APPENDIX F

Sponsor Land Use Compatibility Letter

SCRAA
SOUTH CENTRAL REGIONAL AIRPORT AGENCY

December 21, 2015

Federal Aviation Administration
Airports Division, Central Region
901 Locust Street
Kansas City, MO 64106

Re: Proposed South Central Regional Airport

To Whom It May Concern:

The South Central Regional Airport Agency ("SCRAA") makes the following statement of compatible land use assurances as required by US Code, Title 49, 47107(a)(10), formerly Section 511(2)(5) of the Airport and Airway Improvement Act of 1982.

This letter shall provide the appropriate assurance that SCRAA will take all reasonable action within its authority to encourage the Mahaska County (Iowa) Board of Supervisors and the City Council of the City of Oskaloosa, Iowa to limit land use to the area adjacent to the proposed airport to those consistent with airport activity. The assurance includes the consideration of existing (agricultural) and future land uses.

We will continue to work with Mahaska County and Oskaloosa to ensure land uses remain compatible.

Sincerely,

James M. Hansen
Chair, South Central Regional Airport Agency Board

825 Broadway Street, Pella IA 50219
Phone: 641.628.4173 • Fax: 641.628.3120
www.scraaiowa.com

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APPENDIX G

220th Street Disconnect

2nd US 63 Northwest Bypass of Oskaloosa

Phone: (641) 672-2897 *Fax: (641) 672-1385*

Mahaska County Highway Department

2074 Old Hwy. 163
Oskaloosa, Iowa 52577

July 01, 2013

Mr. Jim Hansen, Chairperson
South Central Regional Airport Agency
825 Broadway
Pella, IA 50219

RE: SITE A – MAHASKA COUNTY
220th STREET

Dear Mr. Hansen:

The South Central Regional Airport Board has selected Site A as the preferred airport site. The airport concept plan shows the primary runway extending through the 220th Street right-of-way. In order to construct the primary runway, 220th Street will have to be disconnected.

Upon completion of the required environmental documentation and a favorable environmental determination from the Federal Aviation Administration, Mahaska County will disconnect 220th Street to accommodate development of the proposed airport.

The action to disconnect will be undertaken if the potential impact to the county road network is addressed within the environmental assessment and acceptable mitigation actions are identified.

Sincerely,

Mahaska County

Jerome T. Nusbaum, PE
County Engineer

cc: Mahaska County Board of Supervisors
Jerald Searle, Snyder & Associates
Michael Shrock, City of Oskaloosa
Mike Nardini, City of Pella

Gmail by Google

Jerald Searle <jeraldsearle@gmail.com>

Clearance Information - NW Oskaloosa Bypass and Airport

Zeimen, Danny [DOT] <Danny.Zeimen@dot.iowa.gov> Wed, Jul 15, 2015 at 1:27 PM
To: "jeraldsearle@gmail.com" <jeraldsearle@gmail.com>

Jerald,

This email is to follow up the conversation regarding the NW Oskaloosa Bypass and Airport clearance on June 16th, 2015 in Ames, Iowa. I have attached a display of what we anticipate to be a worst case scenario for the height of any obstructions. We figured the 50:1 clearance rate we discussed from the end of the runway to the bridge, which was roughly 6,000 feet. See below for a summary of estimated values.

End of Runway Elev.: 842 feet

Distance from end of runway to bridge: 6,000 feet

Highest elevation of obstruction: 895 feet

Clearance area rate: 50:1

With the above assumptions we need to be below 962 feet at the bridge and we are below that threshold. Please let me know if the Airport has any concerns with what is being considered. Thanks.

DANNY ZEIMEN
TRANSPORTATION ENGINEER SPECIALIST
OFFICE OF LOCATION AND ENVIRONMENT
iowadot.gov Iowa Department of Transportation
Office: 515-239-1381 @iowadot
Fax: 515-239-1726

2 attachments

image001.png
20K

PUBLIC MEETING – U.S. 63 NORTHWEST BYPASS OF OSKALOOSA

DECEMBER 16, 2014 5-7P.M.

OSKALOOSA HIGH SCHOOL COMMONS, 1816 N. THIRD STREET

OSKALOOSA, IOWA

To view additional information concerning this project please access the following website:

http://www.iowadot.gov/pim

Welcome to the Iowa Department of Transportation's Public Information Meeting for the proposed U.S. 63 northwest bypass of Oskaloosa. The purpose of this meeting is to discuss the refined alternatives for the bypass as well as the project study area. The study area is located northwest of Oskaloosa and extends from approximately Iowa 163 to existing U.S. 63. We would like to hear your thoughts and ideas as well as answer your questions regarding the project.

PROJECT HISTORY

A Public Information Meeting was held August 15, 2013, to gather input for a location study and for the environmental document for the proposed improvement. A second Public Information Meeting was held April 16, 2014, to present the conceptual alternatives and the project study area.

PRESENT FACILITY

U.S. 63 is the primary north-south travel route through Oskaloosa and varies between two, three and four travel lanes wide. The 2010 traffic volumes on existing U.S. 63 through Oskaloosa ranged from 4,500 to 7,700 vehicles per day (vpd) with 6 to 10% trucks. On existing U.S. 63 north of Oskaloosa, the volumes ranged from 2,800 to 4,500 vpd with 10 to 17% trucks. By 2040, the traffic volumes on these same segments are projected to increase to between 4,500 to 9,000 vpd with 8 to 13% trucks and 3,900 to 6,700 vpd with 12 to 20% trucks, respectively. The 2040 projections assume that the roadway characteristics remain the same as exists today.

Between 2003 and 2012, there were 459 crashes on the segment of U.S. 63 within the Oskaloosa city limits which is approximately twice the statewide average for similar roadways. During the same period, there were 50 crashes on the rural two lane segment north of the Oskaloosa city limits which was below the statewide average.

PROJECT DESCRIPTION

Three conceptual alternatives were presented at the Public Meeting on April 16. Alternative 3 has been eliminated and two new alternatives are being studied in addition to Revised Alternatives 1 and 2. All four of the current alternatives include an interchange on Iowa 163 at either Mahaska County Road G-43 (235th Street) or Jewell Avenue.

The interchange at 235th Street is similar to what was shown at the April 16 meeting. From the intersection at Iowa 163 and 235th Street the proposed alignment would continue northeast to cross the east-west leg of Kirby Avenue just north of 230th Street.

A second interchange alternative has been added at Jewell Avenue based on input from previous public meetings. The alignment from the proposed interchange would proceed northeastward to also cross the east-west leg of Kirby Avenue just north of 230th Street.

- Revised Alternative 1 would begin at the 235th Street interchange while Alternative 4 would begin at the Jewell Avenue interchange. After crossing Kirby Avenue the alignments would join together and proceed northeast crossing 220th and 210th streets before connecting with U.S. 63 south of the Oskaloosa water treatment plant and the South Skunk River. The location of the interchange is the only difference between these two alternatives.

- Revised Alternative 2 would begin at the 235th Street interchange while Alternative 5 would begin at the Jewell Avenue interchange. After crossing Kirby Avenue the alignments would join together and proceed north to follow existing property boundaries approximately one-half mile east of Kirby Avenue. The alignment would continue to just north of 210th Street where it would then curve to the northeast crossing the South Skunk River west of the existing U.S. 63 river crossing. The alignment would continue northeast to connect with existing U.S. 63 near the intersection of 200th Street. The location of the interchange is the only difference between these two alternatives.

PROJECT SCHEDULE

This project is not currently included in the 2015-2019 Transportation Improvement Program, and therefore, no construction schedule has been established. The study is anticipated to be completed in Fall 2016 after which time the project can be considered for future funding. Funding would also be contingent upon the transfer of the existing U.S. 63 to local jurisdiction. Once funding is committed, the Iowa DOT can develop design plans so the project can then be constructed.

ENVIRONMENTAL CONSIDERATIONS

As part of the project development process, various field studies will be conducted within the U.S. 63 project study area. These field studies typically include archeological sites, historic buildings, wetlands, threatened or endangered plants and animals, hazardous waste sites, and land surveys. The Iowa DOT may request landowner permission in order for our staff or consultants to gather field information regarding property within the study area.

The Iowa DOT is requesting your comments about possible impacts this project may have on known historic properties. The term historic property includes a prehistoric or historic site, building, structure, object, or district that is listed or eligible for listing on the National Register of Historic Places. This request is based on the federal regulations known as Section 106 of the National Historic Preservation Act.

This project will continue to be monitored by the Iowa DOT and FHWA throughout all development stages and construction to ensure that all possible environmental effects are identified.

RIGHT OF WAY

As part of the proposed improvements, right-of-way may be required. The Iowa DOT's policy provides for appraisal of property and/or property rights needed for each project. These appraisals use professional techniques and methods to determine "just compensation" in accordance with Federal and State constitutions, laws and regulations. The appraisals are prepared to assure fair treatment for both the property owner and the public.

After the appraisals are completed, each owner is contacted by a right of way agent for the purpose of explaining the plans and appraisals and for contracting the required right of way. In instances where an agreement cannot be reached through negotiations, the property may be acquired by the laws of eminent domain.

CONTACT US

If you have any comments or concerns regarding the project presented today, please contact:

Jason Huddle, District 5 Planner
Iowa Department of Transportation
307 W. Briggs
Fairfield, IA 52556
Phone: 641-472-4171or 800-766-4368
E-mail: jason.huddle@dot.iowa.gov

PUBLIC PARTICIPATION

Please share your ideas with us today, submit them using the attached comment form (self-addressed and pre-paid for your convenience), email your comments to the District Planner above or through the following website http://www.iowadot.gov/pim. All comments and information provided will be given consideration as the project development process continues. Other opportunities for input, throughout the process, will be provided through additional future public meetings.

Thank you for your participation in this meeting.

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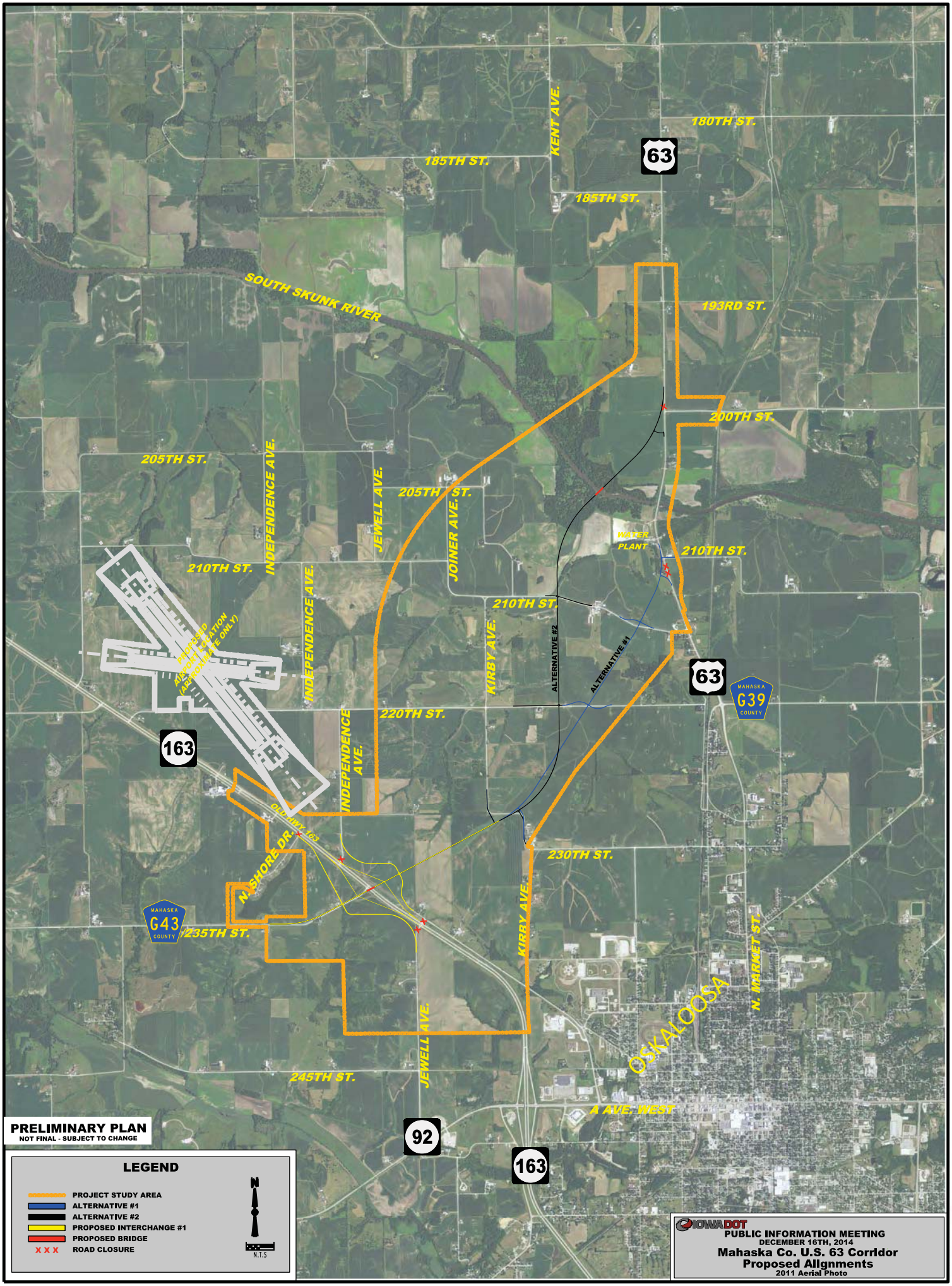
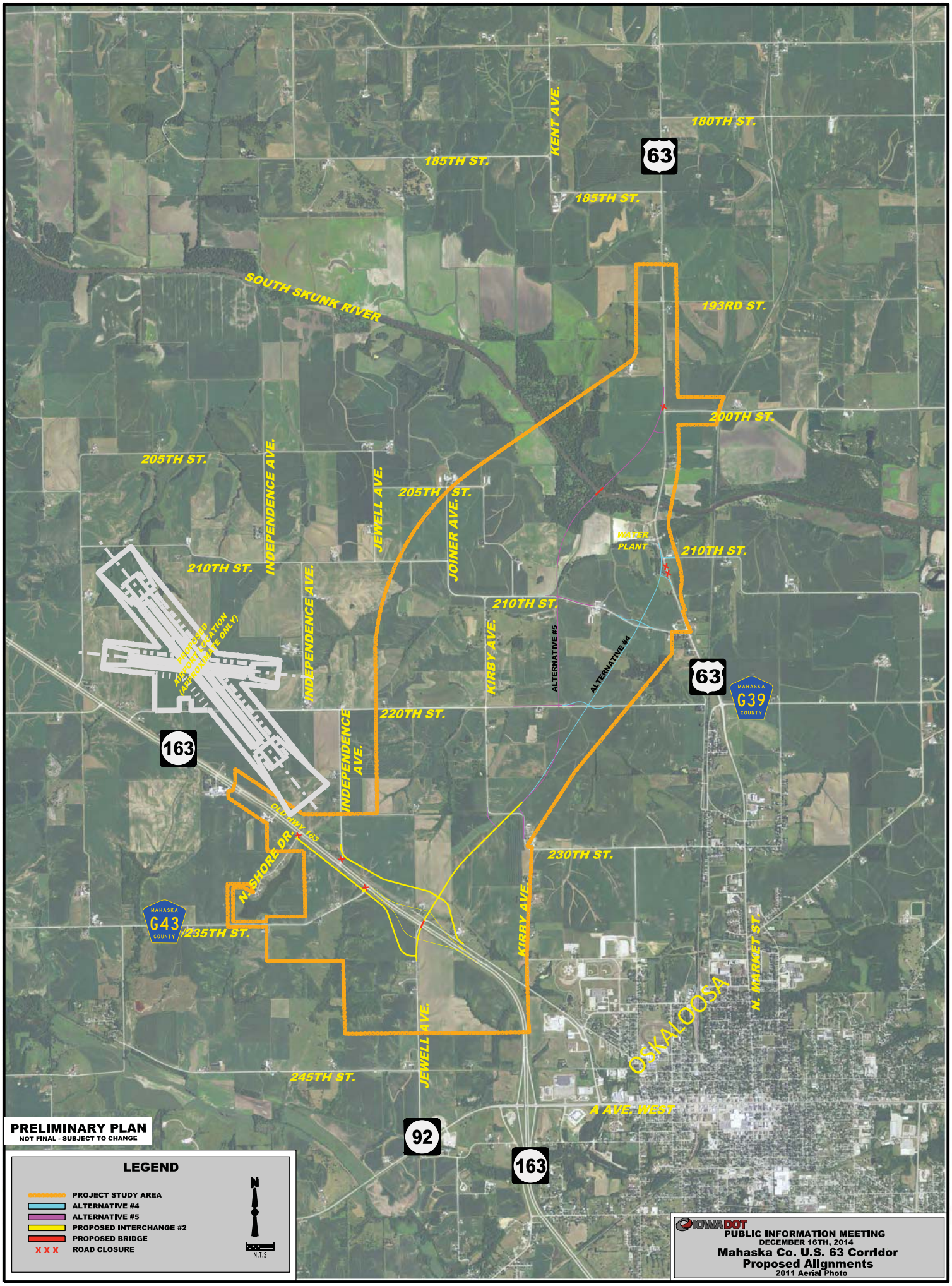

KENT AVE.
180TH ST.
63
185TH ST.
185TH ST.
SOUTH SKUNK RIVER
193RD ST.
200TH ST.
205TH ST.
INDEPENDENCE AVE.
JEWELL AVE.
205TH ST.
JOINER AVE.
WATER PLANT
210TH ST.
210TH ST.
INDEPENDENCE AVE.
210TH ST.
KIRBY AVE.
ALTERNATIVE #2
ALTERNATIVE #1
63
MAHASKA G39 COUNTY
PROPOSED AIRPORT LOCATION (APPROXIMATE ONLY)
220TH ST.
163
INDEPENDENCE AVE.
OLD HWY 163
N. SHORE DR.
230TH ST.
MAHASKA G43 COUNTY
235TH ST.
KIRBY AVE.
N. MARKET ST.
OSKALOOSA
JEWELL AVE.
245TH ST.
A AVE. WEST
92
163
PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE
LEGEND
PROJECT STUDY AREA
ALTERNATIVE #1
ALTERNATIVE #2
PROPOSED INTERCHANGE #1
PROPOSED BRIDGE
XXX ROAD CLOSURE
N
N.T.S
IOWA DOT
PUBLIC INFORMATION MEETING
DECEMBER 16TH, 2014
Mahaska Co. U.S. 63 Corridor
Proposed Alignments
2011 Aerial Photo


KENT AVE.
180TH ST.
63
185TH ST.
185TH ST.
SOUTH SKUNK RIVER
193RD ST.
200TH ST.
205TH ST.
INDEPENDENCE AVE.
JEWELL AVE.
205TH ST.
JOINER AVE.
WATER PLANT
210TH ST.
210TH ST.
INDEPENDENCE AVE.
210TH ST.
KIRBY AVE.
ALTERNATIVE #5
ALTERNATIVE #4
63
MAHASKA G39 COUNTY
PROPOSED AIRPORT LOCATION (APPROXIMATE ONLY)
220TH ST.
163
INDEPENDENCE AVE.
OLD HWY 163
N. SHORE DR.
230TH ST.
MAHASKA G43 COUNTY
235TH ST.
KIRBY AVE.
N. MARKET ST.
OSKALOOSA
JEWELL AVE.
245TH ST.
A AVE. WEST
92
163
PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE
LEGEND
PROJECT STUDY AREA
ALTERNATIVE #4
ALTERNATIVE #5
PROPOSED INTERCHANGE #2
PROPOSED BRIDGE
XXX ROAD CLOSURE
N
N.T.S
IOWA DOT
PUBLIC INFORMATION MEETING
DECEMBER 16TH, 2014
Mahaska Co. U.S. 63 Corridor
Proposed Alignments
2011 Aerial Photo

IOWA DOT

SMARTER | SIMPLER | CUSTOMER DRIVEN

www.iowadot.gov

HIGHWAY DIVISION, OFFICE OF LOCATION AND ENVIRONMENT, 515-239-1225

Citizen Comments

You may also leave comments at http://www.iowadot.gov/pim.

MAHASKA COUNTY
NHSX-63-3(93)--3H-62

I (do ☐ do not ☐) desire a response.

Please return comments by December 29, 2014.

The information which you give may be printed and/or distributed. You are not required to provide any information, unless you request a response to your comments.

