 8-inch public water main will be extended along the Isaac Newton Drive right-of-way from an existing off-site main on the south side of SE 16<sup>th</sup> Street. This public water main

will be providing service to future proposed hydrants and extensions of the main will serve each commercial lot.

### ***Sewer***

An 8-inch public sanitary sewer line running through it currently. It will be extended along the Isaac Newton Drive right-of-way from an existing main that is already extended from S Dayton Avenue. Manholes will be installed and public sanitary sewer mains will provide service all lots.

### ***Sidewalks and Trails***

A five-foot sidewalk is required and will be installed along the frontage of Isaac Newton Drive on both sides of the right-of-way. A five-foot sidewalk will be installed along S Dayton Avenue. An eight-foot shared use path already exists along SE 16<sup>th</sup> Street. A sidewalk ramp already exists to allow pedestrians to cross S Dayton Avenue. There is not a ramp proposed to provide a crossing to the south side of SE 16<sup>th</sup> Street due to a lack of receiving sidewalk facility. Future improvements at that that intersection will address appropriate and safe pedestrian crossing requirements.

A private drive already exists from the Theisen's site south to connect with S Dayton Avenue. This private drive will remain and connect with the new street, Isaac Newton Drive. A sidewalk crossing will be installed to the north of this intersection to allow pedestrians to safely cross this frontage drive, since no changes are proposed to its current design.

### ***Storm Water Management***

Public Works staff has reviewed the storm water management plan and finds that it meets the capacity requirements of the City's ordinances. Further storm water information will be needed prior to approval of a Minor Site Development Plan for each lot. For the purposes of this preliminary plat, the proposed grading and detention plans can be approved. A majority of the storm water runoff will be directed to a detention basin in the western half of Lot 3. The northern half of Lots 1 and 2 will drain to the north to an existing off-site basin.

### ***Flood Plain***

The western portion of Lots 2 and 3, approximately 3.6 acres is located within the floodway. (See Attachment D). The rest of the site is located within the Floodway Fringe. Development within the Floodway Fringe is allowed provided that buildings are elevated or flood proofed to 3 feet above the Base Flood Elevation (BFE or the water surface level of a flood having a 1 percent chance of occurring in any given year). Anything within the Floodway is severely restricted and usually requires explicit approval by the City Council through a Major Site Development Plan or a Preliminary Plat. In this case, no development is proposed in the Floodway, other than the storm water facility. The proposed grading is subject to the requirements of Flood Plain Zoning ordinance (Ames Municipal Code Chapter 9) and the Environmental Overlay standard of Chapter 29.

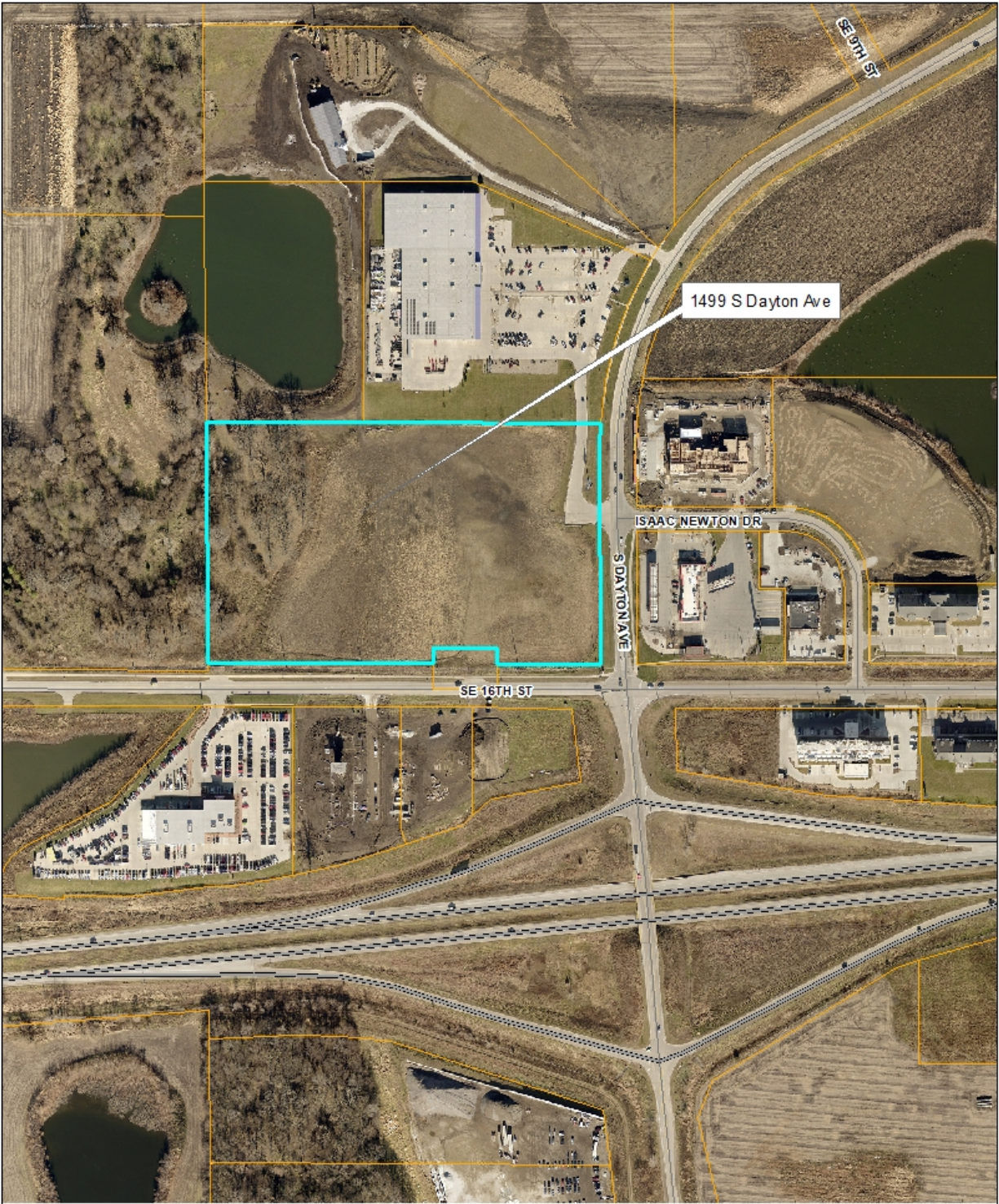
### ***Environmental Assessment Report***

An Environmental Assessment Report is required as part of the Preliminary Plat approval as the storm water detention basin for the development contained within the preliminary plat is to be located in the O-E District, which qualifies as a development use in the regulatory floodway (Chapter 9 of the Ames Municipal Code). This report (Attachment F) is a supplement to the City's flood plain regulations and must show that the project will protect designated natural resources areas through a natural resource inventory and mitigate any negative effects on the floodway, or negative effects on the development as a result of locating improvements in the designated area.

The Environmental Assessment report was completed by Impact 7G on behalf of the developer. A portion of the study area is not part of this preliminary plat. It is on the property to the west and is under the same ownership. Approximately, 1.4 acres of the study area included is an Oak woodland area forested. This forested area is on the western half of Lot 2 and does extend south onto Lot 3. As part of the review of the report and discussion at the Planning and Zoning Commission meeting, it was stressed that this wooded area should be preserved. The applicant did move the extent of the grading outside the dripline of the trees. It is located within the floodway. Most work in a floodway would need a Floodplain permit. However, there is no specific preservation method for the forested area laid out. Staff assumes that the intent is to preserve the oak woodland area but nothing in the Floodway regulations prevents or requires review prior to tree removal. Requiring a Conservation Preservation Easement would be needed that included language prohibiting the removal of trees. Staff feels that a Conservation Preservation Easement would be the most direct way to protect the forested area.

The report indicates that the proposed storm water detention basin will not disturb any wetlands or any impact on woodland areas. The applicant made adjustments to the original design in response to the findings of the assessment. The grading plans also show the elevation in the floodway will have no rise as a result of the project and any excess soil or dirt will be removed from the floodway thereby not causing a shift in elevation from one location to another. The construction of the detention basin can be seen to not have a negative impact on water flow within the stream channel of the Skunk River as any flooding would be accommodated within the storm water detention basin capacity, which currently does not exist.