PLEASE PRINT

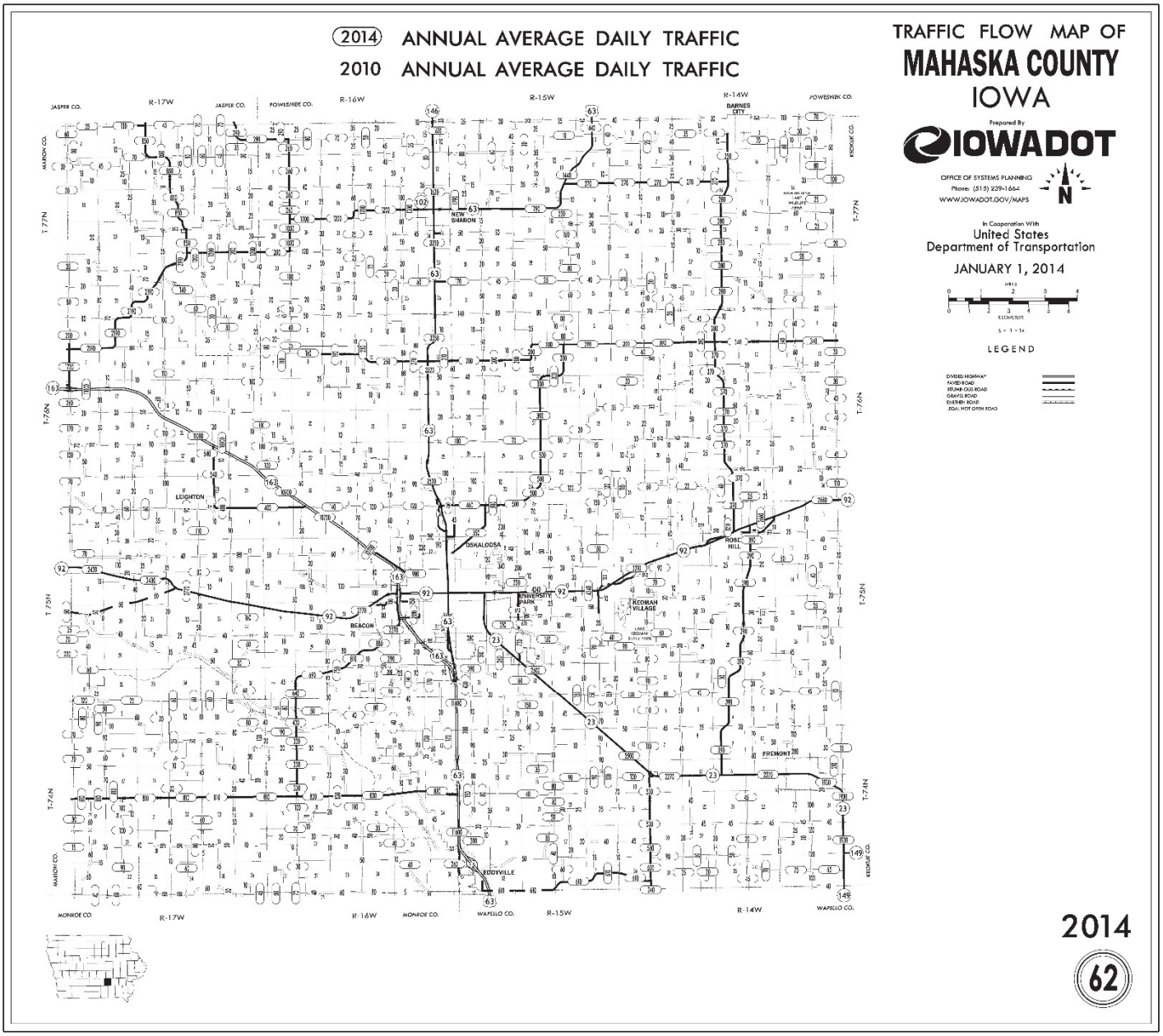
Name: _____

Address: _____

_____

Phone: _____

E-mail: _____



2014 AADT

140 AADT 220th - IA 163/Independence Ave.

10,900 AADT IA 163 - Independence Ave./Eaton Ave.

County: Mahaska

PIN: 13-62-063-020

Project Number: NHSX-063-3(93)--3H-62

Location: Northwest Oskaloosa Bypass

NEPA / SECTION 404 CONCURRENCE POINT 3 MEETING

February 16, 2016
10:00 AM

ALTERNATIVE 1A

- Alternative 1A begins with a new interchange at Iowa 163 and ties into 235th Street and extends northeasterly. It then turns easterly for approximately ½ mile and then curves northeasterly and crosses Kirby Avenue, 220th Street, and 210th Street before reconnecting with US 63 south of the Oskaloosa water treatment plant and the South Skunk River.

Floodplains
Regulated Materials
Waters of the U.S.
Wetlands
Woodlands
Potential IB Habitat
Pipeline
Water Treatment Plant
Proposed Alignment
Impact Area
Project Study Area
City of Oskaloosa
Homes
Valve_Field

ALTERNATIVE 4

Alternative 4 begins with a connection to Jewell Avenue and a new interchange at IA 163 and extends northeasterly.

It crosses Kirby Avenue, 220th Street, and 210th Street before reconnecting with US 63 south of the Oskaloosa water treatment plant and the South Skunk River.

- Cultural Resources
- Floodplains
- Potential IB Habitat
- Water Treatment Plant
- Woodlands
- Waters of the U.S.
- Wetlands
- Regulated Materials
- Pipeline
- Businesses
- Homes
- Proposed Alignment
- Impact Area
- Project Study Area
- City of Oskaloosa
- Valve_Field

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APPENDIX H

Cultural Resources Report

APPENDIX H - HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Report, Summary, and Recommendations

Phase I Cultural Resource Investigation for the Proposed South Central Regional Airport

Principal Investigator: Jonathan Sellars, Consulting Archaeological Services, January 2016

Phase IA Archaeological Assessment of the Pella and Oskaloosa Municipal Airport Properties, Mahaska and Marion Counties, Iowa

Principal Investigator: Toby Morrow, Wapsi Valley Archaeology, April 2016

Reconnaissance Level Architectural History Survey for Three Airport Locations, Intensive Level Survey, and Evaluation of the Prine Cemetery, Mahaska and Marion Counties, Iowa

Principal Investigator: Colleen Small-Vollman, Wapsi Valley Archaeology, April 2016

Viewshed Impact Study of 1795 220th Street and Prine Cemetery, Mahaska County, Iowa

Principal Investigator: Colleen Small-Vollman, Wapsi Valley Archaeology, June 2016

PHASE I CULTURAL RESOURCE INVESTIGATIONS FOR THE PROPOSED SOUTH CENTRAL AIRPORT PROJECT, MAHASKA COUNTY, IOWA.

Report CAS-1067

By
Jonathan R. Sellars,
Principal Investigator
and
Leslie A. Ambrosino,
Project Archaeologist

Report of Investigations Conducted For
DGR, Inc.
Ankeny, Iowa

Consulting Archaeological Services
West Des Moines, Iowa

2016

Database Doc Number: _____

NATIONAL ARCHAEOLOGICAL DATABASE – REPORTS: DATA ENTRY FORM

1. R and C #:
2. Authors: Sellars, Jonathan R., and Leslie A. Ambrosino

Year of Publication: 2016

3. Title: Phase I Cultural Resource Investigations for the Proposed South Central Airport Project, Mahaska County, Iowa.

4. Report Title:
Volume #:
Report #: CAS-1067 NTIS:
Publisher: Consulting Archaeological Services
Place: West Des Moines, IA 50266

5. Unpublished
Sent From:
Sent To:
Contract #:

6. Federal Agency: FAA/STA

7. State: IA
County: Mahaska
Town:

8. Work Type: 31

9. Keyword:

0 - Types of Resources / Features
2 - Taxonomic Names
4 - Geographic Names / Locations
6 - Project names / Study Unit

Southern Iowa Drift Plain	[4]
Skunk River Basin	[4]
319.0 acres surveyed	[7]
Lanceolate projectile point	[3]
Lithic Scatter	[0]
	[ ]

1 - Generic terms / Research Questions
3 - Artifact Types / Material Classes
5 - Time Periods
7 - Other Key Words

Historic/Euro-American	[5]
Prehistoric/Native American	[5]
Prine Cemetery	[7]
	[ ]
	[ ]
	[ ]

10. UTM Zone: 15 Easting: Northing:
15 Easting: Northing:
15 Easting: Northing:
15 Easting: Northing:

11. Township: T75N T76N
Range: R16W R16W

Other Publication Types:

12. Monograph:

Name:

Place:

13. Chapter: In: First: Last:

14. Journal: Volume: Issue: First: Last:

15. Dissertation:

Degree: Ph.D. LL.D. M.A. M.S. B.A. B.S. Institute:

16. Paper: Meeting:

Place: Date:

17. Other:

Reference Line:

18. Site #: 13MK341
13MK609
13MK610
13MK611

19. Quad Map: Name Oskaloosa, IA Date: 1968

Abstract

This report presents the findings of a Phase I cultural resource investigation undertaken by personnel from Consulting Archaeological Services (CAS) in Mahaska County, Iowa. The cultural resource investigation was undertaken for the proposed South Central Regional Airport (SCRAA). The CAS investigations were undertaken for DGR Engineering of Ankeny, Iowa.

Development plans call for the proposed airport project to encompass 581.46 acres (2.35 square kilometers). However, project planners were unable to secure landowner permission to inspect all of the proposed development lands. As such, the CAS intensive (Phase I level) field investigations focused upon a combined area of 319.0 acres (1.29 square kilometers), for which land access was granted by private landowners.

The inspected project area was composed primarily of upland landforms that were in use for row crop production. There were no perennial drainages within the project area. Archaeological investigations included an archival records search, landowner and informant interviews, a pedestrian inspection of the project area, and the implementation of systematic shovel testing and hand probe testing.

The Phase I survey resulted in the identification of four archaeological sites. Three of these sites; prehistoric site 13MK341 and historic sites 13MK610 and 13MK611, were located within the proposed airport construction project area. The remaining site, the Prine Cemetery (13MK609), is an historic (Euro-American) period pioneer cemetery. The Prine Cemetery is located out of, but in close proximity to, the proposed airport construction project area. For reasons that include limited additional archaeological research potential, limited artifact assemblages, and prior site disturbances, sites 13MK341, 13MK610, and 13MK611 do not appear to meet minimum requirements for nomination to the National Register of Historic Places. Further archaeological investigations at these sites do not appear to be warranted. Site 13MK609 (the Prine Cemetery) is located outside of, but in close proximity to, the project area. Detailed recommendations for avoidance and preservation of this cemetery are presented in the report.

With the exception of the four archaeological sites discussed herein, no additional archaeological sites were identified by the Phase I cultural resource survey.

Reconnaissance Level Architectural History Survey for Three Airport Locations and Intensive Level Survey and Evaluation of the Prine Cemetery, Mahaska and Marion Counties, Iowa

Colleen Small-Vollman

Wapsi Valley Archaeology Report No. 907

Wapsi Valley Archeology, Inc.
P.O. Box 244
Anamosa, Iowa 52205
(319) 462-4760

April 2016

Abstract

This report presents the results of a reconnaissance level architectural history survey for the proposed South Regional Airport Project. Wapsi Valley Archaeology, Inc. completed this survey for Snyder & Associates, Inc.

Three areas were examined for this study, including the existing Pella Municipal Airport in Marion County, the existing Oskaloosa Municipal Airport in Mahaska County, and the proposed location for a new regional airport east of Pella and northwest of Oskaloosa in Mahaska County. The purpose of the current investigation was to perform a reconnaissance level historic architectural survey to identify historic properties that may be eligible for listing on the National Register of Historic Places within the subject area. In addition, this investigation also involved an intensive level survey and evaluation of the Prine Cemetery, which is situated in the vicinity of the proposed South Central Regional Airport.

The investigation found that construction at the Pella Municipal Airport began in 1968. The buildings at this facility are all less than 50 years old and are not of exceptional importance. None of the buildings are individually eligible, and the airport as a whole is not eligible for listing on the National Register of Historic Places.

The study also found that the Oskaloosa Municipal Airport and the property located at 1795 220th Street within the proposed South Central Regional Airport boundaries may be eligible for listing on the National Register of Historic Places. The Oskaloosa Municipal Airport runways are associated with the 1942 United States Air Naval Training Base located in Ottumwa, Iowa, and may retain sufficient integrity to meet criteria for listing on the National Register under Criterion A. The property at 1795 220th Street may retain sufficient integrity to meet criteria for listing on the National Register under Criterion C. In addition, an earth cellar associated with this residential property is a distinctive feature that may be significant individually.

In addition, the results of the intensive level survey determined that the Prine Family Cemetery is National Register eligible because it retains a high level of integrity and is a good example of a cemetery that is associated with the early settlement of Mahaska County.

Wapsi Valley Archaeology, Inc. has determined that the Oskaloosa Municipal Airport and the residence and earth cellar located at 1795 220th Street may be eligible for the National Register and recommends that Phase I intensive level historic architectural evaluation and documentation be completed to further evaluate these properties and make a formal determination of National Register eligibility. This reconnaissance level survey report presents a professional opinion of properties that appear to be significant; however, eligibility of properties identified for listing on the National Register of Historic Places should be confirmed through additional research, documentation, and formal evaluation at an intensive level of investigation.

Finally, avoidance is recommended for the Prine Cemetery. If avoidance is not possible, then mitigation of adverse effects is recommended for this historic property.

Conclusions

This report has presented the results of reconnaissance level architectural surveys of the Pella and Oskaloosa Municipal Airports and properties within the boundary of the proposed South Central Regional Airport.

The Pella Municipal Airport was constructed in 1968. The buildings at this facility are all less than 50 years old and are not of exceptional importance. None of the buildings are individually eligible, and the airport as a whole is not eligible for listing on the National Register of Historic Places.

This study found that the Oskaloosa Municipal Airport and the property located at 1795 220th Street, Oskaloosa, and may retain sufficient integrity to meet criteria for listing on the National Register under Criterion A. The airport runways are associated with the 1942 United States Air Naval Training Base located in Ottumwa, Iowa. The property at 1795 220th Street may retain sufficient integrity to meet criteria for listing on the National Register under Criterion C. In addition, an associated earth cellar is a distinctive feature that may be significant individually.

In addition, the results of the intensive level survey determined that the Prine Family Cemetery is National Register eligible because it appears to retain a high level of integrity and is good example of a cemetery associated with the early settlement of Mahaska County.

Recommendations

This reconnaissance level survey was undertaken by Wapsi Valley Archaeology, Inc. and has determined that the Oskaloosa Municipal Airport and the residence and earth cellar located at 1795 220th Street may be eligible for the National Register of Historic Places. We recommend that Phase I intensive level historic architectural evaluation and documentation be completed to further evaluate these properties and make a formal determination of National Register eligibility. This reconnaissance level survey report presents a professional opinion of properties that appear to be significant; however, eligibility of properties identified for listing on the National Register of Historic Places should be confirmed through additional research, documentation, and formal evaluation at an intensive level of investigation.

Finally, avoidance is recommended for the Prine Cemetery. If avoidance is not possible, then mitigation of adverse effects is recommended for this historic property.

A Phase IA Archaeological Assessment of the Pella and Oskaloosa Municipal Airport Properties, Mahaska and Marion Counties, Iowa

Toby A, Morrow

Wapsi Valley Archaeology Report No. 909

Wapsi Valley Archaeology, Inc.
P.O. Box 244
Anamosa, Iowa 52205
(319) 462-4760

April 2016

Abstract

This report presents the results of Phase IA archaeological assessment of two properties: the Pella Municipal Airport and the Oskaloosa Municipal Airport. Wapsi Valley Archaeology, Inc. conducted this study for Snyder & Associates, Inc. in April 2016 to determine whether or not a Phase I intensive archaeological field study was called for and, if so, where this work would be most effectively directed. The Pella Municipal Airport project area is in the SW 1/4 of Section 4, the SE 1/4 of Section 5 and the NW 1/4 and the NW 1/4 of the SW 1/4 of Section 9, T76N, R18W, Lake Prairie Township, Marion County, and it encompasses a total of 84 acres (34.0 hectares). The Oskaloosa Municipal Airport is in the E 1/2 and the E 1/2 of the W 1/2 of Section 8, and in the W 1/2 of the W 1/2 of Section 9, T74N, R14W, Cedar Township, Mahaska County, and it encompasses some 620 acres (250.9 hectares), of which approximately 528 acres (213.7 hectares) are leased out as farmland.

Background research indicated that no archaeological sites have been recorded within or near either of the two airports. Evaluation of soils data along with the LANDMASS and Burial Mound models indicated that while the two areas have relatively little potential for containing prehistoric cultural resources, there are some small, limited areas that have a greater chance of containing such sites.

Examination of historic plat maps indicates that a residence was located on the Pella Airport property as early as 1875 and that there were three different rural farmsteads on the Oskaloosa Airport property during the early twentieth century. Furthermore, from 1942 to 1947 the Oskaloosa Airport was a Naval Outlying Landing Field associated with the major Naval air training base at Ottumwa. The Pella Airport is much more recent, having been initially constructed from 1967 to 1968.

A brief field visit included photographing the project areas, spot-checking selected areas within them and taking Oakfield soil probe tests. Limited probing at the Pella Airport property demonstrated that while much of the area is previously disturbed, soil profiles are intact in some places. Spot-checking at the Oskaloosa Airport property demonstrated that historic artifact scatters are present at the locations of the farmsteads illustrated on the 1905 plat map and visible on the late 1930s aerial photograph.

Phase I intensive archaeological surveys of selected portions of both the Pella and Oskaloosa airport properties are recommended. At Pella, the southeastern-

most 200 meters (656 feet) of the property parcel should be surveyed for prehistoric archaeological sites, and the vicinity of the house illustrated on the 1875 plat map should be subjected to subsurface testing. At Oskaloosa, the southwestern corner of the property should be examined to search for prehistoric archaeological sites, the vicinities of the three farmsteads illustrated on the 1905 plat map and visible on the late 1930s aerial photograph should be surveyed, and the potential for any material traces of the World War II use of the field should be investigated. Beyond these selected locations, no additional archaeological work is recommended.

Conclusions

This report has presented the results of Phase IA archaeological assessment of two properties: the Pella Municipal Airport and the Oskaloosa Municipal Airport. This study was completed to determine whether or not a Phase I intensive archaeological field study was called for and, if so, where this work would be most effectively directed.

Background research indicated that no archaeological sites have been recorded within or near either of the two airports. Evaluation of soils data along with the LANDMASS and Burial Mound models indicated that while the two areas have relatively little potential for containing prehistoric cultural resources, there are some small, limited areas that have a greater chance of containing such sites.

Examination of historic plat maps indicates that a residence was located on the Pella Airport property as early as 1875 and that there were three different rural farmsteads on the Oskaloosa Airport property during the early twentieth century. Furthermore, the Oskaloosa Airport was from 1942 to 1947 a Naval Outlying Landing Field associated with the major Naval air training base at Ottumwa. The Pella Airport is much more recent, having been initially constructed from 1967 to 1968.

Recommendations

Phase I intensive archaeological surveys of selected portions of both the Pella and Oskaloosa airport properties are recommended. At Pella, the southeastern-most 200 meters (656 feet) of the property parcel should be surveyed for prehistoric archaeological sites, and the vicinity of the structure illustrated on the 1875 plat map should be subjected to subsurface testing. At Oskaloosa, the southwestern corner of the property should be examined to search for prehistoric archaeological sites, the vicinities of the three farmsteads illustrated on the 1905 plat map and visible on the late 1930s aerial photograph should be surveyed, and the potential for any material traces of the World War II use of the field should be investigated. Beyond these selected locations, no additional archaeological work is recommended.

It should be noted that all Phase I archaeological surveys involve sampling within a project area. According to the "Protection of Historic Properties" portion of the National Historic Preservation Act [36CFR Part 800.13(b)], if any prehistoric or historic artifacts or features are unexpectedly uncovered during the course of the proposed construction activities, the responsible agency must be contacted without delay. In addition, if any human remains are encountered, it is required by Iowa law [Code of Iowa, Chapters 263B and 716.5; IAC 685, Ch. 11.1] that all work in the area of the remains be temporarily stopped, security provided for the remains, local law enforcement officials notified to help protect the remains, and the Bioarchaeology Program Director, located in the Office of the State Archaeologist, contacted immediately at (319) 384-0740. Archaeologists with Wapsi Valley Archaeology at (319) 462-4760 and the State Historical Society of Iowa at (515) 281-4358 or 8744 can also be called upon to provide advice if unexpected cultural resources are encountered.

Information contained in this report relating to the nature and location of archaeological sites is considered private and confidential and not for public disclosure in accordance with Section 304 of the National Historic Preservation Act (54 U.S.C. § 307103); 36 CFR Part 800.6 (a)(5) of the Advisory Council on Historic Preservation's rules implementing Sections 106 and 110 of the Act; Section 9(a) of the Archaeological Resource Protection Act (54 U.S.C. § 100707) and, Chapter 22.7, subsection 20 of the Iowa Code.

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Viewshed Impact Study of 1795 220th Street and the Prine Cemetery, Mahaska County, Iowa

Colleen Small-Vollman and Michael Giller

Wapsi Valley Archaeology Report No. 928

Wapsi Valley Archaeology, Inc.
126 East Main Street
Anamosa, Iowa 52205
(319) 462-4760

June 2016

Abstract

This report is an addendum to Wapsi Valley Archaeology Report number 907 (R&C No. 150362076). The Federal Aviation Administration and the South Central Regional Airport Agency (SCRAA) requested further study of the visual effects that the proposed South Central Regional Airport undertaking may have on historic properties within the defined project area. Wapsi Valley Archaeology, Inc. completed this survey for Snyder & Associates, Inc. in June 2016.

For this investigation, a viewshed impact study was completed to assess the visual impact the proposed airport building complex including runways, buildings no more than 35 feet tall, and an estimated-50-foot tower will have on the property located at 1795 220th Street and the Prine Cemetery located in Oskaloosa, Mahaska County. In addition, the Prine Cemetery was mapped and photographed.

A viewshed impact study was completed for the property located at 1795 220th Street. This property could not be fully evaluated because access to the resource was denied by the property owner; however, for the purpose of this study, the property may be treated as though it is eligible for the National Register of Historic Places. The viewshed impact study for the property located at 1795 220th Street concluded that the house and associated earth cellar are within the viewshed of the proposed South Central Regional Airport boundaries and would be adversely affected should the property be determined eligible for listing on the National Register of Historic Places.

The results of the viewshed impact study found that the Prine Cemetery will not be adversely visually impacted by the proposed airport building complex including runways, buildings no more than 35 feet tall, and a tower estimated to be 50 feet tall, based on current design plans. It is recommended that the existing screen of trees at the northern and eastern edges of the cemetery be maintained over time.

Wapsi Valley Archaeology, Inc. has determined that the proposed undertaking will have no adverse visual impact to the Prine Cemetery but will have an adverse visual impact on the residence and earth cellar located at 1795 220th Street if that property is determined eligible for the National Register. If the property located at 1795 220th Street, Oskaloosa is determined eligible in the future, it is recommended that a Multiple Property Documentation Form be completed on earth contact cellars in Iowa to mitigate the adverse effects of the undertaking on this property.

Recommendations

This viewshed impact study was undertaken by Wapsi Valley Archaeology, Inc. and has determined that the residence and earth cellar located at 1795 220th Street will be adversely impacted by the proposed airport undertaking. We recommend the following measures to mitigate the adverse effects of the undertaking should the property be found to be eligible for the National Register of Historic Places, or should the involved parties decide to treat the property as such.

Wapsi Valley Archaeology suggests that a National Register Multiple Property Documentation Form be prepared for earth contact cellars in Iowa. The document will define and describe the historic context, describe the associated property type (earth contact cellars in Iowa), and establish the significance and integrity of these resources.

Although the proposed undertaking will not visually impact the Prine Cemetery, it is suggested that the existing trees remain in place and be maintained in order to provide privacy and a screen from possible intrusions created by the proposed undertaking.

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APPENDIX I

Endangered and Threatened Species Report

ENGINEERS & PLANNERS
SNYDER & ASSOCIATES, INC.
IOWA | MISSOURI | NEBRASKA | SOUTH DAKOTA | WISCONSIN

Memorandum

To: South Central Regional Airport Agency **Date:** 5-15-2015

From: Snyder & Associates, Inc.

CC:

RE: T&E Species Review

The U.S. Fish and Wildlife service requires that a Threatened and Endangered Species Review (T&E Review) be conducted before the construction of projects that could have an impact on threatened and endangered species. As specified in Section 7 of the Endangered Species Act, as amended, each federal agency is required to ensure that "any action authorized , funded, or carried out by such agency…is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with the affected states, to be critical, unless such agency has been granted an exemption for such action by the Committee." Further, Section 7a(3) requires that "each federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under Section 4 or results in the destruction or adverse modification of critical habitat proposed to be designated for such species."

The proposed airport property is located in Sections 29, 32, and 33 of Township 76 North, Range 16 West, and Section 4 of Township 75 North, Range 16 West in Mahaska County, Iowa. The project area currently consists primarily of row-crop agricultural land and two woodland areas.

Federally threatened and endangered species are listed and described in **Table 1**. The U.S. Fish and Wildlife Service supplied the public a list of federally threatened and endangered species for each county in Iowa via their Section 7 Consultation web site:
http://www.fws.gov/midwest/endangered/lists/iowa_cty.html

Table 1 - Federal list of Threatened and Endangered Mammal, Animal, and Plant Species in Mahaska County, IA

Common Name	Scientific Name	Classification	Preferred Habitat
Indiana bat	Myotis sodalist	Endangered	Large trees, loose bark, near water
Northern long-eared bat	Myotis septentrionalis	Threatened	Loose bark trees, barns/sheds
Prairie bush clover	Lespedeza leptostachya	Threatened	Dry to mesic prairies, gravelly soils
Western prairie fringed orchid	Platanthera praeclara	Threatened	Mesic to wet unplowed tall grass prairies
Bald Eagle*	Haliaeetus leucocephalus	Special Concern	Near water, nest in large trees

* On June 28, 2007, the bald eagle was removed from the Federal List of Endangered and Threatened Species, but is still listed as a Species of Special Concern in the State of Iowa and protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

The State of Iowa threatened and endangered species are listed and described in **Table 2**. The Iowa Department of Natural Resources provides a list of state threatened and endangered species on their Natural Areas Inventory website:
https://programs.iowadnr.gov/naturalareasinventory/pages/Query.aspx

Table 2 - State list of Threatened and Endangered Mammal, Animal, and Plant Species in Mahaska County, IA

Common Name	Scientific Name	Classification	Preferred Habitat
Bald Eagle	Haliaeetus leucocephalus	Special Concern	Near water, nest in large trees
Barn Owl	Tyto alba	Endangered	Grassland, nest is large trees, abandoned buildings
Henslow's Sparrow	Ammodramus henslowii	Threatened	Tall, dense grass, >100 acres
Regal Fritillary	Speyeria idalia	Special Concern	Tall grass and mixed grass prairies
Indiana bat	Myotis sodalis	Endangered	Large trees, loose bark, near water
Southern Bog Lemming	Synaptomys cooperi	Threatened	Tall grass prairie
Creeping Bush-clover	Lespedeza repens	Special Concern	Anthropogenic, forests, rocky slopes
Curved-pod Corydalis	Corydalis curvisiliqua ssp grandibracteata	Endangered	Sandy soil, open ground, prairies, hillsides, disturbed areas
Downy Woodmint	Blephilia ciliata	Threatened	Mesic to dry black soil prairies
Earleaf Foxglove	Tomanthera auriculata	Special Concern	Mesic to wet-mesic tall grass prairie
Frost Grape	Vitis vulpina	Special Concern	Woods, flood plains, and ravines
Hill's Thistle	Cirsium hillii	Special Concern	Open, dry, sandy, fire-prone areas
Larkspur	Delphinium carolinianum	Special Concern	Dry open woods, sandy hills
Paw Paw	Asimina triloba	Special Concern	Rivers and woodlots
Rough Bedstraw	Galium asprellum	Special Concern	Moist soil in meadows, thickets
Rough Buttonweed	Diodia teres	Special Concern	Disturbed areas, upland prairies
Roundstem Foxglove	Agalinis gattingeri	Threatened	Dry open woodlands, prairies
Spring Avens	Geum vernum	Special Concern	Rich deciduous woodlands, shaded
Winged Monkey Flower	Mimulus alatus	Threatened	Openings in forests, swamps, ditches
Glomerate Sedge	Carex aggregate	Special Concern	Moist, open ground

Meadow Bluegrass	Poa wolfii	Special Concern	Moist woodlands, steep slopes
Oval Ladies'-tresses	Spiranthes ovalis	Threatened	Moist to mesic woodlands
Pale Green Orchid	Platanthera flava	Endangered	Moist prairies, riverbanks, ditches
Slender Ladies'-tresses	Spiranthes lacera	Threatened	Meadows, fields, prairies, open woods
Soft Rush	Juncus effusus	Special Concern	Wet woodlands, marshes, ditches
Virginia Spiderwort	Tradescantia virginiana	Special Concern	Woodlands, hillsides, stream banks
Crowfoot Clubmoss	Lycopodium digitatum	Special Concern	Disturbed areas, coniferous forests
Northern Adder's-tongue	Ophioglossum pusillum	Special Concern	Anthropogenic, marshes, meadows
Smooth Green Snake	Liochlorophis vernalis	Special Concern	Moist native prairies/prairie marshes

Suitable habitat for the Indiana bat and northern long-eared bat may be present within the woodland areas of the proposed airport property. Snyder & Associates, Inc. recommends a bat habitat assessment be performed within all woodland areas of the proposed airport property.

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INDIANA BAT AND NORTHERN LONG-EARED BAT HABITAT ASSESSMENT

PROPOSED SOUTH CENTRAL AIRPORT
IOWA HIGHWAY 163
MAHASKA COUNTY, IOWA

PERFORMED FOR:

SOUTH CENTRAL REGIONAL AIRPORT AGENCY
213 SOUTH 1ST STREET
OSKALOOSA, IOWA 52577

JUNE 19, 2015

PREPARED BY:

SNYDER & ASSOCIATES, INC.
ENGINEERS AND PLANNERS

2727 SW Snyder Blvd.
Ankeny, Iowa 50023
515-964-2020

SNYDER & ASSOCIATES
Engineers and Planners

TABLE OF CONTENTS

Section

Appendices

LIST OF ACRONYMS

CFR	Code of Federal Regulations
dbh	diameter at breast height
IDNR	Iowa Department of Natural Resources
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

Snyder & Associates, Inc. assessed the project areas of the proposed airport project in Mahaska County, Iowa for the presence of Indiana bat and Northern long-eared bat habitat. Pedestrian surveys of the project area were conducted on May 6 and May 18, 2015 in accordance with the proposal and general conditions. The scope of this investigation was to indicate the presence/absence of potential bat habitat within the project areas that may be affected by construction activities.

Mahaska County, Iowa is listed as a county containing suitable summer habitat for the Indiana bat (*Myotis sodalis*) and Northern long-eared bat (*Myotis septentrionalis*). Indiana bat and Northern long-eared bat habitat surveys were conducted to determine the potential occurrence for Indiana bat habitat, including mature trees or snag trees.

1.1 Site Description

The proposed airport project boundary is shown on the Vicinity Map (Exhibit 1) and U.S. Geological Survey (USGS) Topographic Map (Exhibit 2) enclosed in Appendix A. The proposed airport property boundary is an irregular shaped area located east of Highland Avenue, south of 210th Street, west of Independence Avenue, and north of Highway 163. Drainageways, agricultural fields, a pond, utility lines, trees, a portion of 220th Street, and residential areas are located within the airport property boundary. The project area consists of roughly 580 acres, and is located in the following sections in Mahaska County, Iowa:

- Section 29, Township 76 North, Range 16 West
- Section 32, Township 76 North, Range 16 West
- Section 33, Township 76 North, Range 16 West and
- Section 4, Township 75, Range 16 West

1.2 Indiana Bat Preferred Habitat

The Indiana bat (*Myotis sodalis*) is a federally-listed endangered species under 50 Code of Federal Regulations (CFR) Part 17 and state-listed endangered species under the Code of Iowa, Chapter 481B. Female Indiana bats have their young beneath the loose or peeling bark of trees. Most nursery colonies have been found beneath the bark on the trunk or large branches of standing dead trees. Dead trees that retain sheets or plates of bark such as several of the oak species (*Quercus spp.*) along with cottonwood (*Populus deltoides*) are potential roost trees. Live trees with the same characteristics, such as shagbark (*Carya ovata*) and shellbark (*Carya lacinosa*) hickory are also used for roosting (Reference A). Generally, nursery colonies are located near streams and rivers in upland forests because high populations of insects serve as a primary food source in these locations. Based on studies conducted in Illinois, essential summer habitat was considered to be the following:

- 30 percent or greater deciduous forest cover within a 6/10 mile radius
- Permanent water within a 6/10 mile radius
- Suitable roost trees within a 3/10 mile radius

Areas with as little as five (5) percent deciduous forest cover provided suitable habitat as long as water and roost trees were within the listed distances. In Iowa, Indiana bat occurrences have been recorded in areas of 15 percent or greater forest cover and near permanent water. As with other states, roost tree species have been identified as shagbark (*Carya ovata*) and shellbark (*Carya*

lacinosa), bitternut hickory, American elm (*Ulmus americana*), slippery elm (*Ulmus rubra*), eastern cottonwood (*Populus deltoids*), silver maple (*Acer saccharinum*), white oak (*Quercus alba*), red oak (*Quercus falcata*), post oak (*Quercus stellata*), and shingle oak (*Quercus imbricaria*) with slabs or plates of loose bark. Suitable summer habitat requirements in Iowa have been considered as having the following within a ½ mile radius of a location of:

- Forest cover of 15 percent or greater
- Permanent water
- One or more of the listed tree species having 9 inches dbh or greater
- The potential roost trees ranked as moderate or high for peeling or loose bark

Indiana bats have been found in both urban and rural areas but generally exclude city park areas with manicured and mowed grasses. In Iowa, the counties that are affected by the Indiana bat's summer range include: Adair, Appanoose, Boone, Cedar, Clarke, Dallas, Davis, Decatur, Des Moines, Guthrie, Henry, Iowa, Jasper, Jefferson, Johnson, Keokuk, Lee, Louisa, Lucas, Madison, Mahaska, Marion, Marshall, Monroe, Muscatine, Polk, Poweshiek, Ringgold, Scott, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, and Wayne (Reference C).

The U.S. Fish and Wildlife Service (USFWS) released the 2014 Range-Wide Indiana Bat Summer Survey Guidelines in January 2014 (Reference B). The objectives, according to the guidelines, are to:

- Standardize range-wide survey procedures
- Maximize the potential for detection/capture of Indiana bats at a minimum acceptable level of effort
- Make accurate presence/absence determinations
- Aid in conservation efforts for the species by identifying areas where the species is present

The USFWS 2014 guidelines state that suitable summer habitat for Indiana bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags greater than five (5) inches dbh that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat.

1.3 Northern Long-Eared Bat Preferred Habitat

The Northern long-eared bat (*Myotis septentrionalis*) is a federally-listed threatened species as of May 2015. Female northern long-eared bats have their young beneath the loose or peeling bark of trees. Northern long-eared bats require forest for roosting, raising young, foraging, and commenting between roosting and foraging habitat (Reference D). Northern long-eared bats may roost individually or in colonies in cavities, under bark, in crevices, crevices of both live trees and snags, and manmade structures to a lesser extent (Reference D). These bats are not

dependent on certain tree species but rather choose roost trees that have suitable cavities and bark. Bats emerge at dusk to forage in upland and lowland woodlots and tree-lined corridors, feeding on insects. In Iowa, all counties are affected by the Northern long-eared bat's summer range (Reference E).

According to the USFWS, suitable roost trees have the following:

- Trees can be alive, dead, dying, or snagged
- Trees with 3 inches or greater dbh
- Exfoliating bark, crevices, cavity, or cracks

Isolated trees are considered suitable roost trees if they exhibit the previously listed characteristics and are less than 1,000 feet from the nearest roost tree within a woodlot or wooded fencerow. Spring/fall swarming habitat is most typically found within five (5) miles of a hibernaculum and includes forested patches, fencerows, riparian, forests, and other wooded corridors.

2.0 Methods

The proposed airport project area was assessed for potential Indiana bat and Northern long-eared bat habitat on May 6 and May 18, 2015. Only those portions for which private landowner permission could be obtained were assessed during the pedestrian survey. The project area was assessed following the Iowa Department of Natural Resources (IDNR) Survey Methods for Indiana Bat Summer Habitat (Reference A), USFWS Range-Wide Indiana Bat Summer Survey Guidelines (Reference B), and the USFWS Northern Long-Eared bat guidance (Reference D).

Visual observations were performed by walking the project area in order to identify live and dead trees/snags greater than three (3) inches dbh having exfoliating bark, crack, crevices, and/or hollows according to the USFWS 2014 Guidelines. Photographs were taken of these areas and are included in Appendix B of this report.

Points were marked using a global positioning system (GPS) unit. Each location was then assigned a numerical indicator where the number represented a location for potential Indiana or Northern long-eared bat habitat trees. These locations included either individual trees or group of trees clustered together.

3.0 Results

A large portion of the project area is agricultural land with some forested areas and streams. Throughout the accessible project area, 89 potential roost tree locations (Exhibits 3-1 through 3-3 enclosed in Appendix A) met the habitat requirements listed in the IDNR and USFWS guidance. These potential roost trees included either an individual tree or group of trees clustered together and are enclosed in Appendix B, Photographic Documentation. The photographs provide a description and location of each site meeting the habitat requirements.

4.0 Conclusions and Recommendations

Potential Indiana bat and Northern long-eared bat habitat locations were assessed within the project area on May 6 and May 18, 2015.

A few private landowners did not grant permission to access their property within the proposed airport property. Within the accessible project areas, 89 potential roost tree locations were identified and categorized as dead/dying, living, or snag trees:

- The following are dead/dying trees that have peeling bark as identified in the USFWS guidelines:
  2, 15, 17, 18, 19, 21, 23, 25, 28, 29, 32, 37, 40, 41, 44, 49, 54, 55, 68, 69, 71, 73, 75, 78, 80, 85, 86, 87
- The following are live trees with exfoliating bark, cracks, or crevices:
  1, 3, 4, 6, 11, 16, 33, 34, 35, 61, 70, 79, 89
- The following are snag trees with downed limbs and/or trunks that have peeling bark:
  5, 7, 8, 9, 10, 12, 13, 14, 20, 22, 24, 26, 27, 30, 31, 36, 38, 39, 42, 43, 45, 46, 47, 48, 50, 51, 52, 53, 56, 57, 58, 59, 60, 62, 63, 64, 65, 66, 67, 72, 74, 76, 77, 81, 82, 83, 84, 88

Based on the results of the Indiana bat and Northern long-eared bat habitat survey, the proposed actions **may affect, but not likely adversely affect** the Indiana bat and Northern long-eared bat. The recommendation is that removal of any potential roost trees identified during the habitat study or during project construction should be conducted from October 1 to March 31.