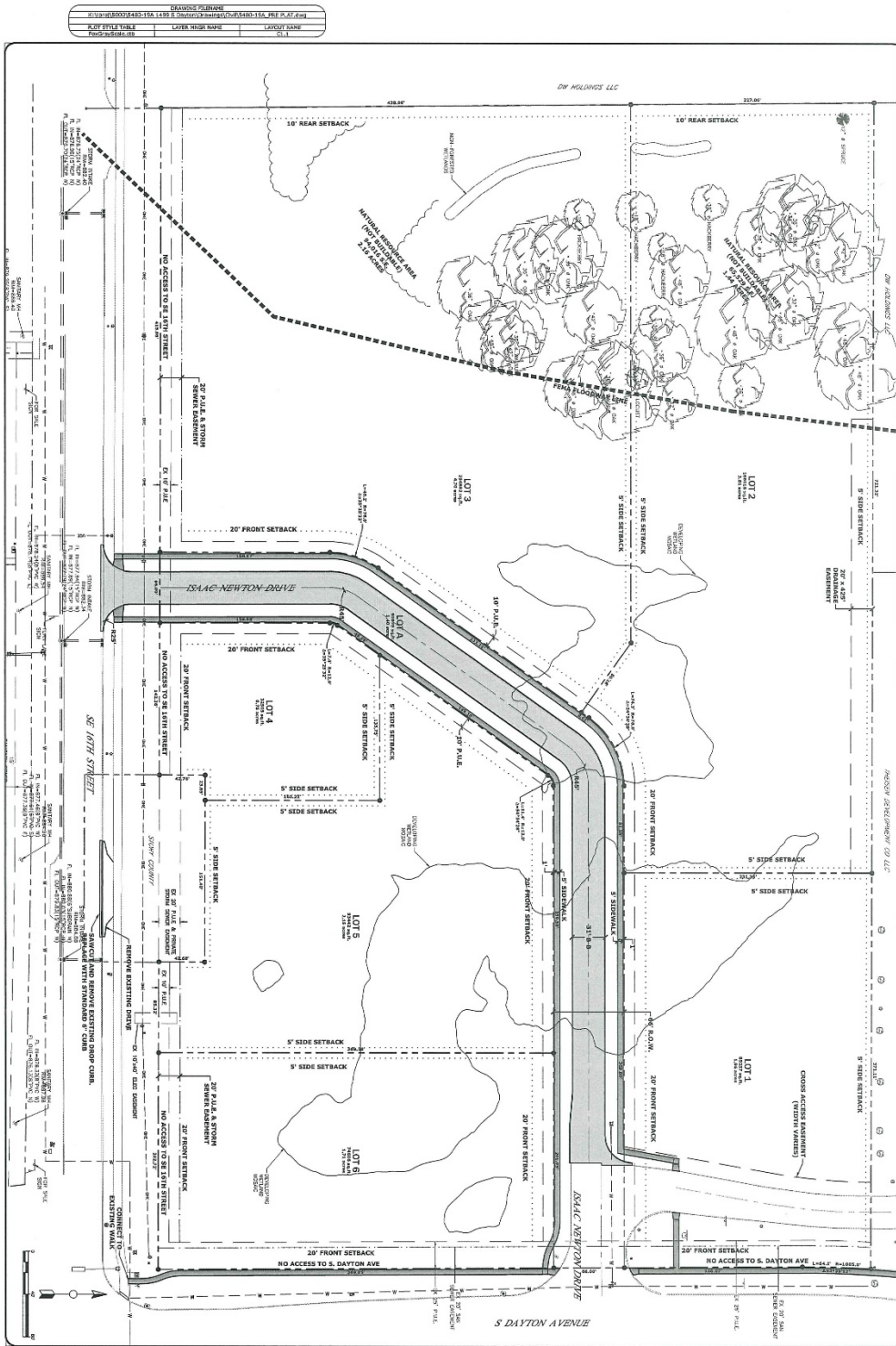
ATTACHMENT A: LOCATION MAP



Wheelock Corner Subdivision  
Preliminary Plat



ATTACHMENT B: PRELIMINARY PLAT LOT LAYOUT

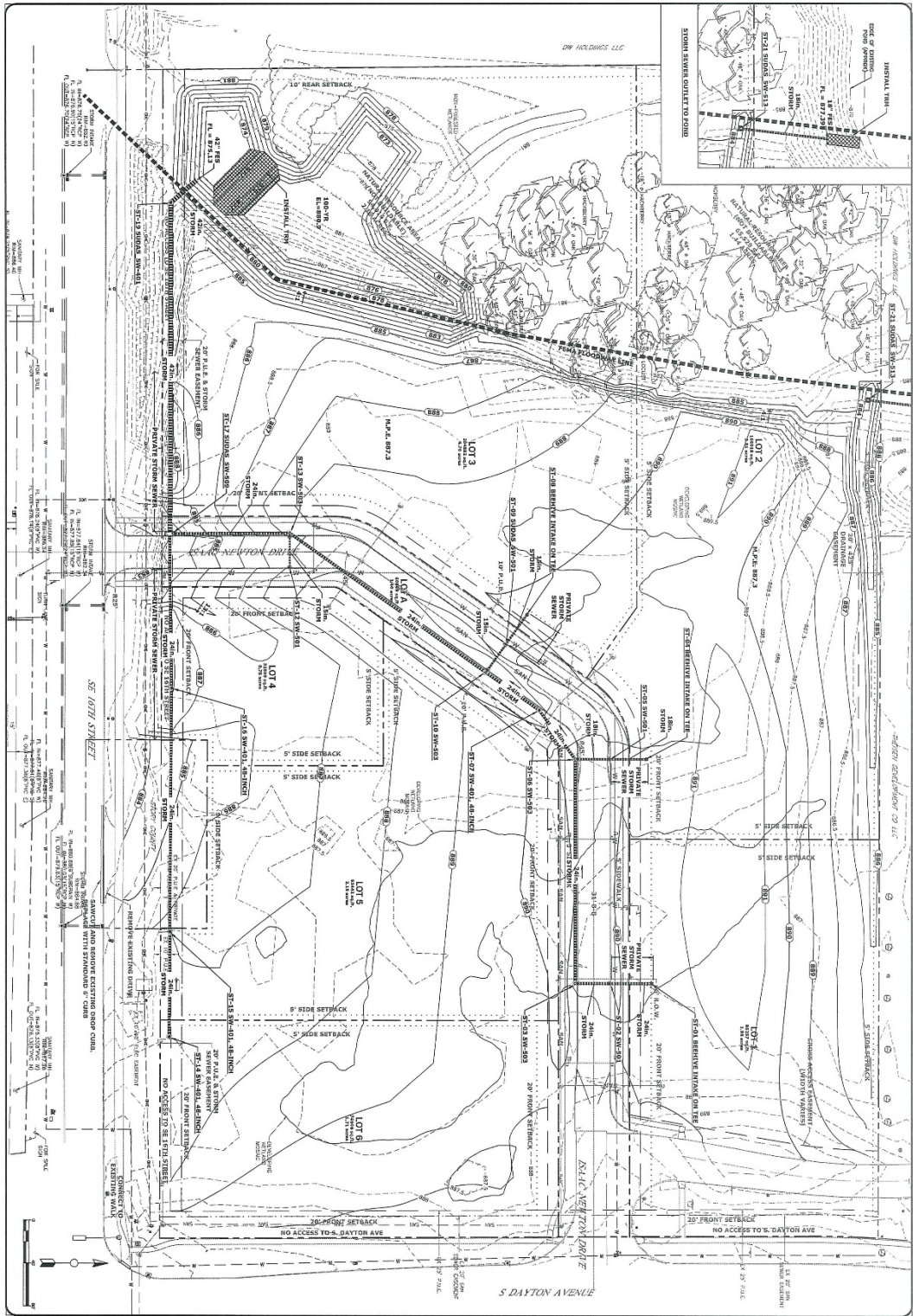


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PROJECT NAME	LOT LAYOUT	CITY/STATE
PROJECT NUMBER	4480-136	2010

<p>DATE: 03/05/09</p> <p>BY: SIK</p> <p>CHECKED: JMK</p> <p>DESIGNED: JMK</p> <p>DECISION: 03/05/09</p> <p>LAST UPDATE: 03/04/09</p>	<table border="0"> <tr> <td style="vertical-align: top;"> <p>LOT LAYOUT &amp; DIMENSIONING PLAN WHEELOCK CORNER SUBDIVISION</p> <p>1499 S. DAYTON AVE AMES, IA</p> </td> <td style="text-align: center; vertical-align: middle;"> </td> <td style="vertical-align: top;"> <p>FOX Engineering Associates, Inc. 414 South 17th Street, Suite 107 Ames, Iowa 50010 Phone: (515) 233-0000 Fax: (515) 233-0100</p> </td> </tr> </table>	<p>LOT LAYOUT &amp; DIMENSIONING PLAN WHEELOCK CORNER SUBDIVISION</p> <p>1499 S. DAYTON AVE AMES, IA</p>		<p>FOX Engineering Associates, Inc. 414 South 17th Street, Suite 107 Ames, Iowa 50010 Phone: (515) 233-0000 Fax: (515) 233-0100</p>	<p>C1.1</p>
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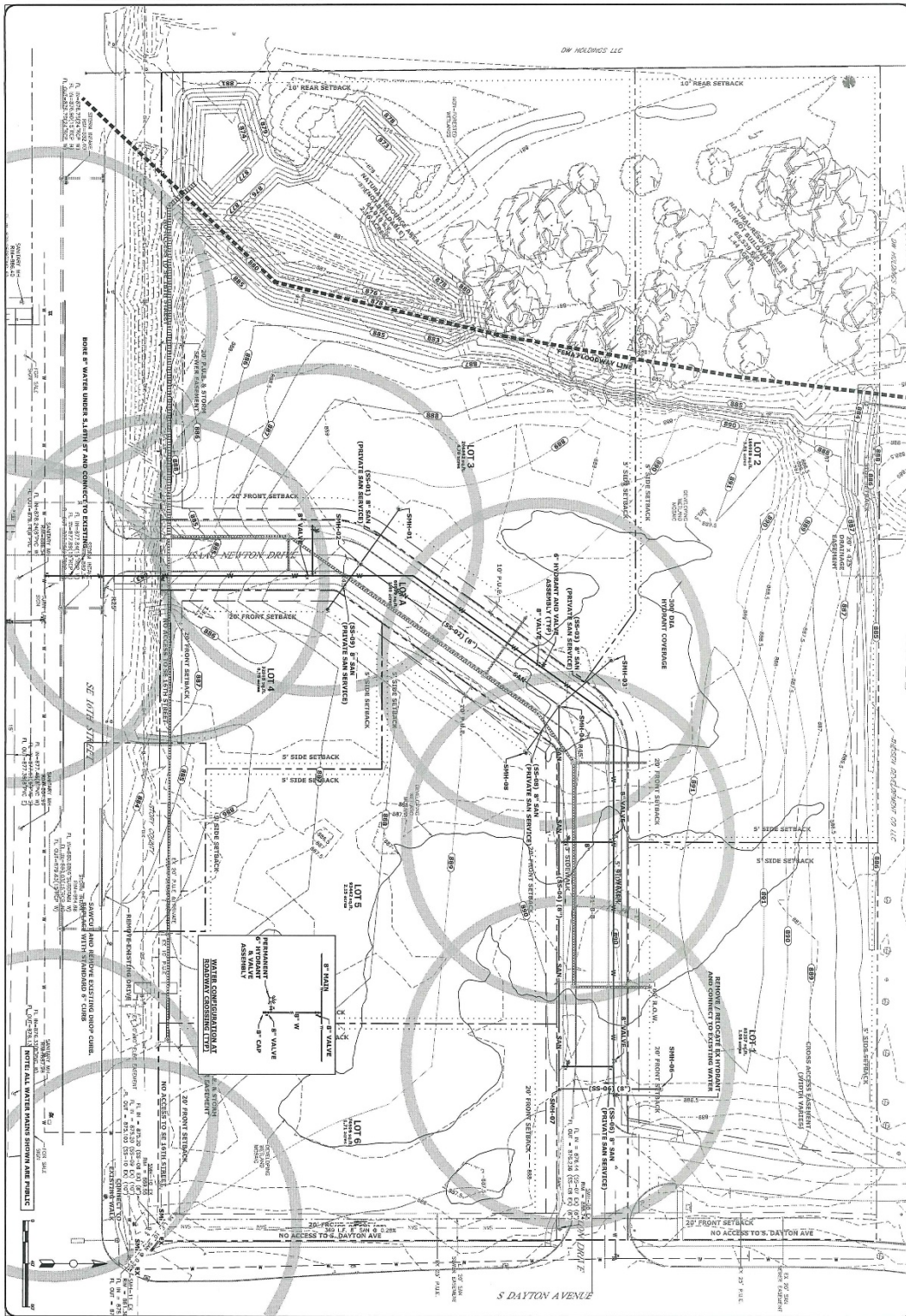