5.0 References

A. IDNR, 2007. Guidelines for Protection of Indiana Bat Summer Habitat, June 2007.

B. USFWS, 2014. Range-Wide Indiana Bat Summer Survey Guidelines, available online at: http://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/2014IBatSummerSurveyGuidelines13Jan2014.pdf

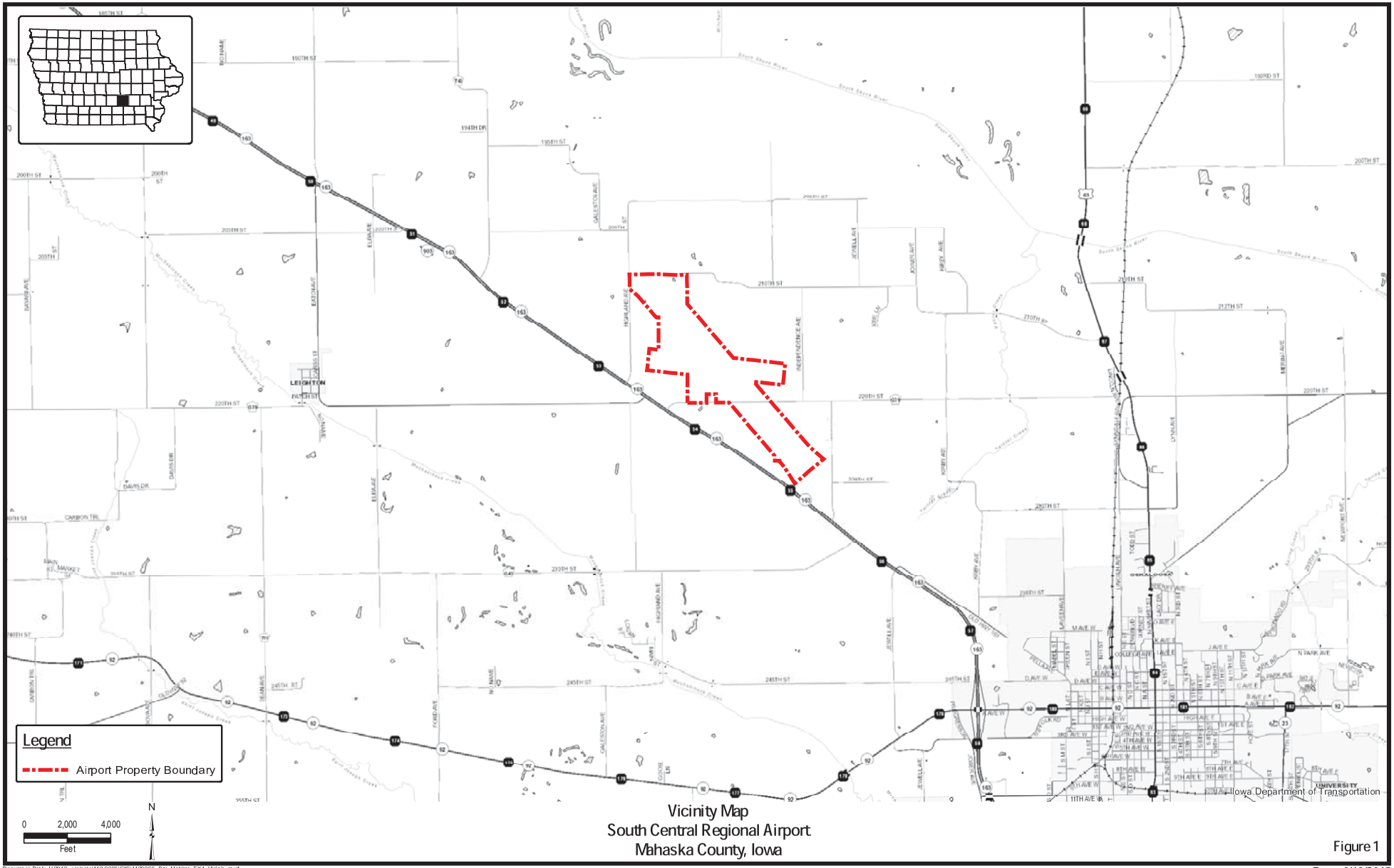
C. USFWS, 2014. Indiana Bat Counties in Iowa, available online at: http://www.fws.gov/midwest/Endangered/lists/pdf/IowaIBatRangeMap.pdf

D. USFWS, 2015. Northern Long-Eared Bat 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule, available online at: http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinalListing02April2015.pdf

E. USFWS, 2015. Northern Long-Eared Bat Interim 4(d) Rule Map, available online at: http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/WNSBufferZone.pdf

Appendix A
Exhibits

Source: IA DOT



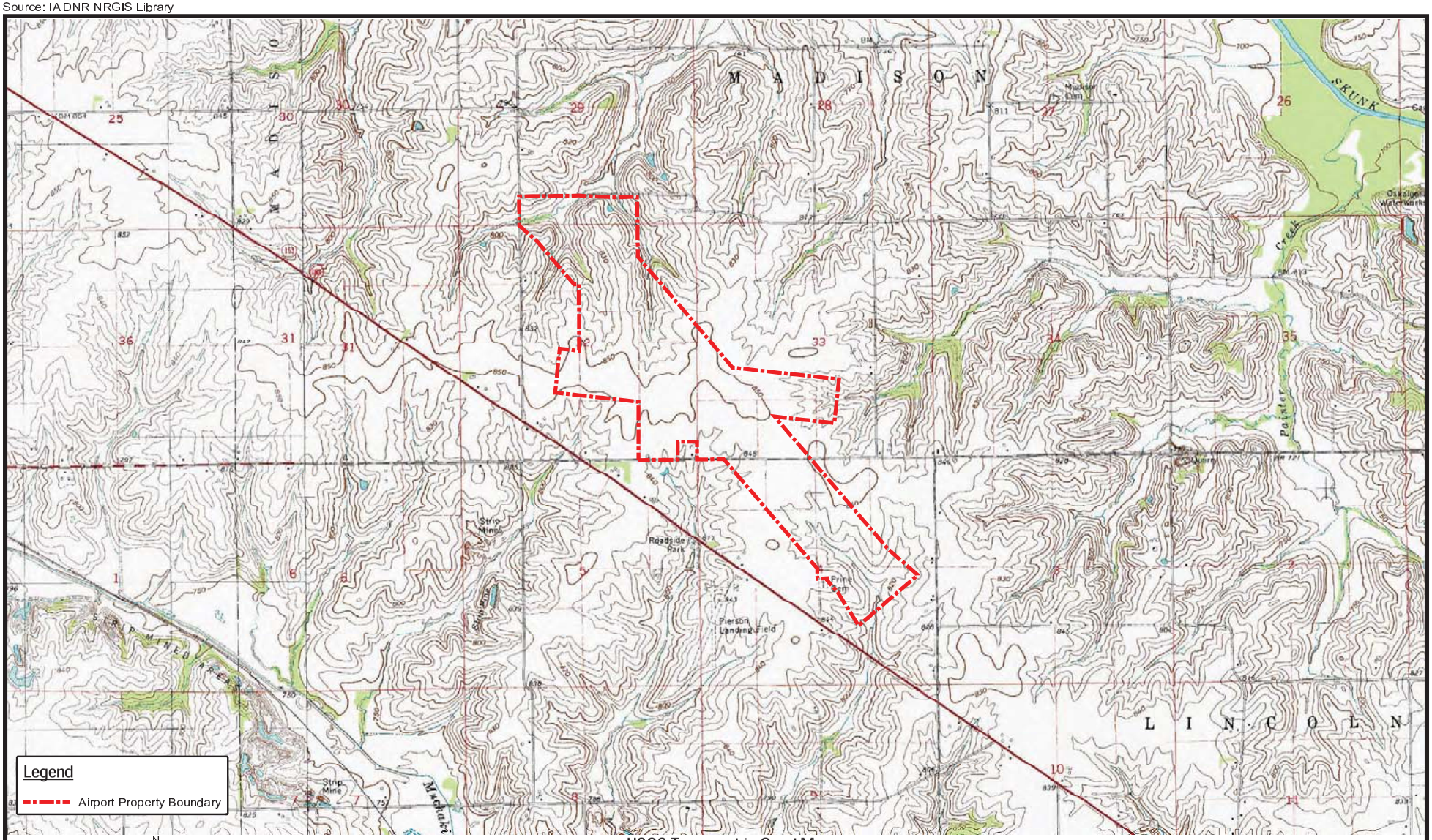
Vicinity Map
South Central Regional Airport
Mahaska County, Iowa

Figure 1

Document Path: J:\2012_projects\112,0865\GIS\1120865_Bat_Habitat_EX1_Vicinity.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library



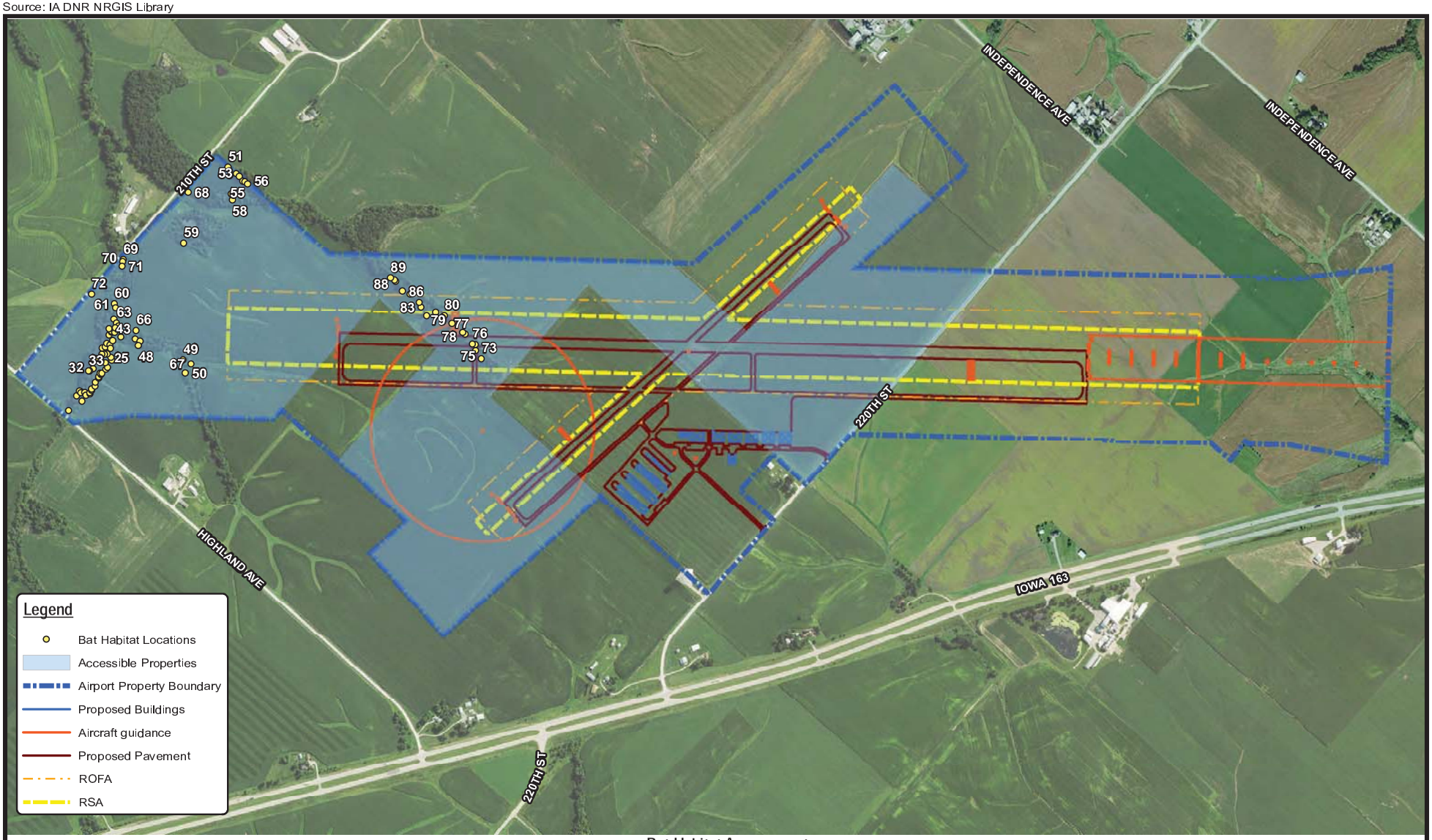
USGS Topographic Quad Map
South Central Regional Airport
Mahaska County, Iowa

Figure 2

Document Path: J:\2012_projects\112_0865\GIS\1120865_Bat_Habitat_Ex2-topo.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library



Bat Habitat Assessment
South Central Regional Airport
Mahaska County, Iowa

Figure 3-1

Document Path: J:\2012_projects\112_0865\GIS\1120865_EX3_Bat Habitat Assessment.mxd

Date: 6/19/2015

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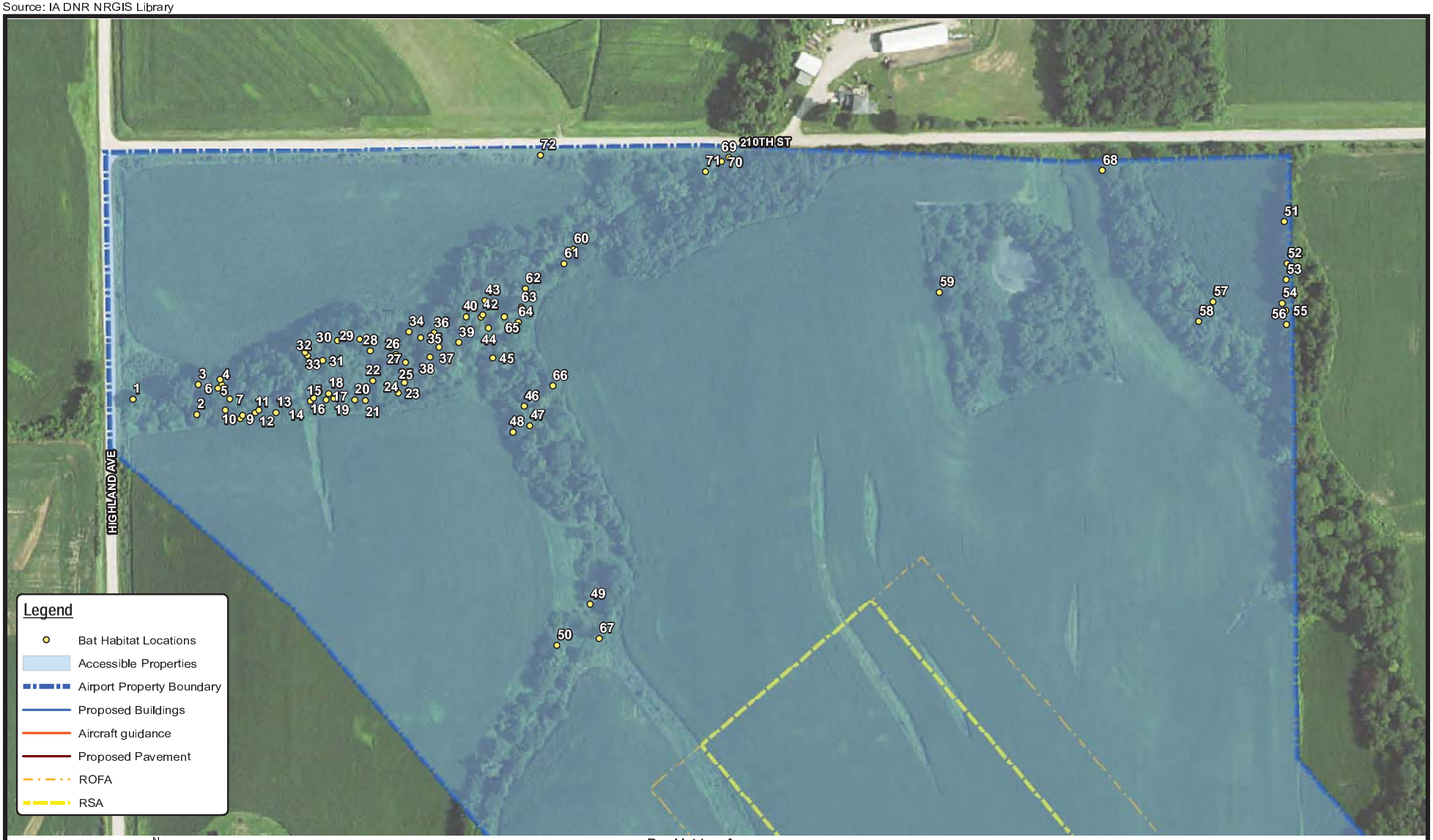

Bat Habitat Assessment
South Central Regional Airport
Mahaska County, Iowa

Figure 3-2

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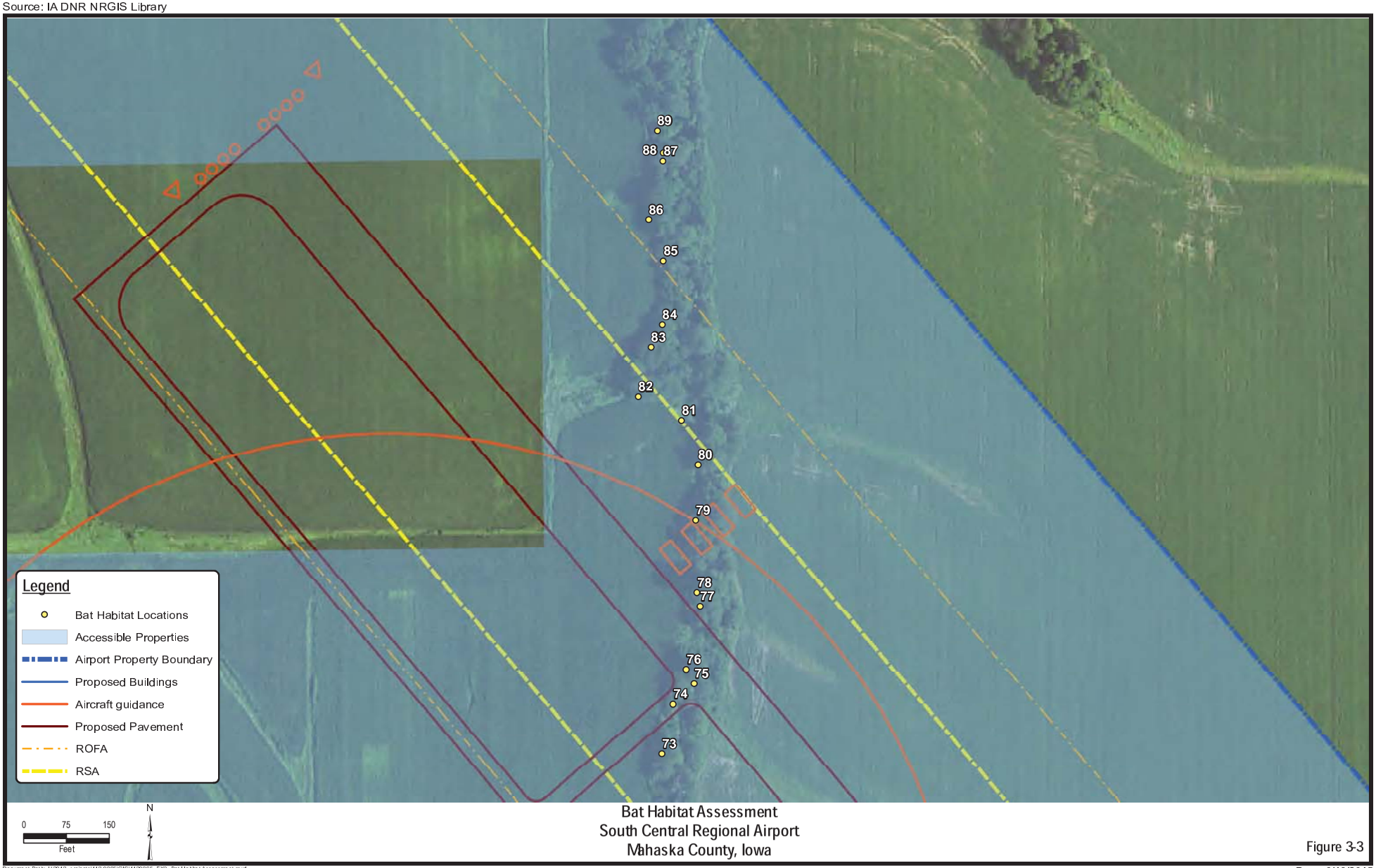


Bat Habitat Assessment
South Central Regional Airport
Mahaska County, Iowa

Figure 3-3

Document Path: J:\2012_projects\112_0865\GIS\1120865_EX3_Bat Habitat Assessment.mxd

Date: 6/19/2015

Appendix B
Photographic Documentation

1. Cottonwood with cracks and crevices at approximately 25 dbh (41.350232°,-92.732325°).

2. Dead tree with peeling bark, cracks, and crevices (41.350134°,-92.731803°)

3. Honey Locust with cracks and crevices at approximately 25 dbh (41.350320°,-92.731788°)

4. Ash tree with cracks and crevices at approximately 12 dbh (41.350316°,-92.731597°)

5. Dying tree with peeling bark, cracks, and crevices (41.350349°,-92.731611°)

6. Ash tree with cracks and crevices at approximately 14 dbh (41.350295°,-92.731629°)

7. Cluster of dead trees with cracks and crevices (41.350227°,-92.731533°)

8. Cluster of dead trees with peeling bark, cracks, and crevices (41.350160°,-92.731571°)


9. Cluster of dead trees with peeling bark, cracks, and crevices (41.350106°,-92.731450°)

10. Cluster of dead trees with peeling bark, cracks, and crevices (41.350127°,-92.731430°)

11. Cluster of living trees with peeling bark, cracks, and crevices (41.350142°,-92.731328°)

12. Cluster of dead trees with peeling bark, cracks, and crevices (41.350158°,-92.731296°)

13. Cluster of dead trees with peeling bark, cracks, and crevices (41.350141°,-92.731157°)

14. Cluster of dead trees with peeling bark, cracks, and crevices (41.350197°,-92.731055°)

15. Dead tree with peeling bark, cracks and crevices (41.350210°,-92.730875°)

16. Cluster of living trees with peeling bark, cracks, and crevices (41.350231°,-92.730847°)

17. Cluster of dead trees with peeling bark, cracks, and crevices (41.350217°,-92.730746°)

18. Cluster of dead trees with peeling bark, cracks, and crevices (41.350256°,-92.730727°)

19. Cluster of dying trees with peeling bark, cracks, and crevices (41.350225°,-92.730682°)

20. Cluster of dead trees with cracks and crevices (41.350215°,-92.730514°)

21. Dying tree with cracks and crevices (41.350211°,-92.730427°)

22. Dead tree with cracks and crevices (41.350332°,-92.730364°)

23. Dying tree with peeling bark and crevices (41.350255°,-92.730157°)

24. Dead tree with peeling bark, cracks, and crevices (41.350318°,-92.730107°)

25. Dead tree with peeling bark, cracks, and crevices (41.350443°,-92.730095°)

26. Dead tee with peeling bark and crevices (41.350493°,-92.730174°)

27. Dying tree with peeling bark and crevices (41.350537°,-92.730219°)

28. Dead tree with peeling bark, cracks, and crevices (41.350517°,-92.730384°)

29. Dead tree with peeling bark, cracks, and crevices (41.350589°,-92.730467°)

30. Dead tree with peeling bark, cracks, and crevices (41.350583°,-92.730650°)

33. Cluster of living trees with peeling bark, cracks, and crevices (41.350510°,-92.730915°)

32. Dying tree with peeling bark and crevices (41.350490°,-92.730895°)

31. Cluster of dying trees with peeling bark, cracks, and crevices (41.350460°,-92.730773°)

34. Ash tree with peeling bark and crevices at approximately 12dbh (41.350632°,-92.730067°)

35. Cluster of living trees with peeling bark, cracks, and crevices (41.350594°,-92.729971°)

36. Cluster of dying trees with peeling bark, cracks, and crevices (41.350624°,-92.729861°)

37. Dying tree with peeling bark and crevices at approximately 10 dbh (41.350537°,-92.729821°)

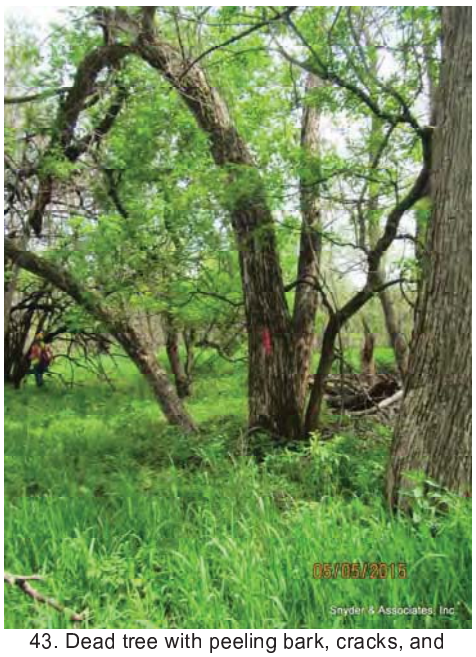
38. Cluster of dying trees with peeling bark, cracks, and crevices (41.350475°,-92.729895°)

39. Cluster of dead and dying trees with peeling bark and crevices (41.350564°,-92.729659°)

40. Dying tree with peeling bark and crevices (41.350722°,-92.729596°)

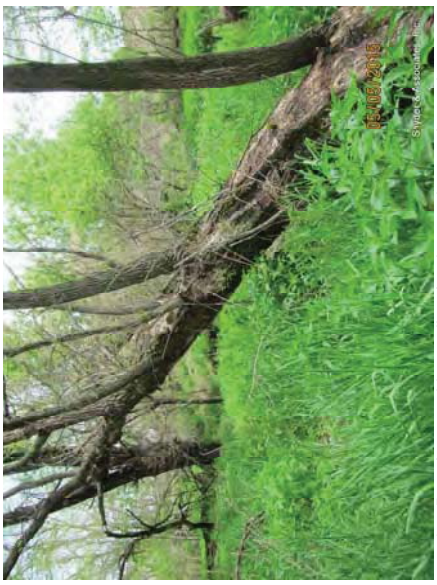
41. Dead tree with peeling bark, cracks, and crevices (41.350719°,-92.729475°)

42. Cluster of dead trees with peeling bark, cracks, and crevices (41.350731°,-92.729460°)



43. Dead tree with peeling bark, cracks, and crevices (41.350820°,-92.729442°)

44. Cluster of dead trees with peeling bark, cracks, and crevices (41.350651°,-92.729415°)



45. Dead tree with peeling bark, cracks, and crevices (41.350466°,-92.729383°)

52. Dying tree with peeling bark, cracks, and crevices (41.351004°,-92.722890°)

49. Dying tree with peeling bark and crevices (41.348945°,-92.728604°)

46. Cluster of dead trees with peeling bark, cracks, and crevices (41.350168°,-92.729131°)

53. Cluster of dead trees with peeling bark and crevices (41.350906°,-92.722898°)

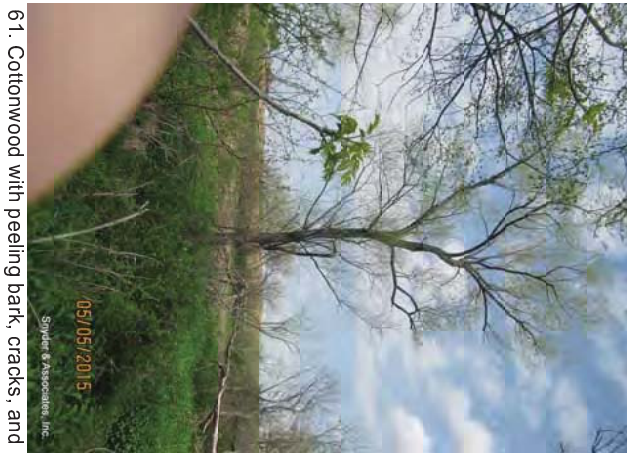
50. Cluster of dead and dying trees with peeling bark, cracks, and crevices (41.348693°,-92.728879°)

47. Cluster of dead trees with peeling bark, cracks, and crevices (41.350047°,-92.729085°)

54. Dead tree with peeling bark, cracks, and crevices (41.350760°,-92.722934°)

51. Dead tree with peeling bark, cracks, and crevices (41.351263°,-92.722912°)

48. Cluster of dead trees with peeling bark and crevices (41.350009°,-92.729225°)



61. Cottonwood with peeling bark, cracks, and crevices at approximately 12dbh (41.351042°,-92.728793°)

58. Cluster of dead trees with peeling bark, cracks, and crevices (41.350652°,-92.723615°)

55. Dying tree with peeling bark and crevices (41.350716°,-92.722902°)

62. Dead tree with peeling bark, cracks, and crevices (41.350890°,-92.729111°)

59. Dead tree with peeling bark, cracks, and crevices (41.350846°,-92.725732°)

56. Cluster of dead trees with peeling bark, cracks, and crevices (41.350630°,-92.722899°)

63. Dead tree with peeling bark, cracks, and crevices (41.350777°,-92.729145°)

60. Cluster of dead trees with peeling bark, cracks, and crevices (41.351131°,-92.728717°)

57. Cluster of dead trees with peeling bark, cracks, and crevices (41.350772° ,-92.723498°)

64. Dead tree with peeling bark, cracks, and crevices (41.350686°,-92.729173°)

65. Cluster of dead trees with peeling bark, cracks, and crevices (41.350720°,-92.729285°)

66. Cluster of dead trees with peeling bark, cracks, and crevices (41.350292°,-92.728896°)

67. Cluster of dead trees with peeling bark, cracks, and crevices (41.348734°,-92.728534°)

68. Dying tree with peeling bark, cracks, and crevices (41.351588°,-92.724392°)

69. Cluster of dead trees with peeling bark, cracks, and crevices (41.351688°,-92.727441°)

70. Cottonwood tree with peeling bark, cracks, and crevices at approximately 12 dbh (41.351662°,-92.727502°)

71. Dying tree with peeling bark and crevices (41.351602°,-92.727631°)

72. Cluster of dead trees with peeling bark, cracks, and crevices (41.351711°,-92.728978°)

73. Cluster of dead trees with peeling bark, cracks, and crevices (41.343461°,-92.722115°)

74. Dead tree with peeling bark, cracks, and crevices (41.343700°,-92.722041°)

75. Cluster of dying trees with peeling bark, cracks, and crevices (41.343798°,-92.721905°)

76. Dying tree with peeling bark, cracks, and crevices (41.343865°,-92.721955°)

77. Dead tree with peeling bark, cracks, and crevices (41.344168°,-92.721863°)

78. Dying tree with peeling bark, cracks, and crevices (41.344235°,-92.721882°)

79. Cluster of living trees with peeling bark, cracks, and crevices (41.344582°,-92.721886°)

80. Dying tree with peeling bark, cracks, and crevices (41.344849°,-92.721867°)

81. Cluster of dead and dying trees with peeling bark, cracks, and crevices (41.345062°,-92.721970°)

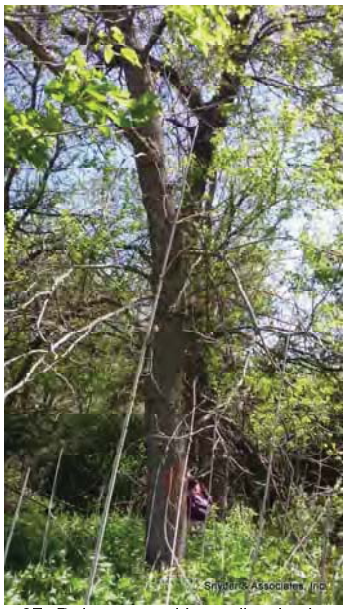
82. Dead tree with peeling bark, cracks, and crevices (41.345178°,-92.722244°)

83. Cluster of dead and dying trees with peeling bark, cracks, and crevices (41.345415°,-92.722159°)

84. Dead tree with peeling bark, cracks, and crevices (41.345523°,-92.722087°)

85. Dying tree with peeling bark, cracks, and crevices (41.345829°,-92.722078°)

86. Cluster of dead and dying trees with peeling bark, cracks, and crevices (41.346029°,-92.722169°)



87. Dying tree with peeling bark, cracks, and crevices (41.346310°,-92.722073°)

88. Cluster of dead and dying trees with peeling bark, cracks, and crevices (41.346349°,-92.722072°)

89. Cluster of living trees with peeling bark, cracks, and crevices (41.346456°,-92.722107°)

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APPENDIX J

Wetland and Stream Delineation Report

ENGINEERS & PLANNERS
SNYDER & ASSOCIATES, INC.
IOWA | MISSOURI | NEBRASKA | SOUTH DAKOTA | WISCONSIN

April 20, 2016

Joey Shoemaker
USACE Rock Island District
1500 Rock Island Drive
Rock Island, IL 61201

RE: PROPOSED SOUTH CENTRAL AIRPORT WETLAND DELINEATION ADDENDUM

Mr. Shoemaker,

On October 26, 2016 I received an email from you requesting additional data at the proposed airport with an attached PDF that referenced areas needing additional information. All of the areas identified, with the exception of the inaccessible property due to landowner constraints, were reviewed.

Forested wetlands were not identified within the proposed airport property boundary. However, Intermittent Stream B, as identified in the wetland delineation report dated July 1, 2015, was confirmed to have a defined bed and bank. A portion of the stream (approximately 600 linear feet) is located within the runway object free area (ROFA) and could be impacted by the proposed project. This would require 404 permitting, 401 water quality certification, and mitigation. The FAA is aware of these requirements.

I added photographs and descriptions to the map you sent in October 2015 and took additional data points within the proposed airport property boundary.

Sincerely,

SNYDER & ASSOCIATES, INC.

Nichoel Church
Environmental Scientist

Enclosures:
Airport PDF (originally from USACE but updated with comments and photos)
Wetland Delineation Addendum Maps
Data Forms

2727 SW Snyder Boulevard | P.O. Box 1159 | Ankeny, IA 50023-0974
p: 515.964.2020 | f: 515.964.7938 | www.snyder-associates.com

WETLAND DELINEATION & STREAM ASSESSMENT

PROPOSED SOUTH CENTRAL AIRPORT
MAHASKA COUNTY, IOWA

PERFORMED FOR
SOUTH CENTRAL REGIONAL AIRPORT AGENCY
213 SOUTH 1ST STREET
OSKALOOSA, IOWA 52577

JUNE 19, 2015

PREPARED BY:

SNYDER & ASSOCIATES, INC.
ENGINEERS AND PLANNERS

2727 SW Snyder Boulevard
Ankeny, IA 50023
515-964-2020

SNYDER & ASSOCIATES
Engineers and Planners

Prepared for:

South Central Regional Airport Agency
213 South 1st Street
Oskaloosa, Iowa 52577

Wetland Delineation Report

Proposed Sourth Central Airport
Mahaska County, Iowa

Snyder & Associates, Inc. Project # 112.0865

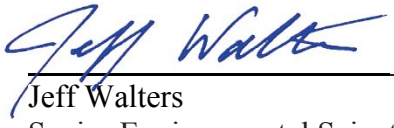
Prepared by:

6/19/2015

Nichoel Church
Environmental Scientist

Date

Reviewed by:



6/19/2015

Jeff Walters
Senior Environmental Scientist

Date

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2727 SW Snyder Boulevard
Ankeny, Iowa 50023
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1. Introduction

Snyder & Associates, Inc. delineated the proposed South Central Airport project located in Mahaska County, Iowa for the presence of streams and wetlands on May 5th and 18th, 2015 in accordance with the proposal and general conditions. The proposed airport property boundary is an irregular shaped area located east of Highland Avenue, South of 210th Street, west of Independence Avenue, and north of Highway 163 (Figure 1). Drainageways, agricultural fields, a pond, utility lines, trees, a portion of 220th Street, and a couple residential areas are located within the airport property boundary. Roads, residential dwellings, trees, and a water tower adjoin the boundary. The proposed airport property boundary is situated in the following sections of Mahaska County, Iowa:

- Section 29, Township 76 North, Range 16 West,
- Section 32, Township 76 North, Range 16 West,
- Section 33, Township 76 North, Range 16 West, and
- Section 4, Township 75, Range 16 West.

The scope of this investigation was to indicate the presence/absence of wetlands, identify wetlands that could be impacted by the project, and delineate the upper boundaries of potential jurisdictional wetlands within the project area. In addition to wetlands, waters of the U.S., which include lakes, ponds, rivers, and streams, would be included in the delineation. This report is used by the U.S. Army Corps of Engineers (USACE) and the Iowa Department of Natural Resources (IDNR). The USACE has discretion to use this report for the purposes of making jurisdictional determinations and enforcing Section 404 of the Clean Water Act. The IDNR uses the report for the purpose of enforcing Section 401 of the Clean Water Act.

The information and recommendations presented in this report are professional opinions based on visual observation, review of available data pertaining to the subject property, and interpretation of available public records. The opinions and recommendations presented herein apply to the subject property conditions at the time of Snyder & Associates, Inc investigation.

2. Methodology

Initial research identified potential wetlands within the wetland delineation boundary. This boundary only included the landowners who provided permission to access their property. A U.S. Geological Survey (USGS) topographic map was used to identify streams, forests, and topography that may indicate the presence of wetlands (Figure 2). National Wetland Inventory (NWI) maps, originally prepared by the U.S. Fish and Wildlife Services (USFWS), were obtained from the Department of the Interior (Figure 3). A soils map provided by the U.S. Department of Agriculture (USDA) was used to identify the approximate location of hydric soils (Figure 4).

On site, potential wetlands were examined for wetland indicators using the Routine On-Site Determination Method as defined in the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) (2010 Midwest Supplement).* Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the EPA as:

"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation

typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.[1]"

Generally an area must have all three indicators including hydrophytic vegetation, hydrology, and hydric soils to support the vegetation and hydric soils to be classified as a wetland. If one or more of these indicators are not present, the area is typically not considered a wetland.

Sample points were taken to confirm the presence or absence of wetland characteristics (Figure 5 enclosed in Appendix A). Photographs visually record the wetland location and habitat at the time of the wetland delineation. Data forms (enclosed in Appendix B) document characteristics at each sample point.

Only areas where landowners provided permission and access to their property were delineated within the airport property boundary. For those properties where access was not granted, a review of satellite imagery and looking at the project area from nearby roadways helped identify potential wetland areas by examining visible vegetation.

3. Site Review

The USGS topographic map is enclosed in Appendix A as Figure 2. A road, intermittent streams, and trees are located within the proposed airport property boundary. Roads, residential dwellings, trees, and a water cemetery adjoin the property boundary.

National Wetlands Inventory maps identify areas that may contain potential wetlands. It should be noted that the wetlands identified on the map may not have been field checked by the USFWS. The NWI Map should not be used as the sole basis for wetland determinations, but as guidance to determine where wetlands may exist within the study corridor. The NWI Map[2] (Figure 3) identified the following potential wetland within the project area:

- **PUBGh:** A Palustrine wetland with an unconsolidated bottom that is intermittently exposed and is diked/impounded..

The USDA Soil Conservation Map[3] was obtained from the USDA website and is included in Figure 4. The soil descriptions identified on each of the project areas are identified in Table 1.

[1] Environmental Laboratory. 1987 Corps of Engineers Wetlands Delineation Manual. Vicksburg, MS: U.S. Army Corps of Engineers, 1987.

[2] http://www.fws.gov/wetlands/Data/Mapper.html

[3] http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Table 1. Soil Map Units and Descriptions

Soil Map Unit	Description	Hydric
11B	Colo-Ely silty clay loams, 2-5% slopes	Yes
24D2	Shelby loam, 9-14% slopes, moderately eroded	No
65E2	Lindley loam, 14-18% slopes, moderately eroded	No
65F2	Lindley loam, 18-25% slopes, moderately eroded	No
69C	Clearfield silty clay loam, 5-9% slopes	Yes
76C2	Ladoga silt loam, 5-9% slopes, eroded	No
76D2	Ladoga silt loam, 9-14% slopes, eroded	No
80C2	Clinton silt loam, 5-9% slopes, eroded	No
122	Sperry silt loam, 0-2% slopes	Yes
179D2	Gara loam, 9-14% slopes, moderately eroded	No
179E2	Gara loam, 14-18% slopes, moderately eroded	No
222C	Clarinda silty clay loam, 5-9% slopes	Yes
222C2	Clarinda silty clay loam, 5-9% slopes, moderately eroded	Yes
222D2	Clarinda silty clay loam, 9-14% slopes, moderately eroded	Yes
279	Taintor silty clay loam, 0-2% slopes	Yes
280	Mahaska silty clay loam, 0-2% slopes	Yes
280B	Mahaska silty clay loam, 2-5% slopes	Yes
281B	Otley silty clay loam, 2-5% slopes	No
281C2	Otley silty clay loam, 5-9% slopes, eroded	Yes
281D2	Otley silty clay loam, 9-14% slopes, eroded	Yes
570B	Nira silty clay loam, 2-5% slopes	No
570C	Nira silty clay loam, 5-9% slopes	Yes
570C2	Nira silty clay loam, 5-9% slopes, moderately eroded	Yes
792D2	Armstrong loam, 9-14% slopes, moderately eroded	No
1313E	Munterville silt loam, 14-18% slopes	No
1313F	Munterville silt loam, 18-25% slopes	No

11B soil map unit is comprised of 60 percent Colo, frequently flooded, and similar soils, 30 percent Ely and similar soils, and 10 percent minor components including Olmitz and Judson. Colo, frequently flooded, is formed from drainageways and the parent material is silty alluvium.

24D2 soil map unit is comprised of 90 percent Shelby, moderately eroded, and similar soils, and 10 percent minor components including Adair, moderately eroded, and Lamoni, moderately eroded. Shelby, moderately eroded, is formed from hillslopes and the parent material is subglacial till.

65E2 soil map unit is comprised of 90 percent Lindley, moderately eroded, and similar soils, and 10 percent minor components including Munterville, moderately eroded, and Keswick, moderately eroded. Lindley, moderately eroded, is formed from hillslopes and the parent material is subglacial till.

65F2 soil map unit is comprised of 90 percent Lindley, moderately eroded, and similar soils, and 10 percent minor components including Munterville, moderately eroded, and Keswick, moderately eroded. Lindley, moderately eroded, is formed from hillslopes and the parent material is subglacial till.

69C soil map unit is comprised of 90 percent Clearfield and similar soils, and 10 percent minor components including Clarinda and Nira. Clearfield is formed from hillslopes and the parent material is loess and underlying gray paleosol.

76C2 soil map unit is comprised of 85 percent Ladoga, eroded, and similar soils, and 15 percent minor components including Ladoga, severely eroded, Hedrick, eroded, and Rinda, eroded. Ladoga, eroded, is formed from interfluves and the parent material is loess.

76D2 soil map unit is comprised of 90 percent Ladoga, eroded, and similar soils, and 10 percent minor components including Gara, eroded and Armstrong, eroded. Ladoga, eroded, is formed from hillslopes and the parent material is loess.

80C2 soil map unit is comprised of 90 percent Clinton, eroded, and similar soils, and 10 percent minor components including Ashgrove, eroded, and Clinton, severely eroded. Clinton, eroded, is formed from interfluves and the parent material is loess.

122 soil map unit is comprised of 100 percent sperry and similar soils. Sperry is formed from depressions and the parent material is loess.

179D2 soil map unit is comprised of 85 percent Gara, moderately eroded, and similar soils, and 15 percent minor components including Shelby, moderately eroded, Armstrong, moderately eroded, and Munterville, moderately eroded. Gara, moderately eroded, is formed from hillslopes and the parent material is subglacial till.

179E2 soil map unit is comprised of 90 percent Gara, moderately eroded, and similar soils, and 10 percent minor components including Armstrong, moderately eroded, and Caleb, moderately eroded. Gara, moderately eroded is formed from hillslopes and the parent material is subglacial till.

222C soil map unit is comprised of 100 percent Clarinda and similar soils. It is formed from hillslopes and the parent material is gray paleosol and underlying subglacial till.

222C2 soil map unit is comprised of 100 percent Clarinda, moderately eroded, and similar soils. Clarinda, moderately eroded, is formed from hillslopes. The parent material is gray paleosol and underlying subglacial till.

222D2 soil map unit is comprised of 100 percent Clarinda, moderately eroded, and similar soils. Clarinda is formed from hillslopes. The parent material is gray paleosol and underlying subglacial till.