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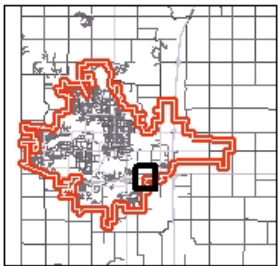
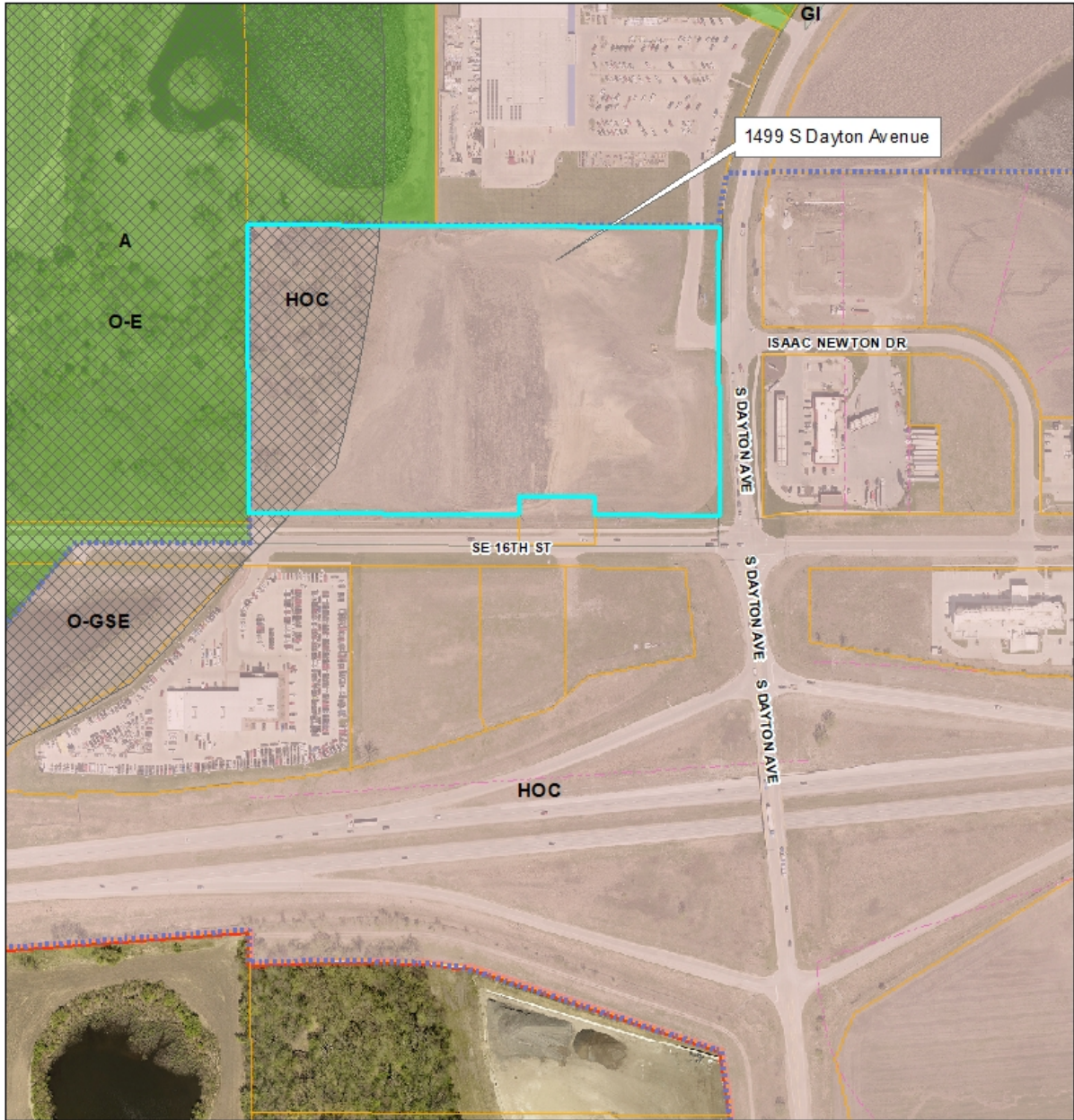
<b>GRADING &amp; STORM SEWER PLAN</b> WHEELLOCK CORNER SUBDIVISION 1499 S. DAYTON AVE AMES, IA		FOX Engineering Associates, Inc. 414 South 17th Street, Suite 107 Ames, Iowa 50010 Phone: (515) 233-0300 Fax: (515) 233-0100	DATE	REVISION	BY	DATE
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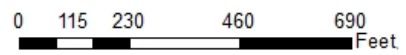


<b>C3.1</b>	<b>SANITARY SEWER &amp; WATER MAIN LAYOUT</b> WHEELBOCK CURVED SUBDIVISION 1499 S. DAYTON AVE AMES, IA		FOX Engineering Associates, Inc. 414 South 17th Street, Suite 107 Ames, Iowa 50010 Phone: (515) 233-0000 FAX: (515) 233-0103	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISION</th> <th>BY</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>12/17/19</td> <td>15 PER THE COMPLY DATED 12/17/19</td> <td>HEBBER</td> <td>8/4</td> </tr> <tr> <td>12/17/19</td> <td>16 PER THE COMPLY DATED 12/17/19</td> <td>DRAWN</td> <td>8/4</td> </tr> <tr> <td>12/17/19</td> <td>17 PER THE COMPLY DATED 12/17/19</td> <td>CHECKED</td> <td>8/4</td> </tr> <tr> <td>12/17/19</td> <td>18 PER THE COMPLY DATED 12/17/19</td> <td>CHECKED</td> <td>8/4</td> </tr> </tbody> </table>	DATE	REVISION	BY	DATE	12/17/19	15 PER THE COMPLY DATED 12/17/19	HEBBER	8/4	12/17/19	16 PER THE COMPLY DATED 12/17/19	DRAWN	8/4	12/17/19	17 PER THE COMPLY DATED 12/17/19	CHECKED	8/4	12/17/19	18 PER THE COMPLY DATED 12/17/19	CHECKED	8/4
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# ATTACHMENT C: ZONING



**Location Map  
1499 S Dayton Avenue**



**ATTACHMENT D: FLOOD PLAIN**



**Wheelock Corner Subdivision  
1499 S Dayton Avenue**

## ATTACHMENT E: APPLICABLE SUBDIVISION LAW

The laws applicable to this Preliminary Plat Subdivision include, but are not limited to, the following: (verbatim language is shown in *italics*, other references are paraphrased):

Code of Iowa Chapter 354, Section 8 requires that the governing body shall determine whether the subdivision conforms to its Land Use Policy Plan.

Ames Municipal Code Chapter 23, Subdivisions, Division I, outlines the general provisions for subdivisions within the City limits and within two miles of the City limits of Ames.

Ames Municipal Code Section 23.302(5):

- (5) *City Council Review of Preliminary Plat: All proposed subdivision plats shall be submitted to the City Council for review and approval in accordance with these Regulations. The City Council shall examine the Preliminary Plat, any comments, recommendations or reports examined or made by the Planning and Zoning Commission, and such other information as it deems necessary and reasonable to consider.*

Ames Municipal Code Section 23.302(6):

- (6) *City Council Action on Preliminary Plat:*
- a. *Based upon such examination, the City Council shall determine whether the Preliminary Plat conforms to relevant and applicable design and improvement standards in these Regulations, to other City ordinances and standards, to the City's Land Use Policy Plan and to the City's other duly adopted plans. In particular, the City Council shall determine whether the subdivision conforms to minimum levels of service standards set forth in the Land Use Policy Plan for public infrastructure and shall give due consideration to the possible burden of the proposed subdivision on public improvements in determining whether to require the installation of additional public improvements as a condition for approval.*
  - b. *Following such examination and within 30 days of the referral of the Preliminary Plat and report of recommendations to the City Council by the Planning and Zoning Commission, the City Council shall approve, approve subject to conditions, or disapprove the Preliminary Plat. The City Council shall set forth its reasons for disapproving any Preliminary Plat or for conditioning its approval of any Preliminary Plat in its official records and shall provide a written copy of such reasons to the developer.*

Ames Municipal Code Chapter 23, Subdivisions, Division IV, establishes requirements for public improvements and contains design standards.

**ATTACHMENT F: ENVIRONMENTAL ASSESSMENT REPORT**

3/9/2020

City of Ames, Iowa



## MEMO: Sec. 291103 "O-E" Written Inventory, Wheelock Corner Subdivision

To Whom it Concerns:

On behalf of Fox Engineering, Impact7G is providing the following assessment of the potential impacts to Environmentally Sensitive areas, as defined in 29.1103 "O-E" Environmentally Sensitive Area Overlay of the Ames City Zoning Code, associated with the Wheelock Development, located in Ames, Iowa.

### Environmentally Sensitive Areas Not Present

The following Environmentally Sensitive Area types are not present, based on sources provided.

- **Parks and Open Space Areas**
- **Aquifer Protection Areas**
- **Prairie<sup>1</sup>**
  - Impact 7G reviewed vegetation present throughout the project areas. No significant assemblages of native grass species are present, per Norris, 1995.
- **Streams<sup>2</sup>**
  - Impact 7G conducted onsite wetland and waters of the U.S. identification throughout the project areas. No stream areas are present, per Norris, 1995.
- **Special Resources<sup>3</sup>**

### Environmentally Sensitive Areas Present

Any Environmentally Sensitive Area types identified within the parcel or development vicinity, and thus with the potential to be impacted for the above development, are listed below with status and comment.

#### Green-ways

- No Impact; resources avoided.
  - An area designated as Green-way<sup>4</sup> is located on the western edge of the parcel. No development is currently proposed within several hundred feet of the Green-way.

#### Floodway & Flood Plains

- Impact to be permitted; State permit required.
  - Current design calls for excavation and removal of soil from the existing grade and has been positioned on the preliminary platting to avoid all wetland and woodland resources. Activities within the floodway & floodplain will be coordinated through Iowa Department of Natural Resources (DNR) Floodplains Department. Only excavation will occur within Floodplain designated areas. No activity will commence in Floodplain or Floodway areas prior to issuance of DNR Floodplain permits.

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<sup>1</sup> Norris, 1995, A natural area inventory of Ames, Iowa, Iowa State University

<sup>2</sup> Norris, 1995, A natural area inventory of Ames, Iowa, Iowa State University

<sup>3</sup> Norris, 1995, A natural area inventory of Ames, Iowa, Iowa State University

<sup>4</sup> Ames Landuse Policy Plan and Ames Urban Fringe, ArcGIS online Map Viewer, accessed 3/9/2020:  
[http://amesgisweb.city.ames.ia.us/arcgis/rest/services/Ames\\_Zoning/Ames\\_LUPP\\_AUF/MapServer](http://amesgisweb.city.ames.ia.us/arcgis/rest/services/Ames_Zoning/Ames_LUPP_AUF/MapServer)

**Designated Natural Resource Areas**, as defined in *A natural area inventory of Ames, Iowa*.<sup>5</sup>

- **Wetland:** No impact; resources avoided
  - Delineated wetlands<sup>6</sup> will not be impacted by project activities as all design plans entirely avoid wetland areas.
  - There are several wet or wetland-like areas (marked as developing wetland mosaic on preliminary platting maps) that are likely the result of soil compaction due to the operation of construction and farming equipment. These areas are likely to be found as non-jurisdictional by the United States Army Corps of Engineers (USACE)– resulting in no impact to wetlands pending a determination by the USACE.
- **Woodland:** No impact; resources avoided.
  - Woodlands<sup>7</sup> present within the project vicinity will not be impacted by development activities. No trees in woodland areas will be removed. Grading and equipment operation will occur outside the drip line of woodland canopies to the greatest extent possible to prevent incidental damage to the trees' roots.

In summary, the planned Wheelock Corner Subdivision will have no impacts to wetlands, no removal of woodland trees, and no negative impacts to the FEMA regulatory floodway of the South Skunk River, once permitted. No other potentially designated Environmentally Sensitive Areas are present.



Chant Eicke, Senior Project Manager  
Impact7G, Inc.

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<sup>5</sup> Norris, 1995, *A natural area inventory of Ames, Iowa*, Iowa State University

<sup>6</sup> Impact7G, 2020, *Natural Areas Inventory Report*, provided or available upon request.