279 soil map unit is comprised of 90 percent Taintor and similar soils, and 10 percent minor components including Mahaska and Sperry. Taintor is formed form interfluves and the parent material is loess.

280 soil map unit is comprised of 95 percent Mahaska and similar soils, and 5 percent minor components including Taintor. Mahaska is formed from interfluves and the parent material is loess.

280B soil map unit is comprised of 90 percent Mahaska and similar soils, and 10 percent minor components including Taintor and Otley. Mahaska is formed from interfluves and the parent material is loess.

281B soil map unit is comprised of 95 percent Otley and similar soils, and 5 percent minor components including Mahaska. Otley is formed from interfluves and the parent material is loess.

281C2 soil map unit is comprised of 90 percent Otley, eroded, and similar soils, and 10 percent minor components including Clearfield, eroded, and Otley, severely eroded. Otley, eroded is formed from hillslopes and the parent material is loess.

281D2 soil map unit is comprised of 85 percent Otley, moderately eroded, and similar soils, and 15 percent minor components including Otley, severely eroded, Adair, moderately eroded, and Shelby, moderately eroded. Otley, moderately eroded, is formed from hillslopes and the parent material is loess.

570B soil map unit is comprised of 90 percent Nira and similar soils and 10 percent minor components including Otley and Mahaska. Nira is formed from hillslopes and the parent material is loess.

570C soil map unit is comprised of 85 percent Nira and similar soils, and 15 percent minor components including Otley, Ladoga, and Clearfield. Nira is formed from hillslopes and the parent material is loess.

570C2 soil map unit is comprised of 85 percent Nira, moderately eroded, and similar soils, and 15 percent minor components including Otley, moderately eroded, Ladoga, moderately eroded, Clearfield, moderately eroded, and Clarinda, moderately eroded. Nira, moderately eroded, is formed from hillslopes and the parent material is loess.

792D2 soil map unit is comprised of 85 percent Gara, moderately eroded, and similar soils, and 15 percent minor components including Shelby, moderately eroded, Armstrong, moderately eroded, and Munterville, moderately eroded. Gara, moderately eroded, is formed from hillslopes and the parent material is subglacial till.

1313E soil map unit is comprised of 95 percent Munterville and similar soils, and 5 percent minor components including Boone. Munterville is formed from hillslopes. The parent material is silty material and loess over residuum weathered from shale.

1313F soil map unit is comprised of 95 percent Munterville and similar soils and 5 percent minor components including Boone. Munterville is formed from hillslopes. The parent material is silty material and loess over residuum weathered from shale.

The 100 year floodplain map is enclosed in Appendix A as Figure 6. Development within the floodplain is discouraged without purchase of flood insurance, a program administered by the Federal Emergency Management Administration (FEMA's) National Flood Insurance Program. Executive Order 11988, Floodplain Management, dated May 24, 1977, implemented by US DOT Order 5650.2, dated April 23, 1979, requires Federal agencies to avoid disrupting floodplain areas whenever there is a practicable alternative, and to minimize any environmental harm that might be caused by the proposed action.

4. Environmental Setting

Weather during the wetland delineation on May 5, 2015 was scattered clouds at approximately 75º F with winds blowing from the south at about 8 mph[4].

Weather during the wetland delineation on May 18, 2015 was sunny at approximately 60º F with winds blowing from the northwest at about 20 mph[5].

According to the National Climatic Data Center,[6] data for Oskaloosa, IA included the mean precipitation in April at 3.59 inches, and May at 4.80 inches. Current climate data was obtained from the Natural Resources Conservation Service (NRCS) Field Office Technical Guide website[7] for Oskaloosa. Precipitation for May 1-31, 2015 was 4.52 inches.

[4] http://www.wunderground.com/history/
[5] http://www.wunderground.com/history/
[6] http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?directive=prod_select2&prodtype=CLIM20&subrnum=
[7] http://efotg.sc.egov.usda.gov/efotg_locator.aspx

OSKALOOSA (136327)
Observed Daily Data
Month: May 2015

Day	Max Temp	Min Temp	Avg Temp	GDD B50	GDD B40	Total Prcpn	New Snow	Snow Depth
1	70	37	53.5	4	14	0.00	0.0	0
2	70	37	53.5	4	14	0.00	0.0	0
3	M	M	M	M	M	M	M	M
4	81	58	69.5	20	30	0.00	0.0	0
5	77	59	68.0	18	28	0.48	0.0	0
6	80	60	70.0	20	30	0.07	0.0	0
7	80	63	71.5	22	32	0.00	0.0	0
8	81	61	71.0	21	31	0.00	0.0	0
9	69	51	60.0	10	20	0.00	0.0	0
10	73	52	62.5	13	23	0.03	0.0	0
11	73	49	61.0	11	21	0.51	0.0	0
12	M	43	M	M	M	0.00	0.0	0
13	66	43	54.5	5	15	0.00	0.0	0
14	74	46	60.0	10	20	0.11	0.0	0
15	62	53	57.5	8	18	0.43	0.0	0
16	76	60	68.0	18	28	0.10	0.0	0
17	81	61	71.0	21	31	0.21	0.0	0
18	77	51	64.0	14	24	0.00	0.0	0
19	57	38	47.5	0	8	0.00	0.0	0
20	60	38	49.0	0	9	0.11	0.0	0
21	50	38	44.0	0	4	0.14	0.0	0
22	74	40	57.0	7	17	0.00	0.0	0
23	76	40	58.0	8	18	0.00	0.0	0
24	76	55	65.5	16	26	0.60	0.0	0
25	72	59	65.5	16	26	0.16	0.0	0
26	79	60	69.5	20	30	0.55	0.0	0
27	73	57	65.0	15	25	0.40	0.0	0
28	81	58	69.5	20	30	0.00	0.0	0
29	81	58	69.5	20	30	0.28	0.0	0
30	78	58	68.0	18	28	0.34	0.0	0
31	M	M	M	M	M	M	M	M
Smry	**73.1**	**51.1**	**62.3**	**359**	**630**	**4.52**	**0.0**	**0.0**

Product generated by ACIS - NOAA Regional Climate Centers.

5. Field Observations

Field investigations were performed on May 5 and 18, 2015 by Snyder & Associates, Inc. to identify all waters of the U.S. and wetlands within the project boundary and within areas where landowners granted access. An emergent wetland, a pond, and streams were identified within the project boundary (Figures 5 and 7). The data forms are enclosed in Appendix B.

Data point 1 was taken within an upland area. The upland is dominated by red mulberry (*Morus rubra*), and stinging nettle (*Urtica dioica*).

Data point 2 was taken within a forested upland. The upland is dominated by eastern cottonwood (*Populus deltoides*), hackberry (*Celtis occidentalis*), annual ragweed (*Ambrosia artemisiifolia*), and poison ivy (*Toxicodendron radicans*).

Data point 3 was taken within an upland area. The upland is dominated by eastern red cedar (*Juniperus virginiana*), eastern cottonwood (*Populus deltoides*), smooth brome (*Bromus inermis*), and Timothy grass (*Phleum pratense*).

Data point 4 was taken within an emergent wetland consisting of 0.05 acres. The pond is approximately 0.20 acres. Wetland vegetation observed included reed canarygrass (*Phalaris arundinacea*) and stinging nettle (*Urtica dioica*). An upland point was taken adjacent to wetland area and called data point 5. The vegetation at data point 5 included smooth brome (*Bromus inermis*) and Canada wildrye (*Elymus canadensis*).

North view of the wetland associated with data point 4.

Data point 6 was taken within an upland area. The upland is dominated by black locust (*Robinia pseudoacacia*), smooth brome (*Bromus inermis*), annual ragweed (*Ambrosia artemisiifolia*), and poison ivy (*Toxicodendron radicans*).

Snyder & Associates, Inc. did not have permission to be on the property at the south end of the proposed airport. This property contains a potential wetland and drainageway. The potential wetland area is noted in Figure 5 and consists of approximately 3.11 acres.

North view of the potential wetland at the south end of the proposed airport property boundary.

Northeast view of Stream A.

East view of Stream B.

Northwest view of Stream C.

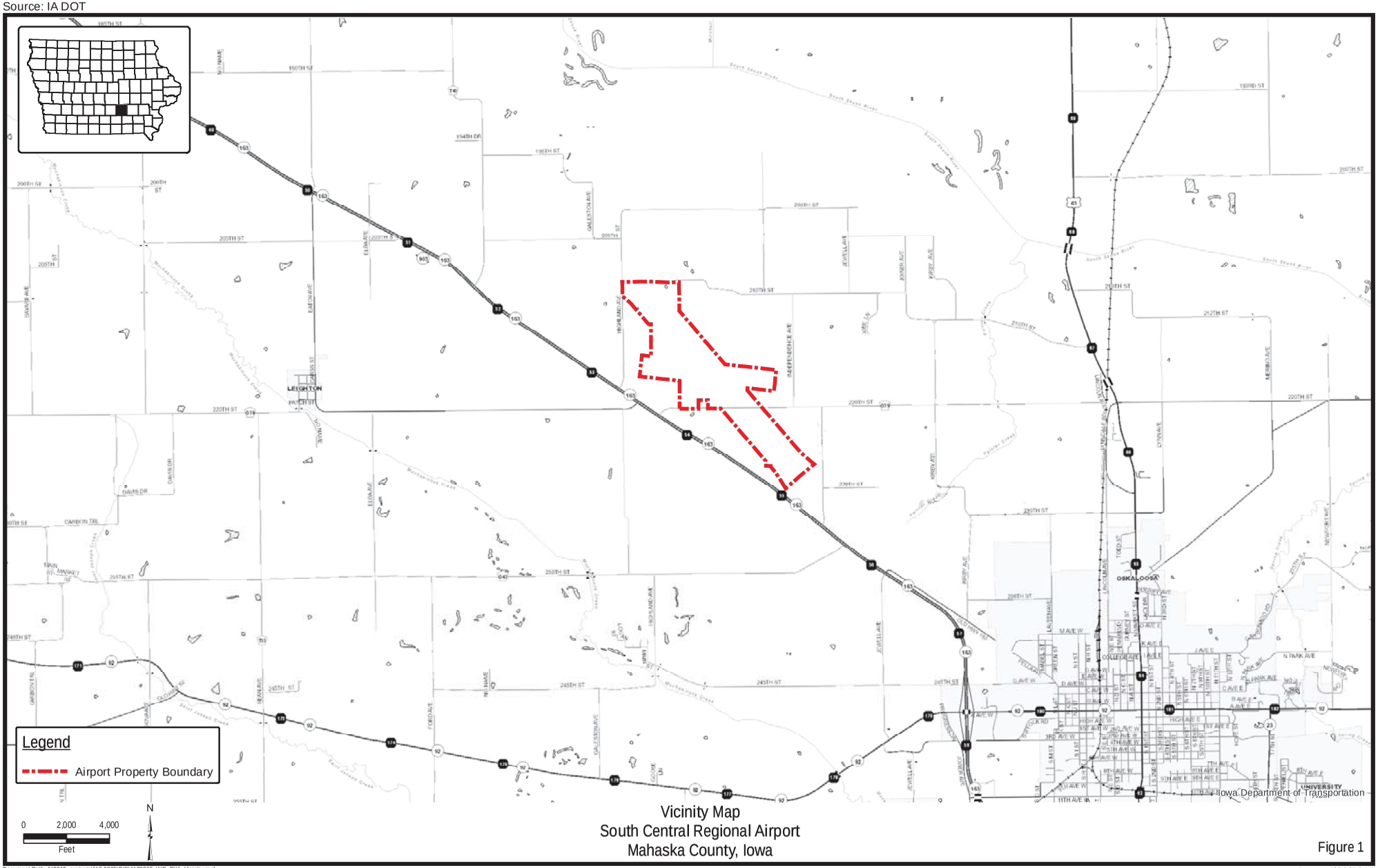
6. Summary

Snyder & Associates, Inc. has performed a Wetland Delineation in conformance with the *1987* Corps of Engineers Wetlands Delineation Manual and the Midwest Regional Supplement of the proposed airport project in Mahaska County, Iowa. Based on the findings of the wetland delineation, An emergent wetland, a potential wetland, a pond, and three streams were identified within the proposed airport property boundary (Figure 5) by Snyder & Associates, Inc. It is in the opinion of Snyder & Associates, Inc. that the pond and emergent wetland are non-jurisdictional and the three streams and potential wetland are jurisdictional.

Discharges of dredged or fill material, excavation, and mechanized land clearing in the waters of the U.S. will require authorization from the U.S. Army Corps of Engineers. Final determination of the limit of waters of the U.S., including wetlands, for permitting purposes rests with the Corps of Engineers. For final authorization for activities in U.S. waters, the Corps of Engineers must approve this determination.

APPENDIX A
FIGURES

Source: IA DOT



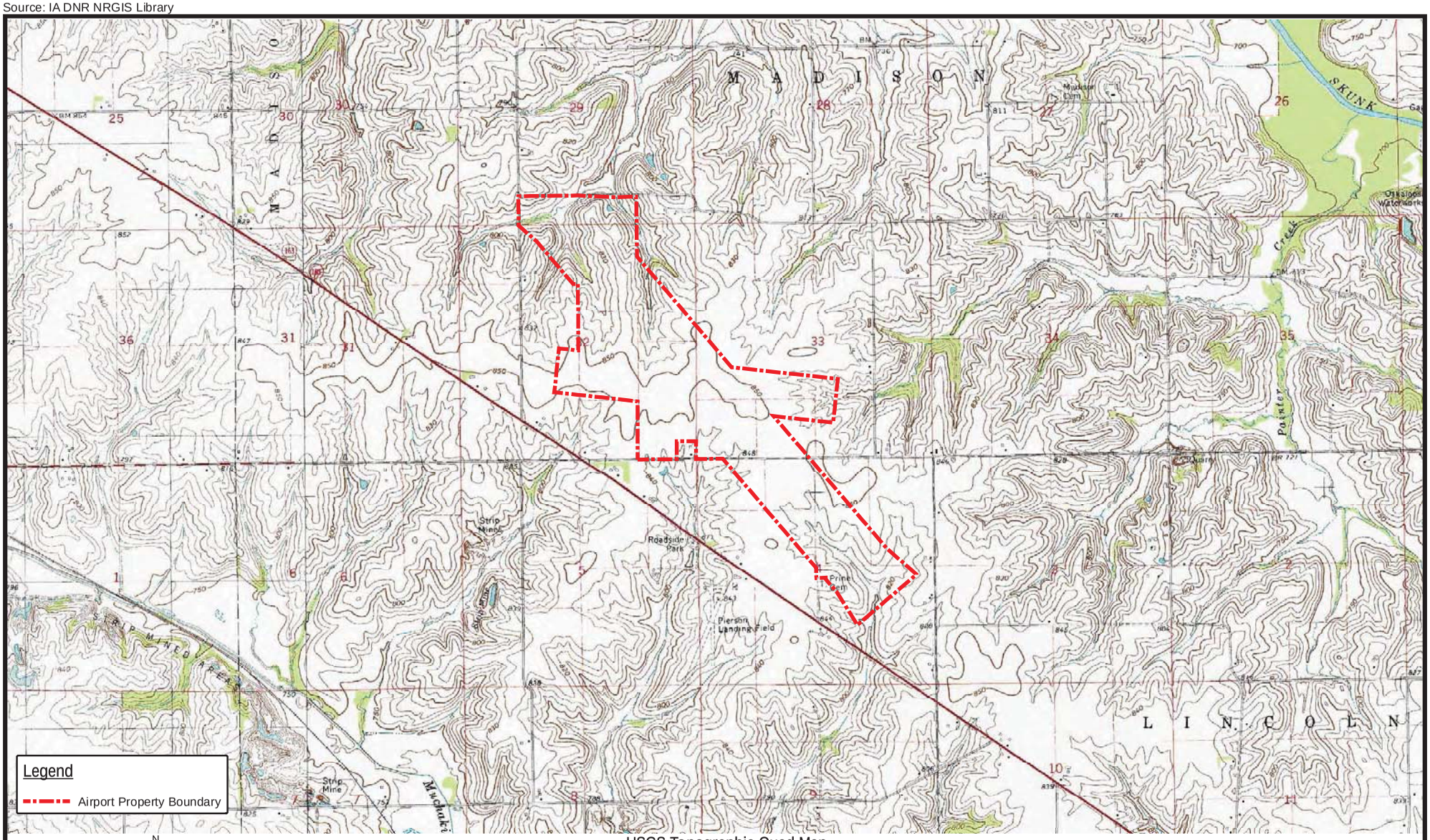
Vicinity Map
South Central Regional Airport
Mahaska County, Iowa

Figure 1

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX1_Vicinity.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



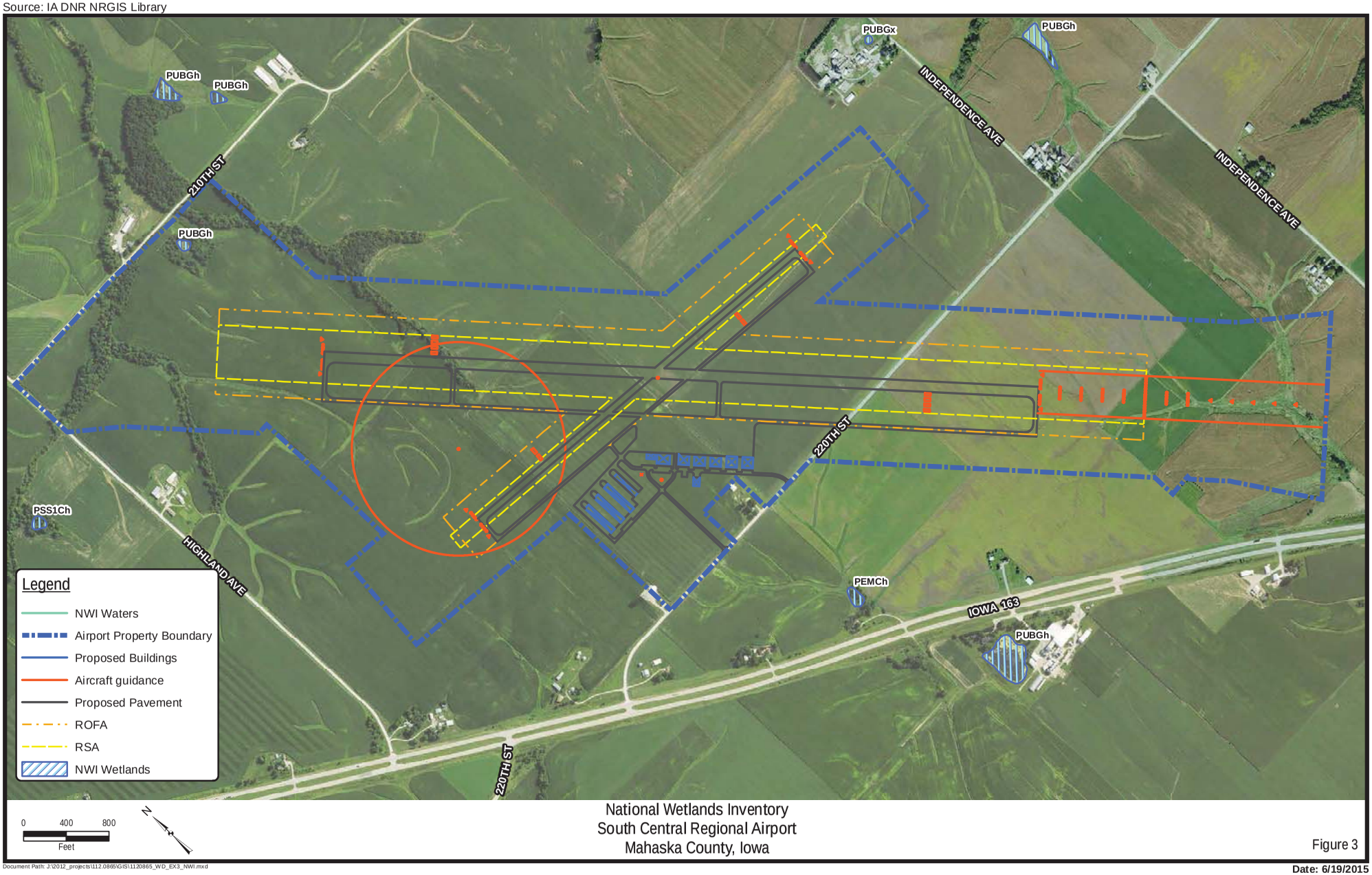
USGS Topographic Quad Map
South Central Regional Airport
Mahaska County, Iowa

Figure 2

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX2_Topo.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



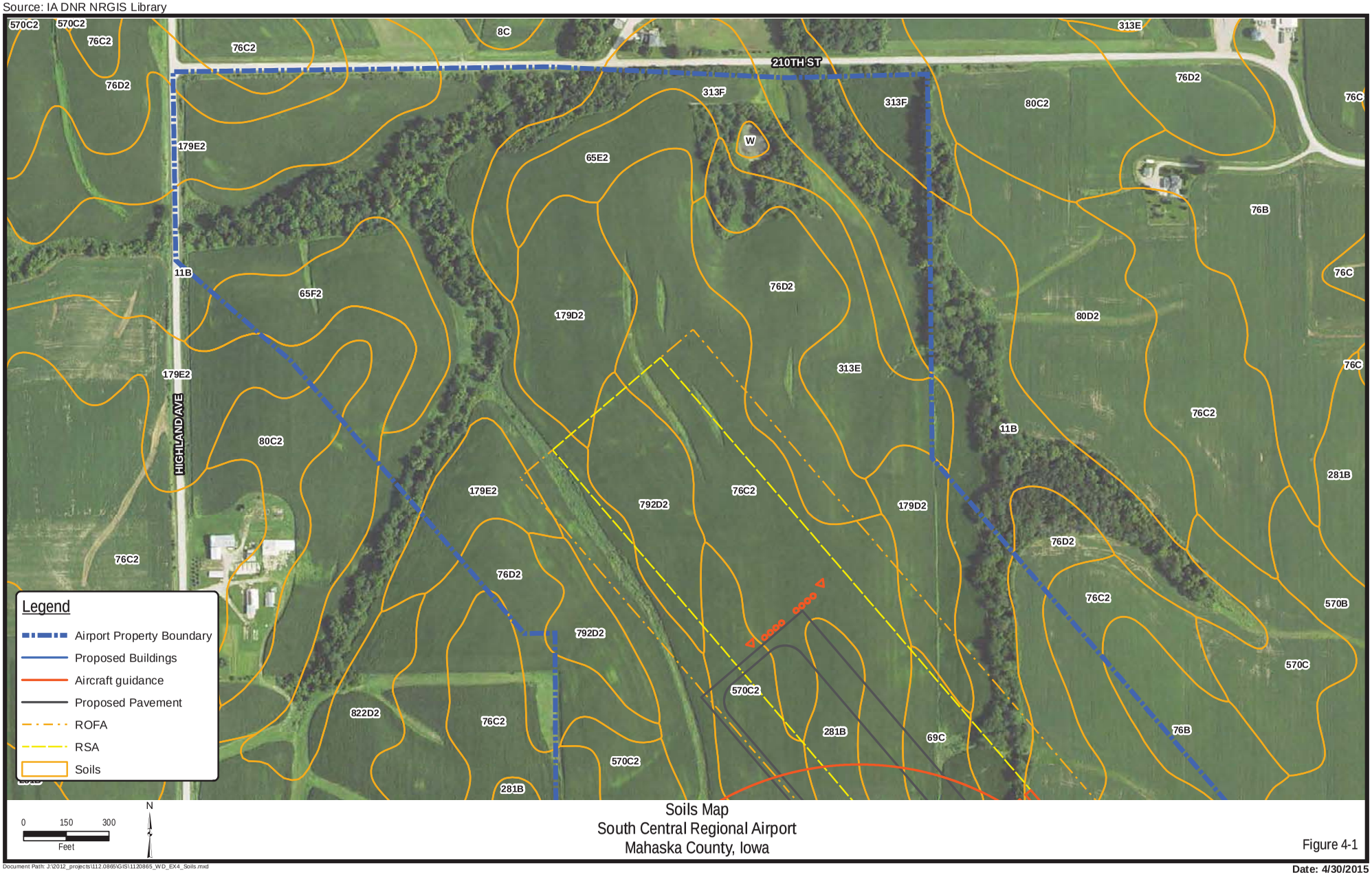
National Wetlands Inventory
South Central Regional Airport
Mahaska County, Iowa

Figure 3

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX3_NWI.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library



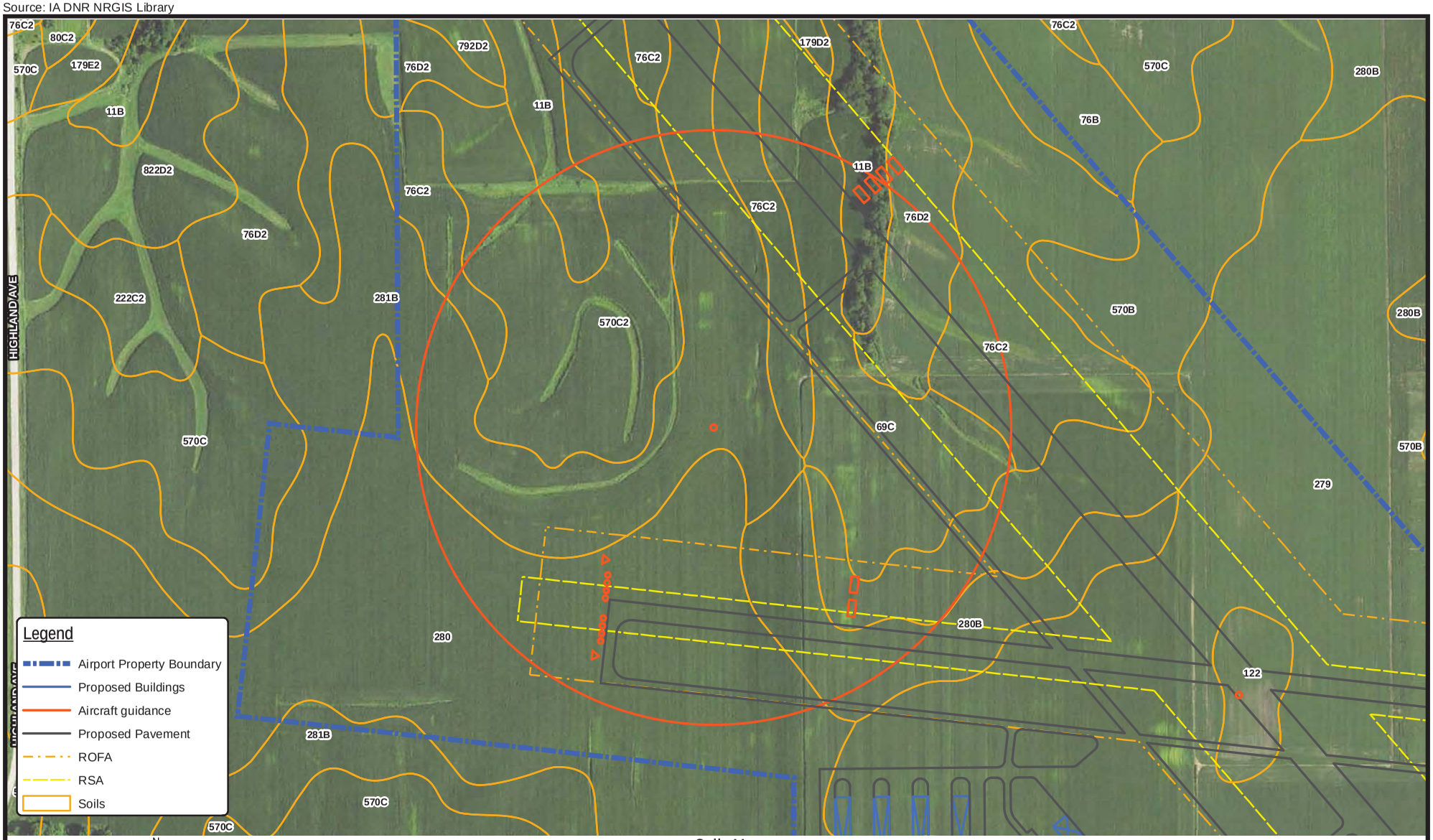
Soils Map
South Central Regional Airport
Mahaska County, Iowa

Figure 4-1

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX4_Soils.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



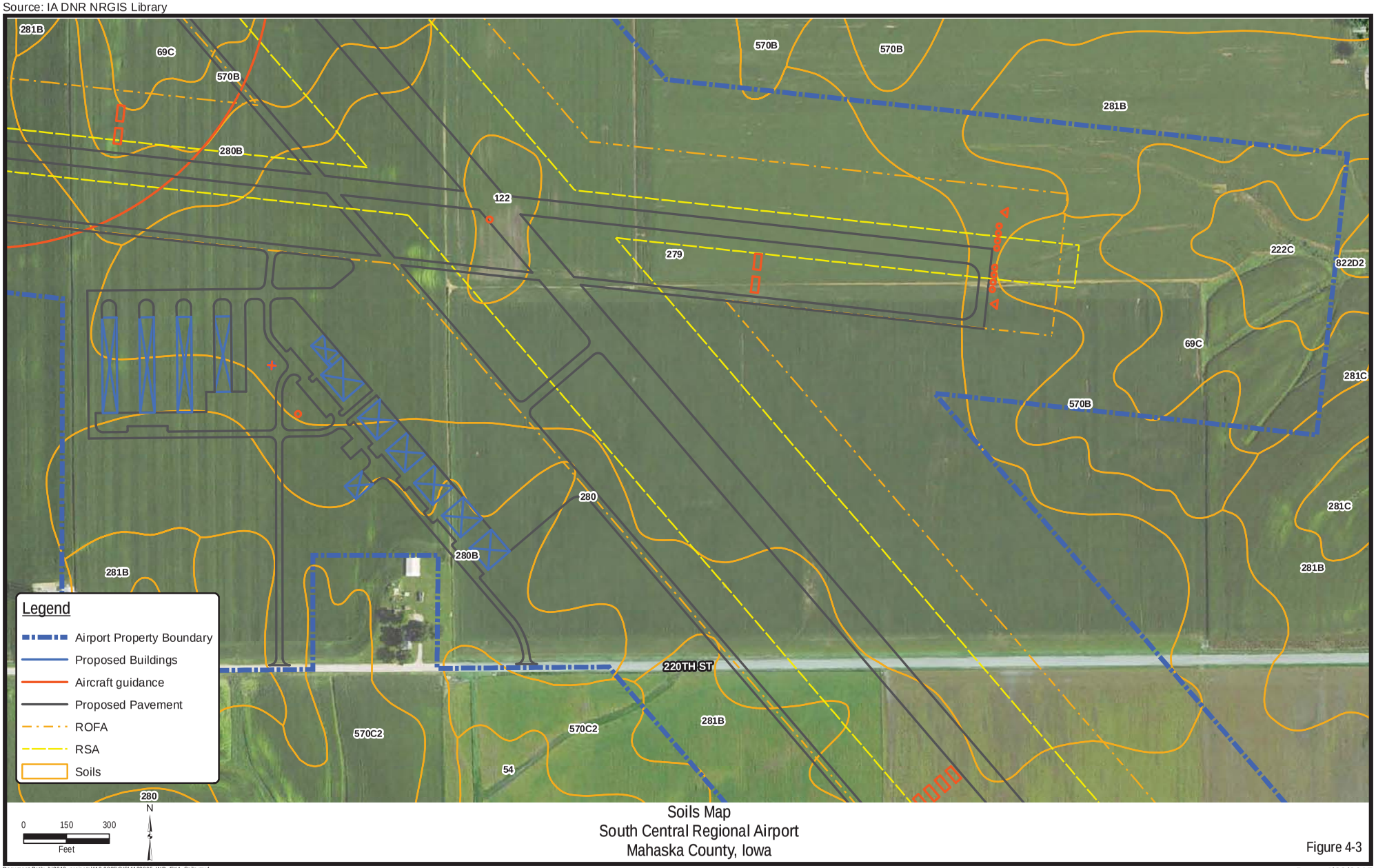
Soils Map
South Central Regional Airport
Mahaska County, Iowa

Figure 4-2

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX4_Soils.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



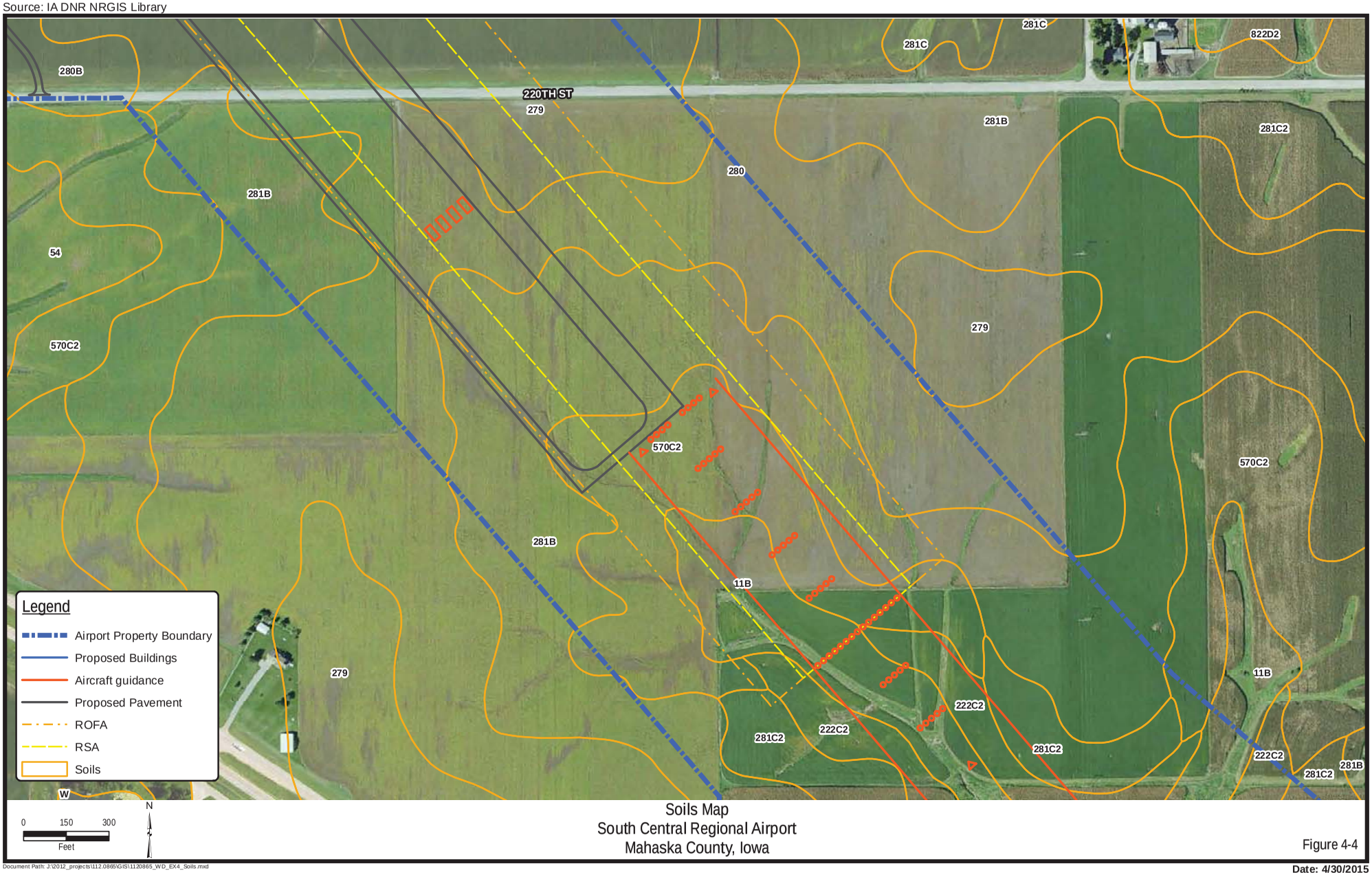
Soils Map
South Central Regional Airport
Mahaska County, Iowa

Figure 4-3

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX4_Soils.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



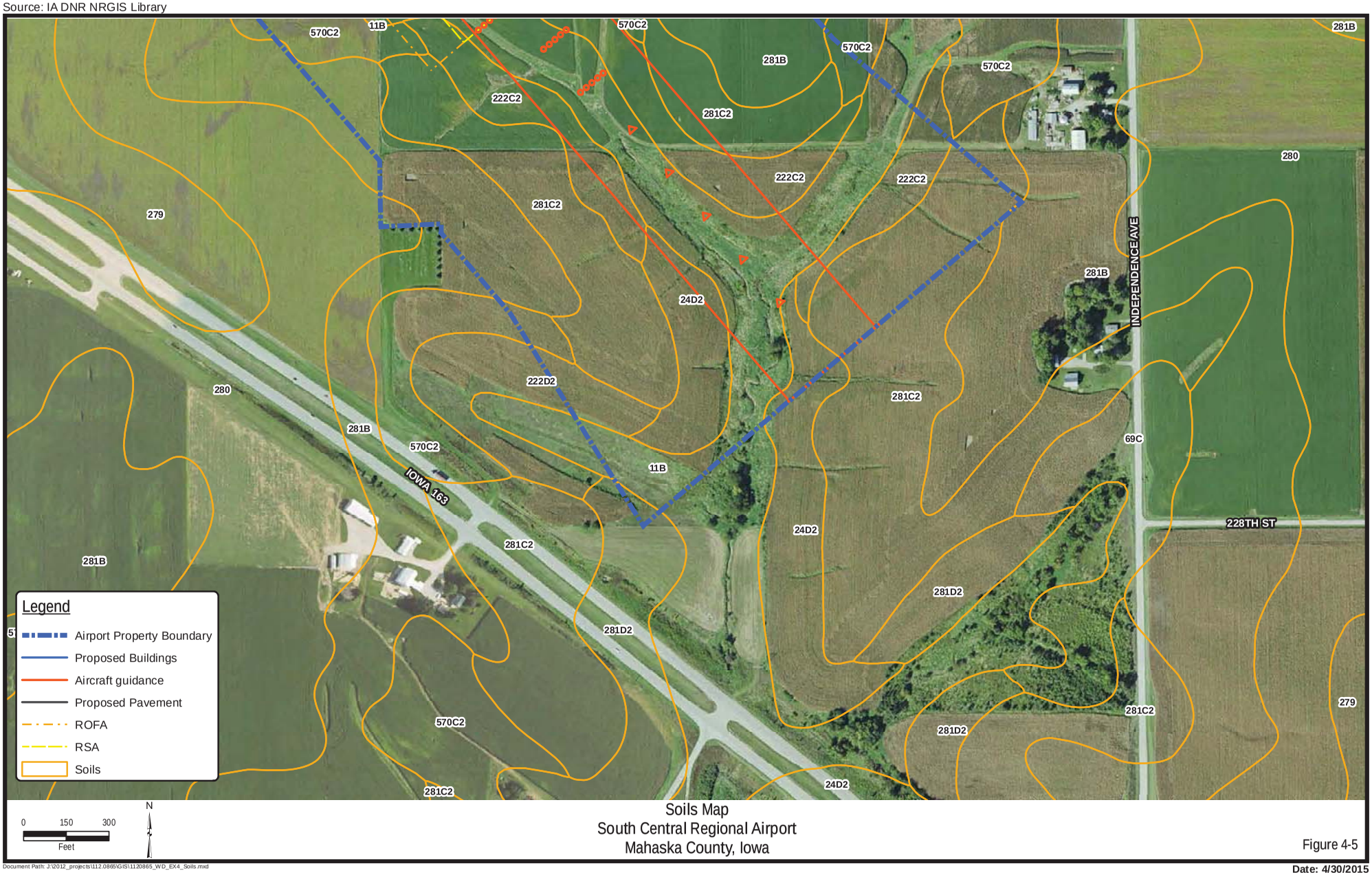
Soils Map
South Central Regional Airport
Mahaska County, Iowa

Figure 4-4

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX4_Soils.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