<sup>7</sup> Impact7G, 2020, *Natural Areas Inventory Report*, provided or available upon request.



# Natural Resources Inventory



Wheelock Development Environmental Services

Prepared for:

FOX Engineering Associates, Inc.  
414 South 17th Street, Suite 107  
Ames, Iowa 50010

Prepared by:



Impact7G, Inc.  
310 Second St.  
Coralville, Iowa 52241  
Project #: FoxEng-001

October 3, 2019  
Revision: 1/8/2020

**RECEIVED**

FEB 20 2020

CITY OF AMES IA  
DEPT. OF PLANNING AND HOUSING

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# 1.0 Executive Summary

## 1.1 Purpose & Need

Impact7G, (I7G) was contracted by FOX Engineering & Associates, Inc. to complete a wetland delineation investigation and natural resources inventory for the proposed Wheelock Development, per City of Ames environmental regulations. The intent of this investigation and report is to document existing site conditions, at the time of investigation, as may be of consequence to any potential city, state, or federal regulatory compliance needs.

## 1.2 Location

Street Address: 1499 South Dayton Ave  
Ames, Iowa 50010

Township: 83N

Range: 24W

Section: 12

Quarter: SW & SE

See Figure C for Location Map.

## 1.3 Summary Findings

Impact7G delineated 0.29 acres of non-forested wetland and identified farmed areas of developing wetland mosaic within the project boundary.

Other environmentally sensitive natural resources present within the investigation area include several large native oak trees that provide elevated habitat and ecological value.

# 2.0 Methodology

For the purposes of the natural resource inventory, a field evaluation was conducted whereby all areas within the project boundary were walked and photographed to identify areas of sensitive resources, elevated diversity, remnant, or other habitat indicators.

## 2.1 Delineation of Wetlands

Field analysis was completed using the routine onsite determination method defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE, 2010). Delineation data points and wetland boundaries were recorded across the site and associated shapefiles are available upon request.

## 2.2 Delineation of Streams & Tributaries

For the purposes of this report, streams & tributaries are characterized by having both a defined bed and bank, and an ordinary high water mark (OHWM).

## 2.3 Ditches

Any areas identified as ditches within the project area were specifically designed and are maintained to promote roadway or other drainage. Ditches exhibiting wetland characteristics (hydrophytic vegetation,

hydric soils, or wetland hydrology), that were constructed in upland areas are not identified as wetlands or other waters of the U.S. For the purposes of this report, ditches or portions of ditches meeting wetland characteristics that were likely constructed in pre-existing wetlands and/or intersect existing wetlands, or other waters of the U.S., are identified as wetlands. Furthermore, ditches are distinguished herein from streams or tributaries if they lack a defined bed and bank, ordinary high water mark, and perennial flow.

### 3.0 Discussion of Findings

Wetland delineation fieldwork was completed on 9/23/2019, by:

Will Downey, Certified Wetland Delineator

Tyler Dursky, Certified Wetland Delineator

#### 3.1 Current Conditions

The eastern half of the investigation area consists of row-crop agriculture, in soybeans at the time of delineation. Aerial imagery dating back to 2005 indicates frequent soil disturbance, intensive row-crop agriculture, and grading activities within the eastern, currently agricultural, area.

In the central portion of the investigation area, just to the west of the agricultural field, remnant oak woodland is present that has persisted since prior to the 1930s. See Figure A: Natura Resource Map. These remnant oaks provide elevated habitat and ecological value. In the central-to-western portions of the investigation area, the tree and shrub species present are generally common-to-opportunistic and weedy species with the exception of a few isolated and scattered oaks. Generally, the trees and shrubs consist of cottonwood (*Populus deltoides*), mulberry (*Morus alba*), silver maple (*Acer saccharinum*) and box-elder (*Acer negundo*). Evidence of any remnant savanna or tall grass prairie herbaceous species was absent throughout the investigation area with vegetation dominated by common and non-native grasses and annuals.

The western half of the project area is an upper river terrace of the South Skunk River, which contains an old stream meander channel which no longer conveys water, likely due to past alterations of the upstream watershed. This old channel is mapped as intermittent stream on USGS Topographic Maps (Figure D) but currently has no defined bed or bank, and no indicators of an OHWM.

The Palmer Hydrologic Drought Index for the week of the wetland delineation indicates wetter than normal conditions (moderately moist) for the region. According to the Iowa Environmental Mesonet data available through Iowa State University, Ames Iowa had received approximately 0.93 inches of total rainfall in the seven days preceding field work. Within the investigation area most wetland boundaries were delineated based on geomorphology and landscape position. Soils were also readily distinguishable between upland and wetland areas.

National Wetland Inventory (NWI) mapping indicates a PEM1A mapped wetland that roughly corresponds to the existing dry stream channel (Figure E). This NWI mapped wetland is not representative of data observed in the field, as much of the old stream channel contains insufficient hydrology indicators or non-hydric soils which do not meet the necessary wetland criteria. The western half of the investigation area has been mapped as regulatory floodway of the South Skunk River according to NFHL mapping (Figure F). SSURGO soils data indicates that the western half of the investigation area is predominantly mapped as 40% hydric soils and the eastern half of the investigation area is mapped as equal parts 5% and 100% hydric soils.

#### 3.2 Wetland Determinations

Within the agricultural field, areas of compaction and ponding water appear to have formed in various locations over recent years and are developing a diffuse mosaic of wetland features. These areas can generally be described as closed-to-concave areas with perched surface water or saturation and evidence of extended

ponding during typical wet periods. These areas appear to be developing a mosaic of wetland characteristics as a result of extensive and repeated disturbance and compaction during the past 5 years, with a history of disturbance dating back over 15 years. At the time of the delineation, soils within these areas were saturated from the soil surface to approximately 5-6 inches of depth, resulting in significantly stunted or entirely non-viable soybean plantings. Due to the stunted and stressed nature of upland plants, vegetation evaluated along the edge of the wetland area still met wetland indicator "Problematic Hydrophytic Vegetation" (Fox-01). Adjacent upland areas generally had no soil saturation in the upper 12" and few signs of crop stress (Fox-02). Typically, U.S. Army Corps of Engineers (USACE) does not take jurisdiction over areas with wetland features that were accidentally created due to recent grading or other activities resulting in temporary surface water impoundment, however, if left undisturbed, these areas will likely continue to develop into emergent wetland areas that may result in jurisdictional wetlands.

Non forested wetlands within the investigation area generally consist of closed depressions within an old stream channel. The channel no longer conveys water but does provide a catchment for rainwater and a flood basin during high flow events of the South Skunk River. Most wetland areas within this channel are linear in shape and were generally dominated by sedge species, violets, and mild water-pepper (Fox-06). Upland areas within this old channel have hydrophytic vegetation but lack redox features within the upper 12" of the soil and do not meet the FAC-Neutral Test for vegetation (Fox-03, Fox-05). Adjacent uplands appear to be better drained due to extent of sand within the soil profile.

One non forested wetland is located at the southwest corner of the investigation area (Fox-04, 0.11 acres) where the roadway intersects the former stream channel. This area is dominated by Kentucky blue grass and late goldenrod, with a few white mulberry, silver maple, and cottonwood trees/saplings. Surface water flows into the wetland area via the old stream channel and a roadside ditch. This ditch has hydrophytic vegetation but lacks enough wetland hydrology indicators to meet necessary wetland criteria. The wetland is drained by a road culvert which outflows on the south side of SE 16<sup>th</sup> Street.

Table 1: Delineated Wetland Areas

Wetland Type	Total Acres
Non Forested Wetland	0.29
Developing Wetland Mosaic	2.25

See also:  
 Figure B: Wetland Delineation Map  
 Appendix A: Photos  
 Appendix B: Wetland Delineation Datasheets

## 4.0 Regulatory Review

The U.S. Army Corps of Engineers regulates the discharge of dredged or fill materials into all regulated waters of the United States (WATERS), including wetlands and streams, in Section 404 of the Clean Water Act (USAEWES Environmental Laboratory, 1987). The process of Jurisdictional Determination, conducted by the U.S. Army Corps of Engineers, may determine that all or part of the WATERS delineated for this project are considered regulated. Based on the information provided, it appears this project may involve filling part of WATERS and therefore may require permits from the Corps of Engineers and the Iowa Department of Natural Resources prior to beginning work.

The Corps of Engineers normally requires acquisition of a Section 404 permit and mitigation when any WATERS impact is proposed. In general, there are two types of permits as described below.

Nationwide Permits: A nationwide permit is generally the simplest form of the 404 permits. Wetland loss of 1/2 acre or less is typically permitted under a Nationwide Permit. Stream impacts of 300 linear feet or less are typically permitted under a Nationwide Permit. This permit often requires preconstruction notification to the Corps for impacts to as little as 1/10 of an acre or less. Generally, this permit takes 30 to 45 days to obtain.

Individual Permits: An individual permit requires a full public interest review. A Public Notice is distributed to all known interested persons. After evaluating comments and information received, a final decision on the application is made. The permit decision is generally based on the outcome of a public interest balancing process in which the benefits of the project are balanced against the detriments. A permit will be granted unless the proposal is found to be contrary to the public interest. Processing time usually takes 60 to 120 days unless a public hearing is required or an environmental statement must be prepared.

During the permitting process for either type of permit, the Corps of Engineers requires that applicants first establish that impacts to WATERS cannot be avoided. Permit applicants then must demonstrate that reasonable efforts to minimize impacts to WATERS have been made in the design and construction plans. Having taken the first two steps, applicants then must provide a plan for compensation, usually through mitigation, for unavoidable impacts. In general, our experience has been that the Corps requires in-kind mitigation be done at a minimum ratio of one (1) to one (1) but may require a compensation ratio of 1.5:1 to 2.5:1 (i.e., two and one-half acres of constructed wetland for every one acre of impact) in some circumstances.

## 5.0 Conclusions

Impact7G delineated 0.29 acres of non-forested wetland. Farmed areas with recently developing wetland characteristics due to compaction and recent disturbance were also identified, however, these areas are typically not considered jurisdictional by U.S. Army Corps of Engineers (USACE) but appropriate coordination is advised.

If proposed activities will impact these areas, consultation with USACE and the Iowa Department of Natural resources is strongly recommended

Other environmentally sensitive natural resources present within the investigation area include several large native oak trees that provide elevated habitat and ecological value.

*This report has been prepared for the exclusive use of our client, and for specific application to the project discussed. To the best of my knowledge the above statements, attachments, including those labeled and identified as enclosures, and all conclusions are true, accurate, and based on current environmental principles and science. No warranties, either expressed or implied, are intended or made. In the event that changes in the nature, design or location of the project as shown are planned, the conclusions and recommendations contained on this form shall not be considered valid unless Impact7G, Inc. reviews the changes and either verifies or modifies the conclusions of this form in writing. This report has been prepared by:*



Prepared by: Will Downey, Environmental Specialist

1/9/2020

Date

Reviewed by: Chant Eicke, PWS

## References

- Eggers, Steve D. and Reed, Donald M. 1997. Wetland Plants and Plant Communities of Minnesota & Wisconsin. U.S. Army Corps of Engineers, St. Paul District.
- Hurt, G.W. (ed.), 2006. Field Indicators of Hydric Soils in the United States, Version 6.0. USDA, NRCS, Baltimore, MD.
- "Iowa Environmental Mesonet." *Iowa State University*, 2 October 2019, <https://mesonet.agron.iastate.edu/>
- USAEWES Environmental Laboratory, 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1.
- U. S. Army Corps of Engineers (USACE), 2005. Subject: Ordinary High Water Mark Identification. Regulatory Guidance Letter No. 05-05. Date: 12/7/2005.
- U. S. Army Corps of Engineers (USACE), 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region. ERDC/EL TR-08-27. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- "Weekly Palmer Drought Indices." *National Oceanic and Atmospheric Administration*, US Department of Commerce, 3 October 2019, <https://www.ncdc.noaa.gov/temp-and-precip/drought/weekly-palmers/>

## GIS & Mapping Layer Sources

All field data shown on maps for wetlands, waterways, bat tree habitat, and data points field-collected and post-processed using ArcGIS by Impact7G Inc., 2019.

Aerial photography provided by Iowa GEODATA (ArcGIS Server)

Source: <https://geodata.iowa.gov/>

Base-mapping data provided by Iowa GEODATA, including:

- 2-foot contour lines
- USGS 24,000 Topographic Mapping
- National Wetland Inventory (NWI) mapping
- Source: <https://geodata.iowa.gov/>

Digital SSURGO Soils Data provided by USDA data gateway.

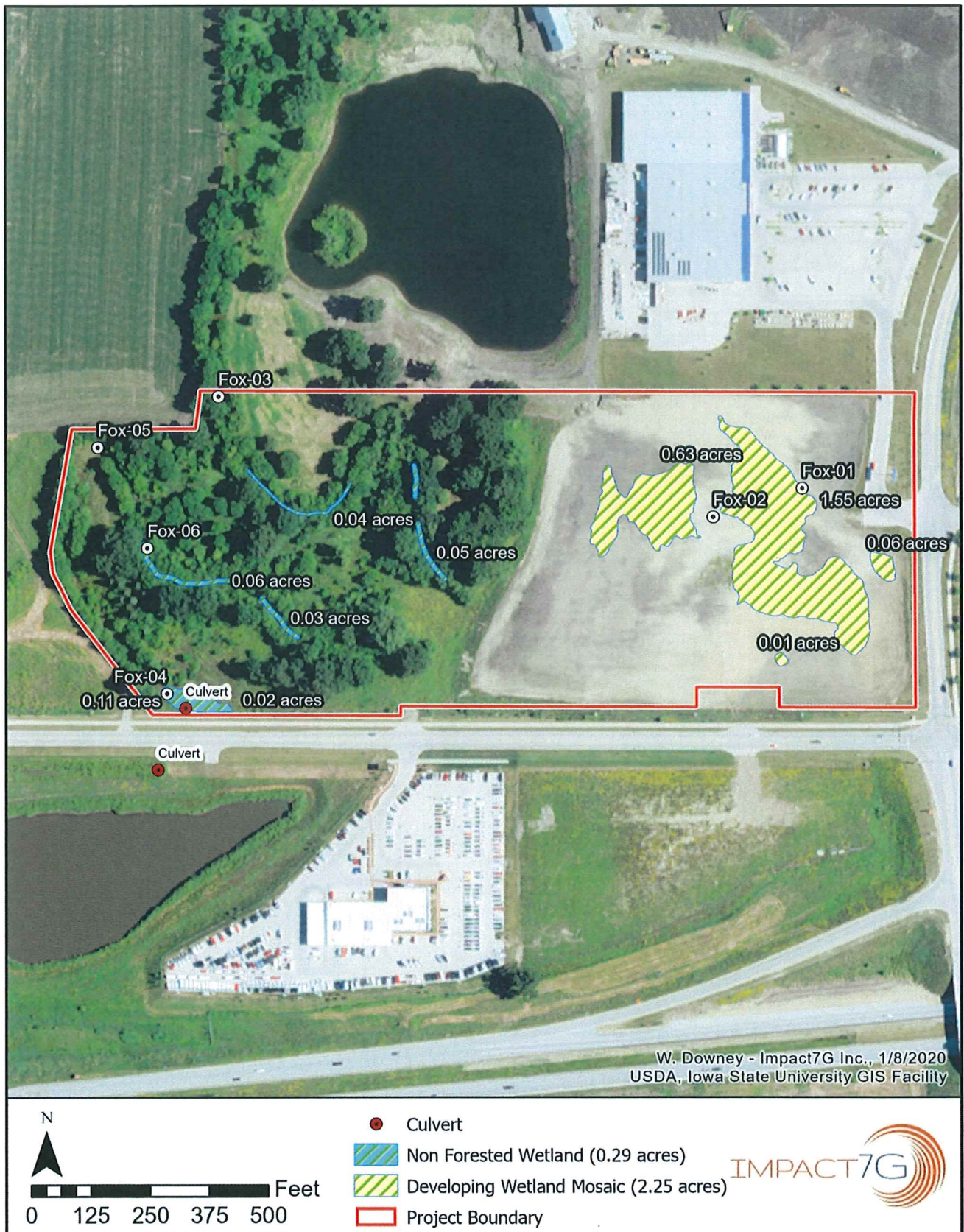
Source: <http://datagateway.nrcs.usda.gov/>

# Figure A: Natural Resource Map





# Figure B: Wetland Delineation Map



**Figure C: Location Map**

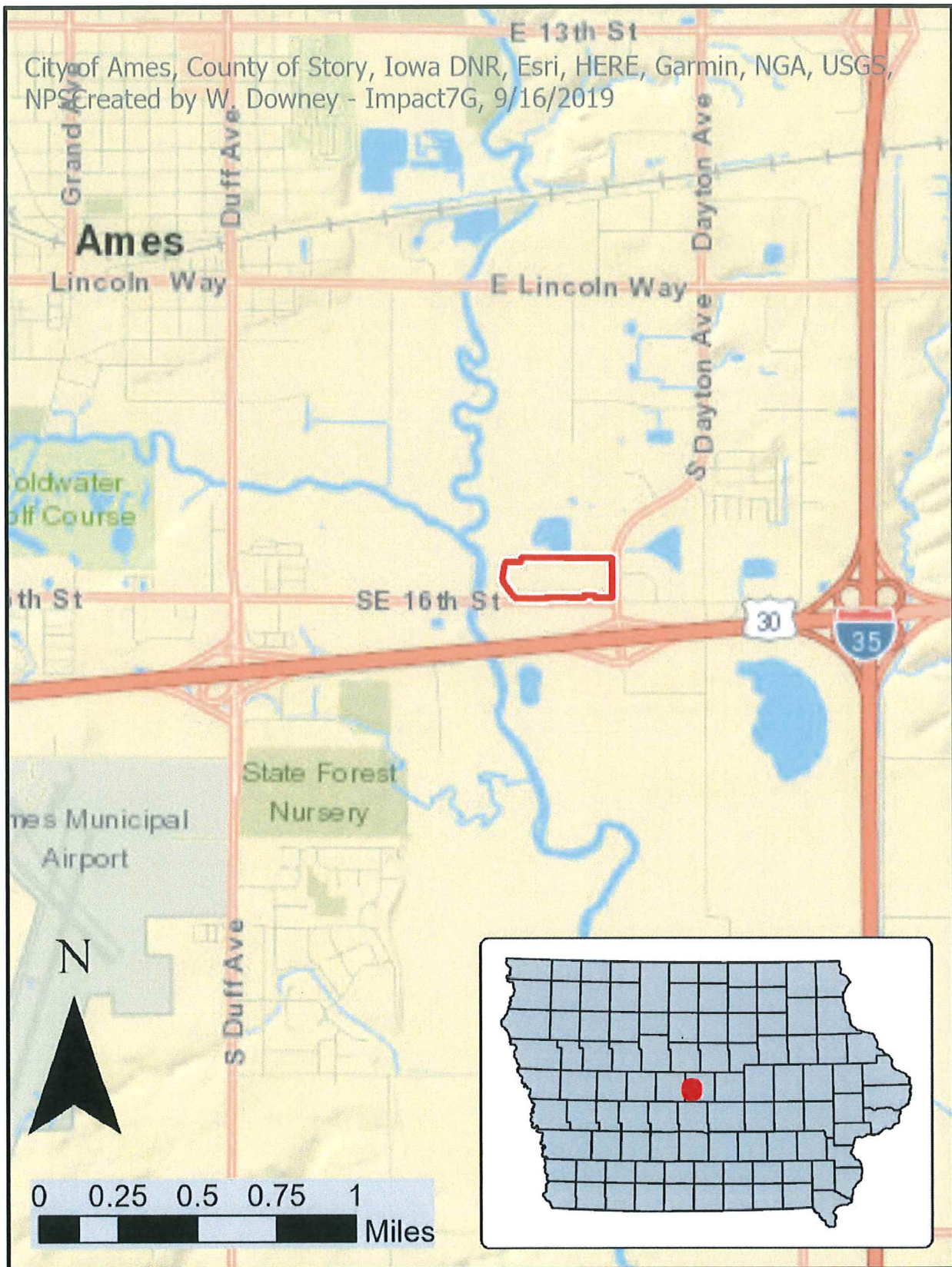
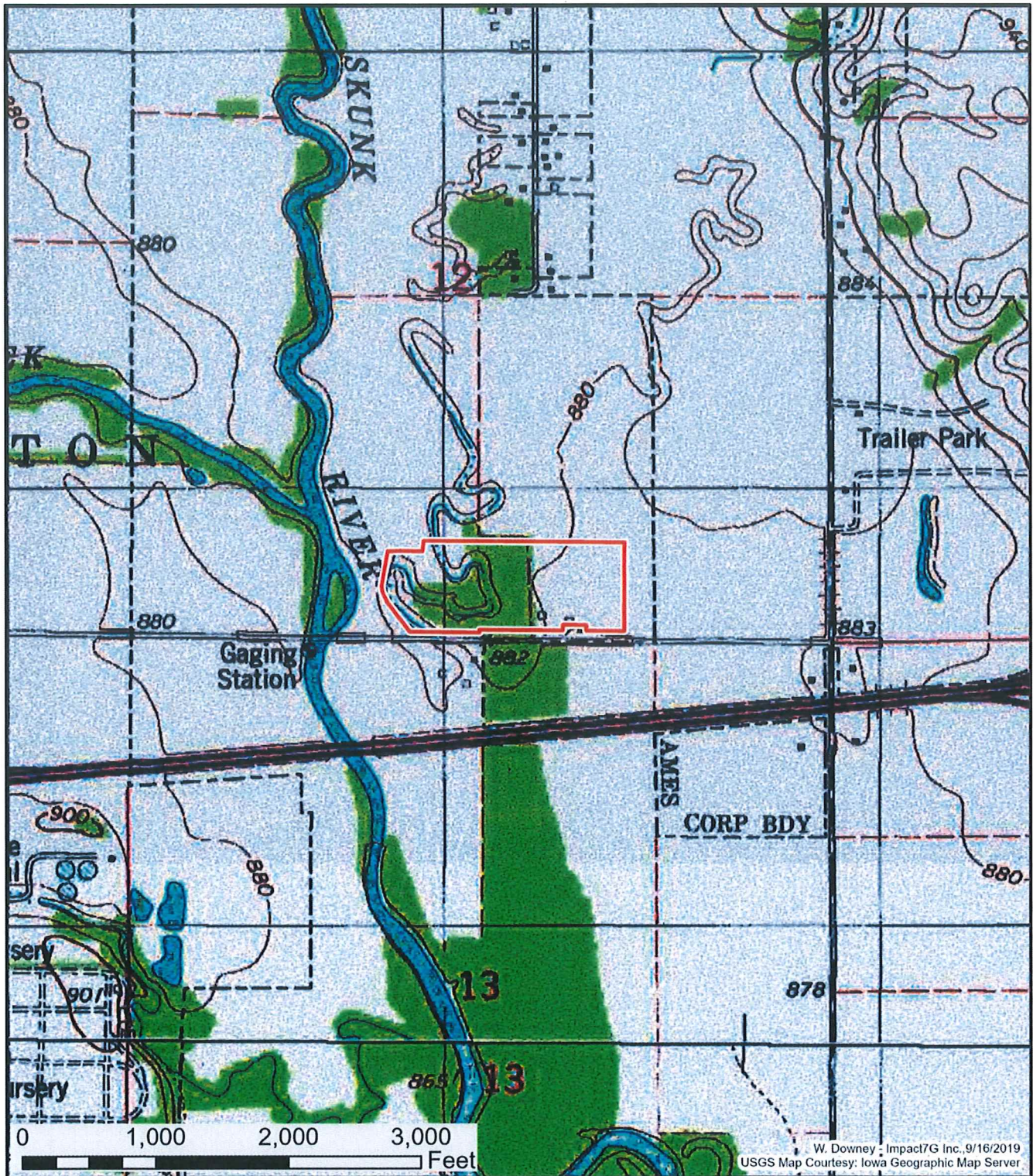


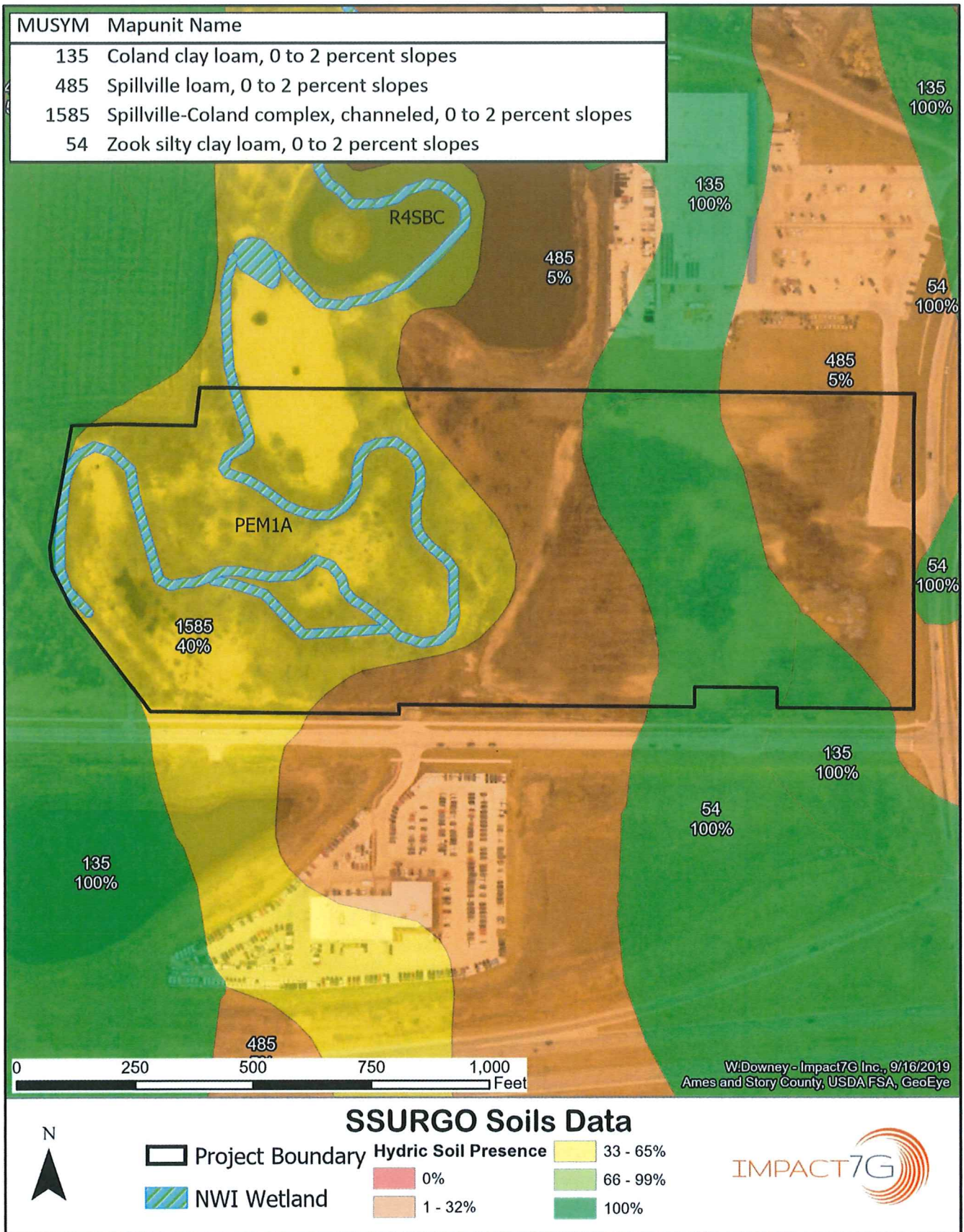
Figure D: USGS Topo 7.5 Minute Quadrangle Map



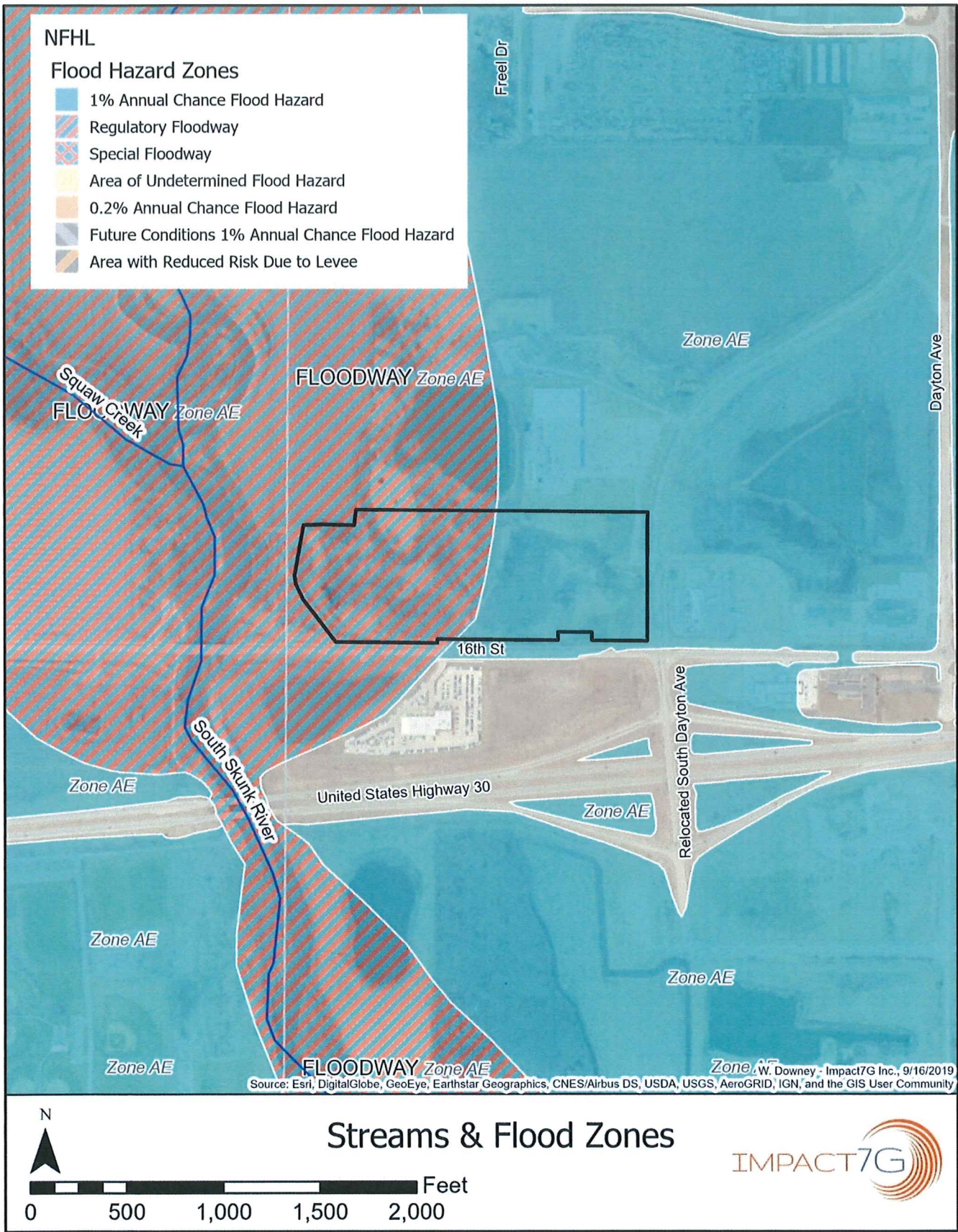
USGS 24,000 Topographic Map  
Ames East, IA



# Figure E: Soils and National Wetland Inventory (NWI) Map



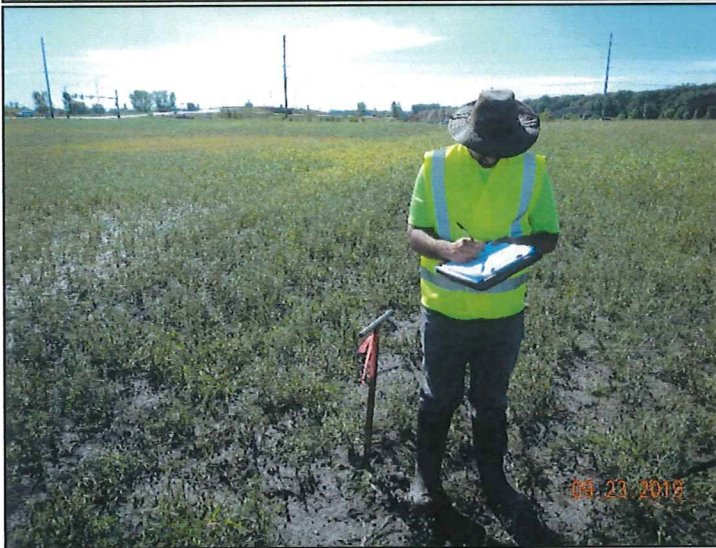
# Figure F: NFHL Flood Map



## Appendix A: Photos



**Photo 1: Developing Wetland Mosaic**  
Data Point: Fox-01  
Date: 9/23/2019  
Direction: West



**Photo 2: Upland Crop Field**  
Data Point: Fox-02  
Date: 9/23/2019  
Direction: South



**Photo 3: Upland - Old Stream Channel**  
Data Point: Fox-03  
Date: 9/23/2019  
Direction: North



**Photo 4: Non Forested Wetland**

Data Point: Fox-04

Date: 9/23/2019

Direction: Southeast



**Photo 5: Upland - Old Stream Channel**

Data Point: Fox-05

Date: 9/23/2019

Direction: West



**Photo 6: Non Forested Wetland**

Data Point: Fox-06

Date: 9/23/2019

Direction: North - At northern edge of wetland area. Old rubble and fill material located north of data point.



**Photo 7: Oak Woodland**

Date: 9/23/2019

Direction: South - Taken near edge of NFHL mapped floodway.



**Photo 8: Upland - Old Field**

Date: 9/23/2019

Direction: West - Taken in northwest ¼ of investigation area, between old stream meanders.



# Appendix B: Wetland Delineation Data Sheets

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Ames, Story County      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-01

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Upper River Terrace      Local relief (concave, convex, none): concave

Slope (%) 0 %      Latitude(dd): 42.009741      Longitude(dd): -93.587722      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Spillville loam, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation  Soil  or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?  No

Are Vegetation  Soil  or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?

Hydric Soil present?

Wetland Hydrology present?

Is the Sampled Area within a Wetland?

Wetland

Non-Wetland

Wetland Type: developing wetland

**Remarks:**

Area recently disturbed by construction activities (frequently since 2005 according to NAIP photos). Wetlands are recently developed, it appears that 2018 or 2019 was the first year that this area was cropped. Soybeans in good condition in upland areas.

## Vegetation

Tree Stratum:	Plot size:	30ft radius, DBH >	Common Name	Absolute % Cover	Dominant Species?	Status
1.				0		
2.				0		
3.				0		
4.				0		
5.				0		

**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% (A/B)

Sapling/Shrub Stratum:	Plot size:	15' radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.				0		
2.				0		
3.				0		
4.				0		
5.				0		

**Prevalence Index worksheet:**

	Total % Cover of:		Multiply by:	
OBL species:	<u>0</u>	x 1	<u>0</u>	
FACW species:	<u>10</u>	x 2	<u>20</u>	
FAC species:	<u>20</u>	x 3	<u>60</u>	
FACU species:	<u>60</u>	x 4	<u>240</u>	
UPL species:	<u>45</u>	x 5	<u>225</u>	

Column Totals: 135 (A)      545 (B)

Prevalence Index = B/A = 4.04

Herbaceous Stratum:	Plot size:	5' radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.			Portulaca oleracea	60	YES	FACU
2.			Glycine max	45	YES	UPL
3.			Panicum capillare	10	NO	FAC
4.			Cyperus esculentus	10	NO	FACW
5.			Setaria pumila	10	NO	FAC
6.				0		
7.				0		
8.				0		
9.				0		
10.				0		

**Hydrophytic Vegetation Indicators:**

- Dominance Test is >50%
- Prevalence Index is ≤3.0<sup>1</sup>
- Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Vine Stratum:	Plot size:	30ft radius, > 1m t	Common Name	Absolute % Cover	Dominant Species?	Status
1.				0		
2.				0		

Hydrophytic Vegetation Present?    Yes     No

Remarks: (Include photo numbers here or on a separate sheet)

Soybeans are heavily stunted and stressed. Hydrophytic vegetation present excluding stunted soybeans.

# Soils

Sample Point: **Fox-01**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR 2/1						sil	
2-6	10YR 2/1		10YR 3/6	7	C	M	sil	
6-16	10YR 2/1						I	Fill material mixed in

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

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>**

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type:       Depth (inches):

**Hydric Soil Present?**      Yes       No

**Soil Remarks:**

Small areas of depletions in fill material

# Hydrology

**Wetland Hydrology Indicators:**

**Primary Indicators (minimum of one is required; check all that apply)**

- Surface Water (A1)
- High Water Table (A2)
- Saturated in Upper 12" (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

**Secondary Indicators (minimum of two required)**

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches)   
 Water Table Present? Yes  No  Depth (inches):   
 Saturation Present? Yes  No  Depth (inches):   
 (includes capillary fringe)

**Wetland Hydrology Present?**      Yes       No

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

**Hydrology Remarks:**

Areas of ponding. Saturated soil appears to be perched on top of compacted fill material. Surface water in lower areas due to recent rainfall. Saturation on aerial imagery visible for some parts of the developing wetland area.

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Ames, Story County      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-02

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Upper River Terrace      Local relief (concave, convex, none): convex

Slope (%) 0-1%      Latitude(dd): 42.009573      Longitude(dd): -93.588415      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Zook silty clay loam, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation     Soil     or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?     No

Are Vegetation     Soil     or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?

Hydric Soil present?

Wetland Hydrology present?

Is the Sampled Area  
within a Wetland?

Wetland

Non-Wetland

Wetland Type:

Remarks:

Area does not collect water - convex land surface

## Vegetation

Tree Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.	30ft radius		0		
2.			0		
3.			0		
4.			0		
5.			0		

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, OR FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Sapling/Shrub Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		

### Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species:	<u>0</u>	x 1	<u>0</u>
FACW species:	<u>46</u>	x 2	<u>92</u>
FAC species:	<u>7</u>	x 3	<u>21</u>
FACU species:	<u>8</u>	x 4	<u>32</u>
UPL species:	<u>40</u>	x 5	<u>200</u>
Column Totals:	<u>101</u> (A)		<u>345</u> (B)

Prevalence Index = B/A = 3.42

Herbaceous Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		Echinochloa crus-galli	45	YES	FACW
2.		Glycine max	40	YES	UPL
3.		Panicum capillare	7	NO	FAC
4.		Portulaca oleracea	7	NO	FACU
5.		Cyperus esculentus	1	NO	FACW
6.		Setaria faberi	1	NO	FACU
7.			0		
8.			0		
9.			0		
10.			0		

### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0<sup>1</sup>
- Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Vine Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.	30ft radius		0		
2.			0		

Hydrophytic Vegetation Present?    Yes     No

Remarks: (Include photo numbers here or on a separate sheet)

Soybeans are stunted - likely due to moisture or soil compaction. Other nearby upland areas have healthy soybeans. Area to the north of the data point appears to have not been planted.

# Soils

Sample Point: **Fox-02**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 3/1						sil	
5-9	10YR 3/1						I	Some sand mixed in
9-14	10YR 3/2	20					I	
	10YR 5/5	80					sl	
14-15	10YR 5/4						I	Fill mix

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

### Hydric Soil Indicators:

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Gleyed Matrix (S4)   |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Sandy Redox (S5)           |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Stripped Matrix (S6)       |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Mucky Mineral (F1)   |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Gleyed Matrix (F2)   |
| <input type="checkbox"/> 2 cm Muck (A10)                   | <input type="checkbox"/> Depleted Matrix (F3)       |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6)    |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Depressions (F8)     |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)      |   |

### Indicators for Problematic Hydric Soils<sup>3</sup>

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

### Restrictive Layer (if observed):

Type: 14 in Refused      Depth (inches):

Hydric Soil Present?

Yes   
No

Soil Remarks:  
Fill Makeup

# Hydrology

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                  |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)                        |
| <input type="checkbox"/> Saturated in Upper 12" (A3)               | <input type="checkbox"/> True Aquatic Plants (B14)                  |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                 |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)              |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)                     |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Gauge or Well Data (D9)                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   | <input type="checkbox"/> Other (Explain in Remarks)                 |

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes  No  Depth (inches):

Water Table Present? Yes  No  Depth (inches):

Saturation Present? Yes  No  Depth (inches):  
(includes capillary fringe)

Wetland Hydrology Present?

Yes   
No

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

Hydrology Remarks:  
No indicators met.

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Story      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-03

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Old Stream Meander      Local relief (concave, convex, none): concave

Slope (%) 0-2%      Latitude(dd): 42.01027      Longitude(dd): -93.592266      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Spillville-Coland complex, channeled, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation  Soil  or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?  No

Are Vegetation  Soil  or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?       Is the Sampled Area      **Wetland**       Wetland Type:

Hydric Soil present?       within a Wetland?      **Non-Wetland**

Wetland Hydrology present?

Remarks: Old stream meander with layers of sand deposition and small pebbles. Tress overhanging from upland area above channel.

## Vegetation

Tree Stratum:		Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		30ft radius		0		
2.				0		
3.				0		
4.				0		
5.				0		
				0 = Total Cover		
Sapling/Shrub Stratum:		Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.				0		
2.				0		
3.				0		
4.				0		
5.				0		
				0 = Total Cover		
Herbaceous Stratum:		Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.	Phalaris arundinacea		Reed Canary Grass	80	YES	FACW
2.	Elymus virginicus		Virginia Wild Rye	15	NO	FACW
3.	Urtica dioica		Stinging Nettle	10	NO	FACW
4.	Laportea canadensis		Canadian Wood-Nettle	5	NO	FACW
5.	Persicaria hydropiper		Mild Water-Pepper	5	NO	OBL
6.	Calystegia sepium		Hedge False Bindweed	2	NO	FAC
7.	Viola sororia		Hooded Blue Violet	2	NO	FAC
8.	Eupatorium serotinum		Late-Flowering Thoroughwo	1	NO	FAC
9.				0		
10.				0		
				120 = Total Cover		
Vine Stratum:		Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		30ft radius		0		
2.				0		
				0 = Total Cover		

**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% (A/B)

**Prevalence Index worksheet:**

Total % Cover of:	Multiply by:	
OBL species: <u>5</u>	x 1	<u>5</u>
FACW species: <u>110</u>	x 2	<u>220</u>
FAC species: <u>5</u>	x 3	<u>15</u>
FACU species: <u>0</u>	x 4	<u>0</u>
UPL species: <u>0</u>	x 5	<u>0</u>
Column Totals: <u>120</u> (A)		<u>240</u> (B)

Prevalence Index = B/A = 2.00

**Hydrophytic Vegetation Indicators:**

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?**      Yes       No

Remarks: (Include photo numbers here or on a separate sheet)

# Soils

Sample Point: **Fox-03**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-9	10YR 2/1						I	
9-15	10YR 5/4						sl	Soil appears to be well drained due to amount of sand in profil

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

## Hydric Soil Indicators:

- |  |   |  |  |
|--|---|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Gleyed Matrix (S4)   | Indicators for Problematic Hydric Soils <sup>3</sup> |  |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Sandy Redox (S5)           |  | <input type="checkbox"/> Coast Prairie Redox (A16)   |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Stripped Matrix (S6)       |  | <input type="checkbox"/> Iron-Manganese Masses (F12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Mucky Mineral (F1)   |  | <input type="checkbox"/> Other (Explain in Remarks)  |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Gleyed Matrix (F2)   |  |  |
| <input type="checkbox"/> 2 cm Muck (A10)                   | <input type="checkbox"/> Depleted Matrix (F3)       |  |  |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6)    |  |  |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Dark Surface (F7) |  |  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Depressions (F8)     |  |  |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)      |   |  |  |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Hydric Soil Present?

Yes

No

Soil Remarks:

# Hydrology

## Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                  |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)                        |
| <input type="checkbox"/> Saturated in Upper 12" (A3)               | <input type="checkbox"/> True Aquatic Plants (B14)                  |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                 |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)              |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)                     |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Gauge or Well Data (D9)                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   | <input type="checkbox"/> Other (Explain in Remarks)                 |

Secondary Indicators (minimum of two required)

- |  |
|--|
| <input type="checkbox"/> Surface Soil Cracks (B6)                  |
| <input type="checkbox"/> Drainage Patterns (B10)                   |
| <input type="checkbox"/> Dry-Season Water Table (C2)               |
| <input type="checkbox"/> Crayfish Burrows (C8)                     |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1)           |
| <input checked="" type="checkbox"/> Geomorphic Position (D2)       |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5)          |

## Field Observations:

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

Wetland Hydrology Present?

Yes

No

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

Hydrology Remarks:

Mapped as NWI wetland

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Story      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-04

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Old Stream meander      Local relief (concave, convex, none): concave

Slope (%) 0%      Latitude(dd): 42.008548      Longitude(dd): -93.592666      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Spillville-Coland complex, channeled, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation  Soil  or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?  No

Are Vegetation  Soil  or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?

Hydric Soil present?

Wetland Hydrology present?

Is the Sampled Area  
within a Wetland?

Wetland

Non-Wetland

Wetland Type:  
wet prairie

Remarks:

Low area beside drainage culvert. Roadside ditch connects with wetland area. Upland area is dominated by kentucky blue grass.

## Vegetation

Tree Stratum:	Plot size: 30ft radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.		White Mulberry	5	YES	FAC
2.		Eastern Cottonwood	5	YES	FAC
3.		Ash-Leaf Maple	2	NO	FAC
4.			0		
5.			0		

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, OR FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Sapling/Shrub Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		Silver Maple	1	NO	FACW
2.			0		
3.			0		
4.			0		
5.			0		

### Prevalence Index worksheet:

Total % Cover of:	Multiply by:	Result
OBL species: <u>0</u>	x 1	<u>0</u>
FACW species: <u>99</u>	x 2	<u>198</u>
FAC species: <u>132</u>	x 3	<u>396</u>
FACU species: <u>5</u>	x 4	<u>20</u>
UPL species: <u>0</u>	x 5	<u>0</u>
<b>Column Totals:</b> <u>236</u> (A)		<u>614</u> (B)

Prevalence Index = B/A = 2.60

Herbaceous Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		Late Goldenrod	95	YES	FACW
2.		Kentucky Blue Grass	60	YES	FAC
3.		sedge	40	NO	FAC
4.		Hooded Blue Violet	15	NO	FAC
5.		Great Ragweed	5	NO	FAC
6.		White Oldfield American-Ast	5	NO	FACU
7.			0		
8.			0		
9.			0		
10.			0		

### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0<sup>1</sup>
- Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Vine Stratum:	Plot size: 30ft radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.		River-Bank Grape	3	NO	FACW
2.			0		

Hydrophytic Vegetation Present?    Yes     No

Remarks: (Include photo numbers here or on a separate sheet)



# Soils

Sample Point: **Fox-04**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 2/1						I	
4-11	10YR 2/1		10YR 4/6	5	C	M	sil	refused on gravel

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

### Hydric Soil Indicators:

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Gleyed Matrix (S4)           |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Sandy Redox (S5)                   |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Stripped Matrix (S6)               |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Mucky Mineral (F1)           |
| <input type="checkbox"/> Stratified Layers (A5)            | <input type="checkbox"/> Loamy Gleyed Matrix (F2)           |
| <input type="checkbox"/> 2 cm Muck (A10)                   | <input type="checkbox"/> Depleted Matrix (F3)               |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Depleted Dark Surface (F7)         |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Redox Depressions (F8)             |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)      |   |

### Indicators for Problematic Hydric Soils<sup>3</sup>

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

### Restrictive Layer (if observed):

Type: gravel      Depth (inches): 11

### Hydric Soil Present?

- Yes   
No

Soil Remarks:

# Hydrology

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9)                  |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Aquatic Fauna (B13)                        |
| <input type="checkbox"/> Saturated in Upper 12" (A3)               | <input type="checkbox"/> True Aquatic Plants (B14)                  |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)                 |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input checked="" type="checkbox"/> Drift Deposits (B3)            | <input type="checkbox"/> Presence of Reduced Iron (C4)              |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Thin Muck Surface (C7)                     |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Gauge or Well Data (D9)                    |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   | <input type="checkbox"/> Other (Explain in Remarks)                 |

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

### Field Observations:

Surface Water Present? Yes  No  Depth (inches):

Water Table Present? Yes  No  Depth (inches):

Saturation Present? Yes  No  Depth (inches):   
(includes capillary fringe)

### Wetland Hydrology Present?

- Yes   
No

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

### Hydrology Remarks:

Corn stalks in basin, with no cornfield immediately adjacent to wetland area.

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Story      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-05

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Old meander      Local relief (concave, convex, none): concave

Slope (%) 0%      Latitude(dd): 42.009975      Longitude(dd): -93.593206      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Spillville-Coland complex, channeled, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation  Soil  or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?  No

Are Vegetation  Soil  or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?

Hydric Soil present?

Wetland Hydrology present?

Is the Sampled Area  
within a Wetland?

Wetland

Non-Wetland

Wetland Type:

**Remarks:**

Boxelder, honey locust, mulberry overhanging old meander from upland area. Old stream channel that has been filled with concrete rubble and other fill material.

## Vegetation

Tree Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.	30ft radius		0		
2.			0		
3.			0		
4.			0		
5.			0		

**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% (A/B)

Sapling/Shrub Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		

**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>100</u>	x 3	<u>300</u>	
FACU species:	<u>11</u>	x 4	<u>44</u>	
UPL species:	<u>2</u>	x 5	<u>10</u>	

Column Totals: 113 (A)    354 (B)

Prevalence Index = B/A = 3.13

Herbaceous Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		Poa pratensis	100	YES	FAC
2.		Lolium perenne	10	NO	FACU
3.		Verbascum thapsus	2	NO	UPL
4.		Asclepias verticillata	1	NO	FACU
5.			0		
6.			0		
7.			0		
8.			0		
9.			0		
10.			0		

**Hydrophytic Vegetation Indicators:**

- Dominance Test is >50%
- Prevalence Index is ≤3.0<sup>1</sup>
- Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Vine Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.	30ft radius		0		
2.			0		

Hydrophytic Vegetation Present?    Yes     No

Remarks: (Include photo numbers here or on a separate sheet)

# Soils

Sample Point: **Fox-05**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 2/4						I	Refused on gravel and rubble

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

**Hydric Soil Indicators:**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

**Indicators for Problematic Hydric Soils<sup>3</sup>**

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Hydric Soil Present?

Yes   
No

**Soil Remarks:**

Pebbles and gravel beginning at 4 in to 8 in. Stream bed filled with rubble.

# Hydrology

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturated in Upper 12" (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- True Aquatic Plants (B14)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Gauge or Well Data (D9)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present?

Yes   
No

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

**Hydrology Remarks:**

Cornstalk drift deposits on fenceline to the north of sample point, located above elevation of data point, likely due to flooding or extremely heavy rainfall.

# Wetland Determination Data Form - Midwest Region

Project/Site: FoxEng-001      Wheelock Development Environmental Services      City/County: Story      Date: 9/23/2019

Applicant/Owner: FOX Engineering Associates, Inc.      State: IA      Sample Point: Fox-06

Investigator(s): Impact7G Inc. Will Downey, Tyler Dursky      Section, Township, Range: Section 12, Township 83 N, Range 24 W

Landform (hillslope, terrace, etc.): Old Stream Meander      Local relief (concave, convex, none): Concave

Slope (%) 0%      Latitude(dd): 42.009391      Longitude(dd): -93.59282      Datum NAD 1983 UTM Zone 15N

Soil Map Unit Name: Spillville-Coland complex, channeled, 0 to 2 percent slopes

Are climatic / hydrologic conditions on the site typical for this time of year?    Yes     No  (If no, explain in Remarks.)

Are Vegetation  Soil  or Hydrology  significantly disturbed?      Are "Normal Circumstances" present?  No

Are Vegetation  Soil  or Hydrology  naturally problematic?      (If needed, explain any answers in Remarks.)

## Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation present?

Hydric Soil present?

Wetland Hydrology present?

Is the Sampled Area  
within a Wetland?

Wetland   
Non-Wetland

Wetland Type:  
seasonally flooded basin

Remarks:

Old stream channel to the north has been filled with concrete rubble and other fill material. Wetland areas are low depressions within the concave channel.

## Vegetation

Tree Stratum:	Plot size: 30ft radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		

### Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, OR FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Sapling/Shrub Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.			0		
2.			0		
3.			0		
4.			0		
5.			0		

### Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species: <u>7</u>	x 1	<u>7</u>	
FACW species: <u>0</u>	x 2	<u>0</u>	
FAC species: <u>12</u>	x 3	<u>36</u>	
FACU species: <u>0</u>	x 4	<u>0</u>	
UPL species: <u>0</u>	x 5	<u>0</u>	

Column Totals: 19 (A)      43 (B)

Prevalence Index = B/A = 2.26

Herbaceous Stratum:	Plot size:	Common Name	Absolute % Cover	Dominant Species?	Status
1.		Persicaria hydropiper	7	YES	OBL
2.		Viola sororia	7	YES	FAC
3.		Carex (sp.)	5	YES	FAC
4.			0		
5.			0		
6.			0		
7.			0		
8.			0		
9.			0		
10.			0		

### Hydrophytic Vegetation Indicators:

- Dominance Test is >50%
- Prevalence Index is ≤3.0<sup>1</sup>
- Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Vine Stratum:	Plot size: 30ft radius	Common Name	Absolute % Cover	Dominant Species?	Status
1.			0		
2.			0		

Hydrophytic Vegetation Present?    Yes     No

Remarks: (Include photo numbers here or on a separate sheet)

Upland trees overhanging sample point. Including honey locust and mulberry.

# Soils

Sample Point: **Fox-06**

**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 <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1						sil	
5-25	10YR 2/1		10YR 4/6	3	C	M	sil	
25-27	10YR 3/1						ms	Refused at 27

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

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- 5 cm Mucky Peat or Peat (S3)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### Indicators for Problematic Hydric Soils<sup>3</sup>

- Coast Prairie Redox (A16)
- Iron-Manganese Masses (F12)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if observed):</b>	<b>Hydric Soil Present?</b>
Type: <input type="text"/> Depth (inches): <input type="text"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

**Soil Remarks:**  
Upland areas within the old stream channel have sandy soils starting within 10-20 inches of soil surface - allowing for better drainage of soil.

# Hydrology

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturated in Upper 12" (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Gauge or Well Data (D9) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input checked="" type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b>	<b>Wetland Hydrology Present?</b>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <input type="text"/>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <input type="text"/>	
Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <input type="text"/> (includes capillary fringe)	

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

**Hydrology Remarks:**  
Mapped as NWI. Area was a meandering stream channel previously- no longer contains flowing water