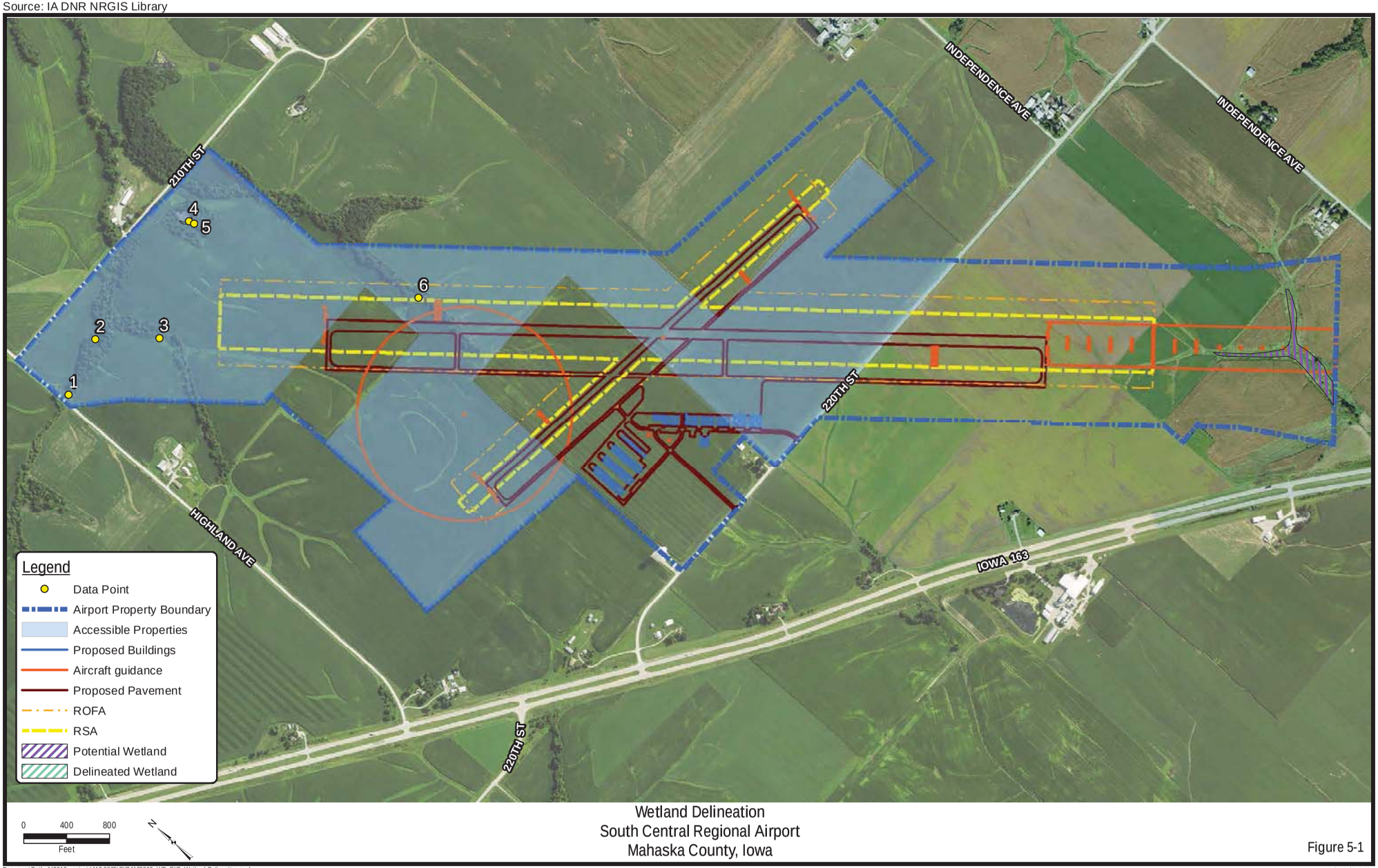
Soils Map
South Central Regional Airport
Mahaska County, Iowa

Figure 4-5

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX4_Soils.mxd

Date: 4/30/2015

Source: IA DNR NRGIS Library



Wetland Delineation
South Central Regional Airport
Mahaska County, Iowa

Figure 5-1

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX5_Wetland Delineation.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library

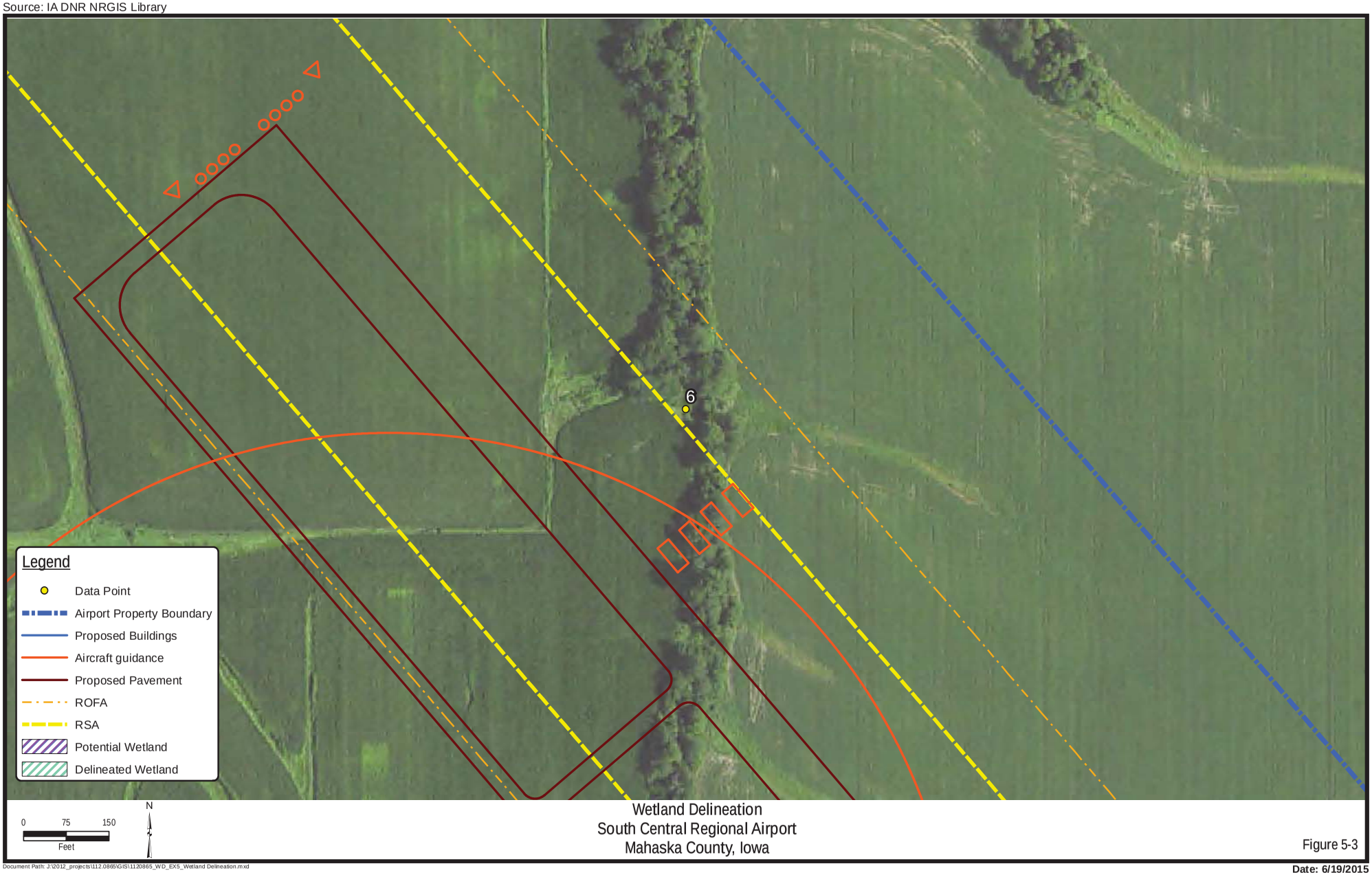
Wetland Delineation
South Central Regional Airport
Mahaska County, Iowa

Figure 5-2

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX5_Wetland Delineation.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library



Wetland Delineation
South Central Regional Airport
Mahaska County, Iowa

Figure 5-3

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX5_Wetland Delineation.mxd

Date: 6/19/2015

Source: IA DNR NRGIS Library

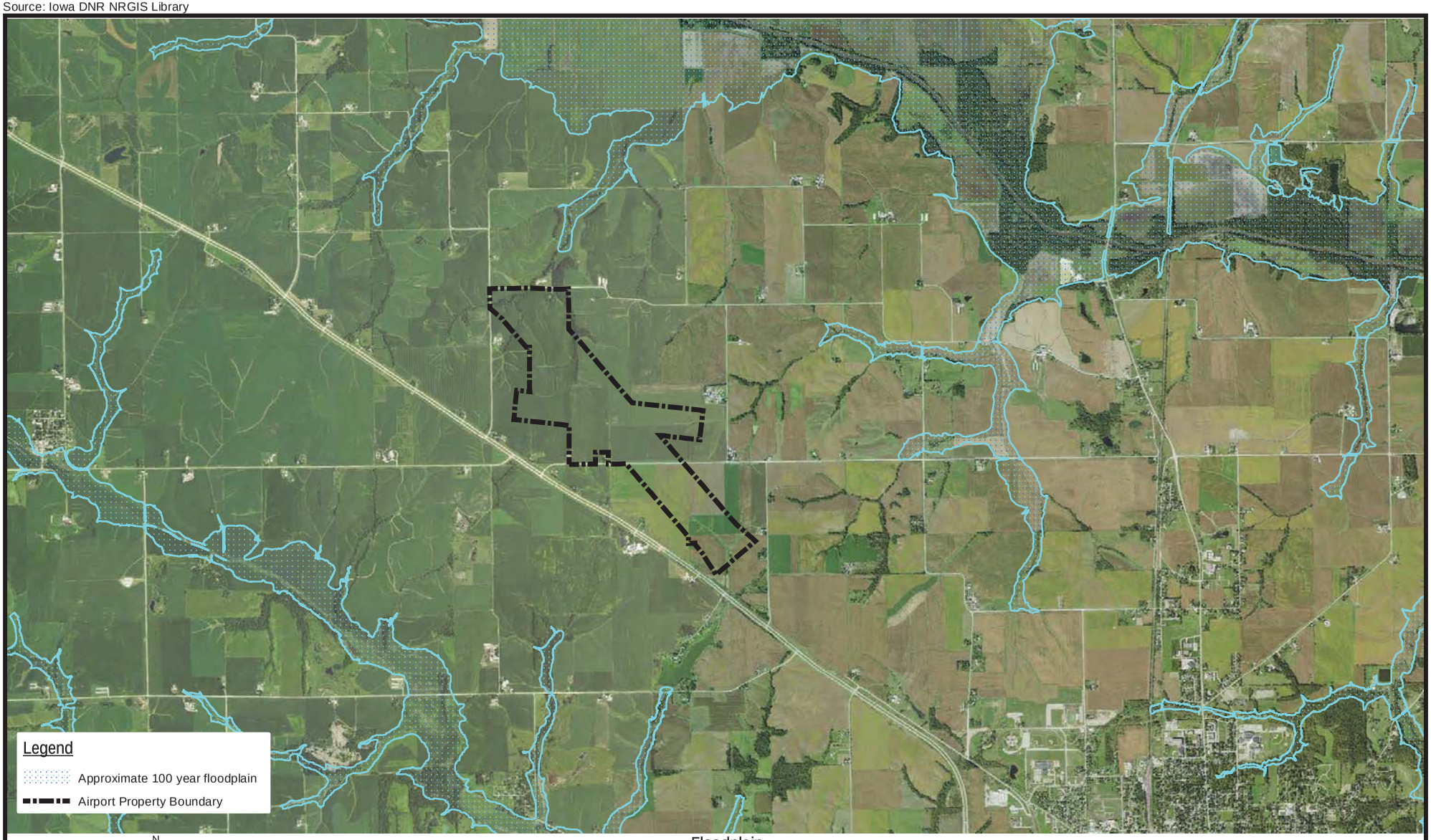
Wetland Delineation
South Central Regional Airport
Mahaska County, Iowa

Figure 5-4

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX5_Wetland Delineation.mxd

Date: 6/19/2015

Source: Iowa DNR NRGIS Library



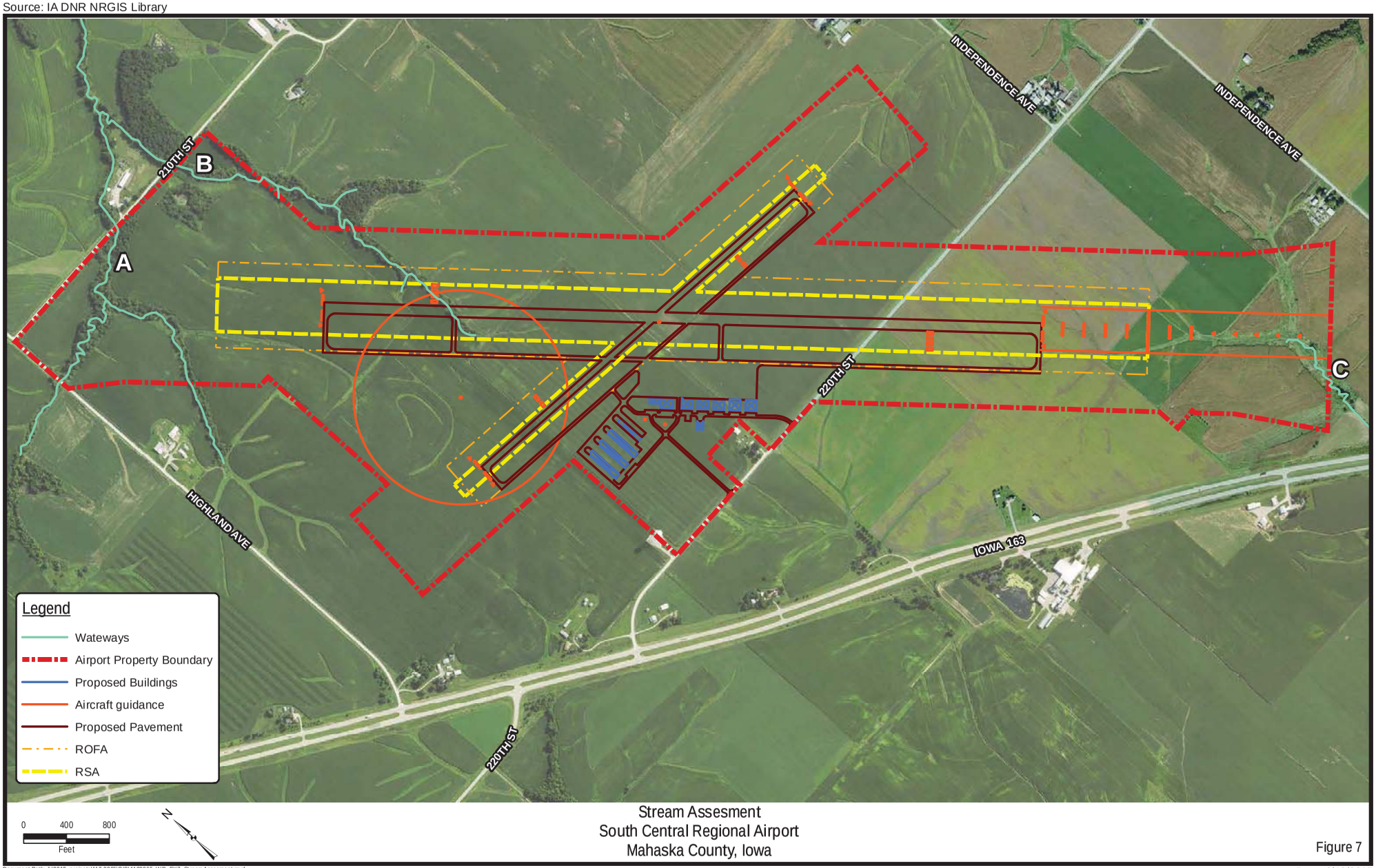
Floodplain
South Central Regional Airport
Mahaska County, Iowa

Figure 6

Document Path: \\SAAFS01.snyder-associates.com\userdata\2012_projects\112.0865\GIS\1120865_WD_EX6_Floodplain.mxd

Date: 6/15/2015

Source: IA DNR NRGIS Library



Stream Assesment
South Central Regional Airport
Mahaska County, Iowa

Figure 7

Document Path: J:\2012_projects\112.0865\GIS\1120865_WD_EX7_StreamAssesment.mxd

Date: 6/19/2015

APPENDIX B
DATA FORMS

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 1

Investigator(s): Nichoel Church | Section, Township, Range: SW 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Drainageway | Local relief (concave, convex, none): Concave

Slope (%): 2-5 | Lat: 41.350184 | Long: -92.732273 | Datum: Lat/Long

Soil Map Unit Name: 11B: Colo-Ely silty clay loams | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Populus deltoides*	1	Y	FAC
2			
3			
4			
5			
	1	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1 *Morus rubra*	10	Y	FACU
2 *Salix nigra*	1	N	OBL
3			
4			
5			
	11	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Urtica dioica*	30	Y	FACW
2			
3			
4			
5			
6			
7			
8			
9			
10			
	30	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

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

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

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	1	x 1 =	1
FACW species	30	x 2 =	60
FAC species	1	x 3 =	3
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	42 (A)		104 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: 1

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 3/2	100					Silty clay loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (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	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 2

Investigator(s): Nichoel Church | Section, Township, Range: SW 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Drainageway | Local relief (concave, convex, none): Concave

Slope (%): 2-5 | Lat: 41.350611 | Long: -92.730261 | Datum: Lat/Long

Soil Map Unit Name: 11B: Colo-Ely silty clay loams | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Populus deltoides*	2	Y	FAC
2 *Celtis occidentalis*	2	Y	FAC
3			
4			
5			
	4	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Ambrosia artemisiifolia*	30	Y	FACU
2 *Toxicodendron radicans*	15	Y	FAC
3			
4			
5			
6			
7			
8			
9			
10			
	45	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	19	x 3 =	57
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column totals	49 (A)		177 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: 2

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-20	10YR 3/2	100					Silty clay loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (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	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 3

Investigator(s): Nichoel Church | Section, Township, Range: SW 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave

Slope (%): 2-5 | Lat: 41.349401 | Long: -92.728799 | Datum: Lat/Long

Soil Map Unit Name: 11B: Colo-Ely silty clay loams | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Juniperus virginiana*	2	Y	FACU
2 *Populus deltoides*	1	Y	FAC
3			
4			
5			
	3	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Bromus inermis*	50	Y	FACU
2 *Phleum pratense*	20	Y	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	70	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	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: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	72	x 4 =	288
UPL species	0	x 5 =	0
Column totals	73 (A)		291 (B)

Prevalence Index = B/A = 3.99

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: 3

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 3/2	100					Silty clay loam	
10-20	10YR 3/3	100					Silty clay loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (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	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 4

Investigator(s): Nichoel Church | Section, Township, Range: SE 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Pond | Local relief (concave, convex, none): Concave

Slope (%): 18-25 | Lat: 41.350821 | Long: -92.725154 | Datum: Lat/Long

Soil Map Unit Name: 1313F: Munterville silt loam | NWI Classification: PUBGh

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Y		
Hydric soil present?	Y	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Juniperus virginiana*	2	Y	FACU
2 *Populus deltoides*	2	Y	FAC
3			
4			
5			
	4	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Phalaris arundinacea*	50	Y	FACW
2 *Urtica dioica*	20	Y	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	70	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	2	x 3 =	6
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column totals	74 (A)		154 (B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? Y

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

SOIL

Sampling Point: 4

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	10YR 2/2	90	7.5 YR 4/6	10	C	PL/M	Loam	
4-18	10YR 4/2	80	7.5 YR 4/6	20	C	PL/M	Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	0-18

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 5

Investigator(s): Nichoel Church | Section, Township, Range: SE 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave

Slope (%): 14-18 | Lat: 41.350684 | Long: -92.725100 | Datum: Lat/Long

Soil Map Unit Name: 1313E: Munterville silt loam | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? N	
Hydric soil present? N	**Is the sampled area within a wetland?** No
Indicators of wetland hydrology present? N	If yes, optional wetland site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Juniperus virginiana*	2	Y	FACU
2 *Populus deltoides*	1	Y	FAC
3			
4			
5			
	3	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Bromus inermis*	50	Y	FACU
2 *Elymus canadensis*	50	Y	FACU
3 *Taraxacum officinale*	10	N	FACU
4			
5			
6			
7			
8			
9			
10			
	110	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	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: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	112	x 4 =	448
UPL species	0	x 5 =	0
Column totals	113 (A)		451 (B)

Prevalence Index = B/A = 3.99

Hydrophytic Vegetation Indicators:

- ____ Rapid test for hydrophytic vegetation
- ____ Dominance test is >50%
- ____ Prevalence index is ≤3.0*
- ____ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ____ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: 5

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 3/2	100					Silty clay loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (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	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Proposed Airport | City/County: Mahaska County | Sampling Date: 5/5/2015

Applicant/Owner: South Central Regional Airport Agency | State: Iowa | Sampling Point: 6

Investigator(s): Nichoel Church | Section, Township, Range: SW 1/4 Sec 29, Twp 76N, R 16W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave

Slope (%): 2-5 | Lat: 41.345120 | Long: -92.721936 | Datum: Lat/Long

Soil Map Unit Name: 11B: Colo-Ely silty clay loams | NWI Classification: None

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N		
Hydric soil present?	N	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Robinia pseudoacacia*	10	Y	FACU
2 *Populus deltoides*	2	Y	FAC
3			
4			
5			
	12	= Total Cover	

Sapling/Shrub stratum (Plot size: 10)			
1			
2			
3			
4			
5			
	0	= Total Cover	

Herb stratum (Plot size: 5)			
1 *Bromus inermis*	50	Y	FACU
2 *Ambrosia artemisiifolia*	20	Y	FACU
3 *Toxicodendron radicans*	20	Y	FAC
4			
5			
6			
7			
8			
9			
10			
	90	= Total Cover	

Woody vine stratum (Plot size: 15)			
1			
2			
	0	= Total Cover	

Dominance Test Worksheet

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

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	22	x 3 =	66
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column totals	102 (A)		386 (B)

Prevalence Index = B/A = 3.78

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

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

Hydrophytic vegetation present? N

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

SOIL

Sampling Point: 6

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-18	10YR 3/2	100					Silty clay loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (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:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (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	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: