UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF: **Respondent:** Hager Slough Special Drainage District 9612 Chandlerville Road Beardstown, Illinois 62618 **Site:** Wetlands along the Hager Slough Special Drainage District Levee Cass County, Illinois	**DOCKET NO.** CWA-05-2015-0015 **PROCEEDING UNDER SECTION 309(a)(3) OF THE CLEAN WATER ACT, 33 U.S.C. § 1319(a).** **ADMINSTRATIVE COMPLIANCE ORDER ON CONSENT**

REGIONAL HEARING CLERK
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SEP 28 2015
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 5

STATUTORY AND REGULATORY AUTHORITY

1. The United States Environmental Protection Agency (EPA or Agency) issues this Administrative Compliance Order on Consent (AOC) to the Hager Slough Special Drainage District (Respondent or HSSDD) under authority of section 309(a)(3) of the Clean Water Act (CWA), 33 U.S.C. § 1319(a)(3). The EPA Administrator has delegated this authority to the Regional Administrator of the EPA, Region 5, who has duly redelegated this authority to the undersigned Director of the Water Division, EPA, Region 5.

2. Section 309(a)(3) of the CWA, 33 U.S.C. § 1319(a)(3), states that: "Whenever, on the basis of any information available . . . the Administrator finds that any person is in violation of section 301(a) of the CWA, 33 U.S.C. § 1311(a), the Administrator shall issue an order requiring such person to comply with such section . . . ."

3. Section 301(a) of the CWA, 33 U.S.C. § 1311(a), states: "Except as in compliance with Section 404 of the CWA, the discharge of any pollutant by any person shall be unlawful."

4. Section 404(a) of the CWA, 33 U.S.C. § 1344(a), states: "The Secretary [of the Army] may issue permits . . . for the discharge of dredged or fill material into the navigable waters [of the United States] at specified disposal sites."

5. Section 502(12) of the CWA, 33 U.S.C. § 1362(12), defines the term "discharge of pollutants" as "any addition of any pollutant to navigable waters from any point source . . . ."

6. Section 502(6) of the CWA, 33 U.S.C. § 1362(6), defines a "pollutant" as "dredged spoil, solid waste . . . biological materials . . . rock, sand, cellar dirt . . . and agricultural waste discharged into water."

7. Section 502(7) of the CWA, 33 U.S.C. § 1362(7), defines the term "navigable waters" as "the waters of the United States . . . ."

8. The term "waters of the United States" includes "all other waters such as . . . rivers . . ., wetlands . . . " and "Wetlands adjacent to waters [such as rivers]." 40 C.F.R. § 230.3(s).

9. Section 502(14) of the CWA, 33 U.S.C. § 1362(14), defines a "point source" as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, [or] discrete fissure . . . from which pollutants are or may be discharged."

FINDINGS

10. Respondent is:

Hager Slough Special Drainage District
9612 Chandlerville Road
Beardstown, Illinois 62618

11. Respondent is a legal entity organized under the laws of the State of Illinois which operates in Cass County, Illinois.

12. The Site that is the subject of this AOC is located in the North ½ of Section 29, Township 19 North, Range 11 West, in Cass County, Illinois. The Site consists of approximately 13 acres of previously forested wetlands located adjacent to an approximately 3,300 foot section of the HSSDD Levee, which is adjacent and parallel to the south bank of the Sangamon River. See "Attachment 1" for a map of the Site.

13. The Sangamon River, and the adjacent wetlands disturbed and/or filled by Respondent's activities referenced in this AOC (see paragraph 14, below), are "waters of the United States" as defined at 40 C.F.R. § 230.3(s) and "navigable waters," as defined at section 502(7) of the CWA, 33 U.S.C. § 1362(7).

14. During the months of June 2012 through August 2012, a person or persons working for, on behalf of, or at the direction of Respondent, used a bulldozer at the Site to (a) clear trees and vegetation and (b) excavate soil approximately 3-5 feet deep, all parallel to the interior toe of the HSSDD Levee for approximately 3,300 feet. The excavated soil was pushed onto the top of the HSSDD Levee to raise its height and to increase and extend its landside slope, permanently filling in several acres of the Site. See "Attachment 2" for a map of impacts at the Site.

15. At all times relevant to this AOC, Respondent is a "person" within the meaning of the definition set forth in section 502(5) of the CWA, 33 U.S.C. § 1362(5).

16. The bulldozer referenced in paragraph 14, above, constitutes a "point source" within the meaning of the definition set forth in section 502(14) of the CWA, 33 U.S.C. § 1362(14).

17. The soil referenced in paragraph 14, above, constitutes "pollutants" within the meaning of the definitions set forth in section 502(6) of the CWA, 33 U.S.C. § 1362(6).

18. The excavation of soil at the Site and its placement in other areas of the Site referenced in paragraph 14, above, constitutes a "discharge of pollutants" within the meaning of the definition

set forth in section 502(12) of the CWA, 33 U.S.C. § 1362(12).

19. Respondent did not have a permit issued pursuant to section 404 of the CWA, 33 U.S.C. § 1344, for the discharge of pollutants referenced in paragraph 14, above, at any time from the first date of the activities described in paragraph 14 until the date of this AOC.

20. Each discharge of pollutants into navigable waters of the United States, without a permit issued pursuant to section 404 of the CWA, 33 U.S.C. § 1344, constitutes a discrete violation of section 301(a) of the CWA, 33 U.S.C. § 1311(a).

21. Each day the discharged materials remain in navigable waters of the United States without the required permit issued pursuant to section 404 of the CWA, 33 U.S.C. § 1344, constitutes a discrete violation of section 301 of the CWA, 33 U.S.C. § 1311.

22. Respondent has submitted to EPA a "Wetland Mitigation Plan" prepared by Klinger & Associates, P.C. of Quincy, IL (dated September 23, 2015, Project No. 14-0255, hereinafter "the Plan") to settle the violations alleged in this AOC.

23. EPA has approved the Plan and has notified Respondent of such approval in writing.

24. The Plan is attached to this AOC as "Attachment 3" and is fully incorporated into the terms and conditions of this AOC.

COMPLIANCE REQUIREMENTS

25. Based upon the foregoing Findings, and pursuant to the authority under section 309(a)(3) of the CWA, 33 U.S.C. § 1319(a)(3), which has been duly delegated to the undersigned EPA representative, Respondent is hereby ORDERED to comply with the following activities to settle the violations alleged in this AOC.

26. Respondent agrees to and shall refrain from further discharges of pollutants into waters of the United States at the Site, except in compliance with a permit issued pursuant to section 404 of the CWA, 33 U.S.C. § 1344.

27. Respondent agrees to and shall implement and undertake all of the activities described in the Plan, in accordance with the schedules specified therein.

28. Respondent agrees to and shall submit all requests for modifications to the Plan to the EPA in writing.

29. Respondent agrees that no modification of the Plan shall be effective unless and until EPA has approved such modification and EPA has notified Respondent of such approval in writing.

30. Respondent agrees that the terms and conditions of any approved modification to the Plan are automatically and immediately incorporated into the terms and conditions of this AOC.

31. Respondent agrees to and shall send or email all submittals required by the Plan to:

Holly Arrigoni, Enforcement Officer
Watersheds and Wetlands Branch (WW-16J)
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590
arrigoni.holly@epa.gov

32. All submittals required by the Plan may be submitted by email unless EPA specifically requests otherwise.

GENERAL PROVISIONS

33. EPA and Respondent acknowledge that this AOC and the Plan have been negotiated in good faith and that neither consenting to the terms and conditions of this AOC, nor Respondent's actions to comply with the terms and conditions of this AOC, constitute an admission of liability.

34. Respondent agrees to the terms and conditions of this AOC and further agrees that it will not contest the basis or validity of this AOC.

35. Respondent waives any and all remedies, claims for relief and otherwise available rights to judicial or administrative review that Respondent may have with respect to any issue of fact or law set forth in this AOC, including any right of judicial review of this AOC pursuant to Chapter 7 of the Administrative Procedure Act, 5 U.S.C. §§ 701-706, or any other authority providing for judicial review of a final Agency action.

36. This AOC is not a permit under the CWA, and neither issuance of this AOC by EPA nor Respondent's compliance with its terms and conditions affects Respondent's ongoing obligation to comply with the CWA or any other federal, state, or local law or regulation.

37. Neither the issuance of this AOC by EPA, nor consent of this AOC by Respondent, shall be deemed to relieve Respondent of its liability for any penalty, remedy or sanction authorized to be imposed pursuant to section 309(b), (c), or (g) of the CWA, 33 U.S.C. § 1319(b), (c) or (g), for any alleged violation of applicable requirements of the CWA. EPA specifically reserves the right to seek any or all remedies authorized under these provisions for the violations alleged in this AOC.

38. Violation of any of the terms and conditions of this AOC may result in further enforcement action under section 309 of the CWA, 33 U.S.C. § 1319. The CWA includes provisions for administrative penalties, for civil injunctive relief and penalties, and for criminal sanctions for violations of the CWA. Specifically, EPA may assess civil administrative penalties of $16,000 per day of violation, up to a maximum of $177,500 under section 309(g) of the CWA, 33 U.S.C. § 1319(g), or seek civil judicial penalties of $37,500 per day of violation of the CWA under section 309(b) of the CWA, 33 U.S.C. § 1319(b). Furthermore, EPA may seek criminal

sanctions, including fines and imprisonment, for negligent or knowing violations of the CWA under section 309(c) of the CWA, 33 U.S.C. § 1319(c).

39. The information required to be submitted pursuant to this AOC is not subject to the approval requirements of the Paperwork Reduction Act of 1995, 44 U.S.C. § 3501 et seq., because it seeks collection of information by an agency from specific individuals or entities as part of an ongoing administrative action or investigation.

40. EPA does not waive any of its rights to use any information submitted pursuant to this AOC in any administrative, civil judicial or criminal action.

41. Modification or withdrawal of this AOC shall not be effective unless and until such modification or withdrawal is issued in writing by EPA.

42. The terms of this AOC are binding on Respondent, its assignees and successors. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this AOC. Respondent agrees to give notice of this AOC to any successors-in-interest at least 30 days prior to transferring ownership and agrees to simultaneously provide EPA with a copy of such notice, and to include the legal name and current contact information of the transferee.

EFFECTIVE DATE AND TERMINATION OF AOC

43. This AOC shall become effective immediately upon being signed by the Director of the Water Division, EPA, Region 5.

44. Respondent will be released from any and all obligations or requirements documented in this AOC and the Plan once the performance standards in the Plan are achieved and written concurrence is received from EPA.

Attachment 1 – Map of Site
Attachment 2 – Map of Impacts at the Site
Attachment 3 – Wetland Mitigation Plan

[*Signature Page Follows*]

ADMINISTRATIVE COMPLIANCE ORDER ON CONSENT
In the Matter of: Hager Slough Special Drainage District; Wetlands along the Hager Slough Special Drainage District Levee in Cass County, Illinois

Docket No. **CWA-05-2015-0015**

Respondent's undersigned representative certifies that he is fully authorized to sign this AOC on behalf of Respondent and to bind Respondent to its terms and conditions.

Agreed to this 3RD day of September, 2015.

For Respondent:

Martin Turner, Commissioner
Hager Slough Special Drainage District
Beardstown, Illinois

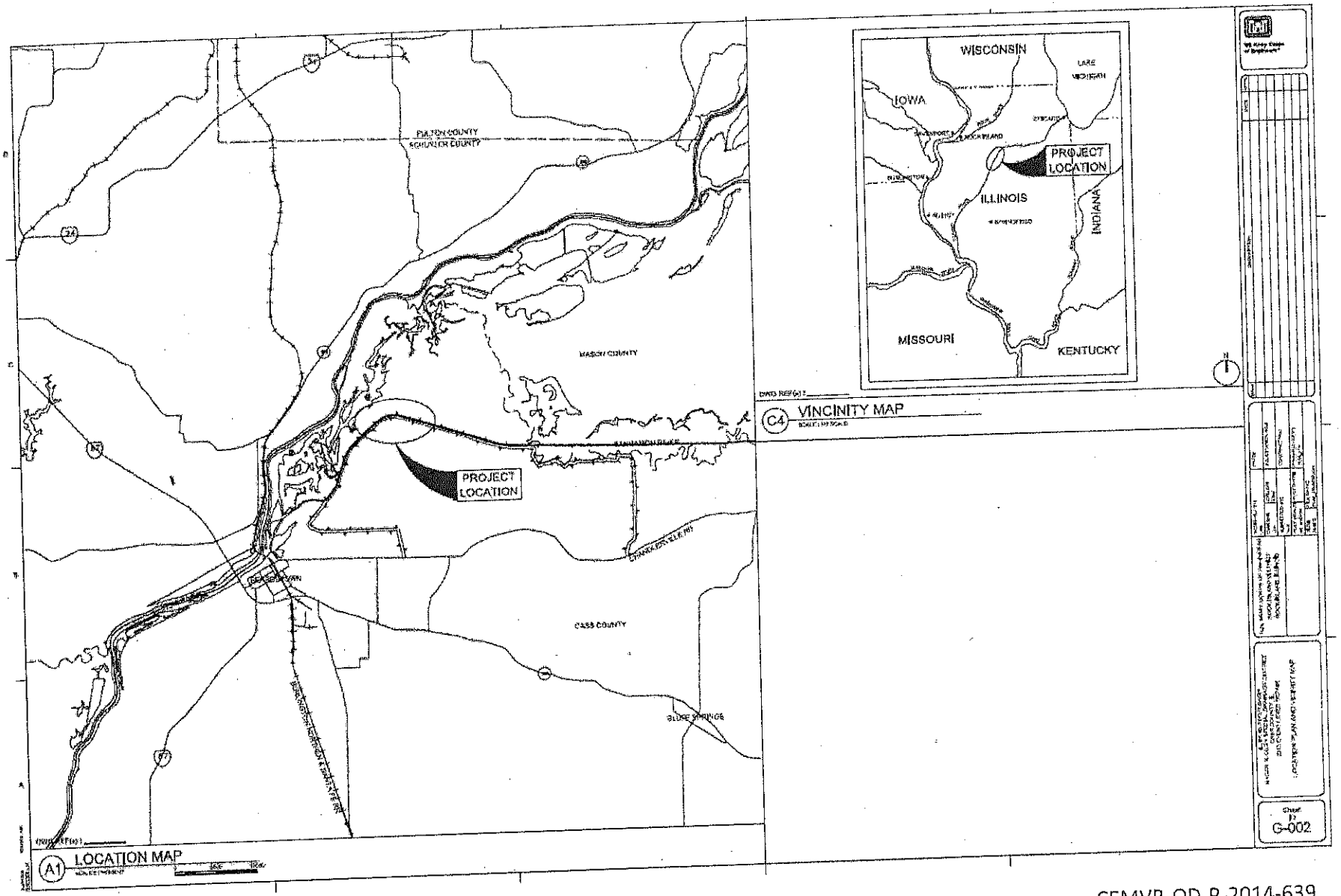
Agreed to this 28th day of September, 2015.

IT IS SO ORDERED:

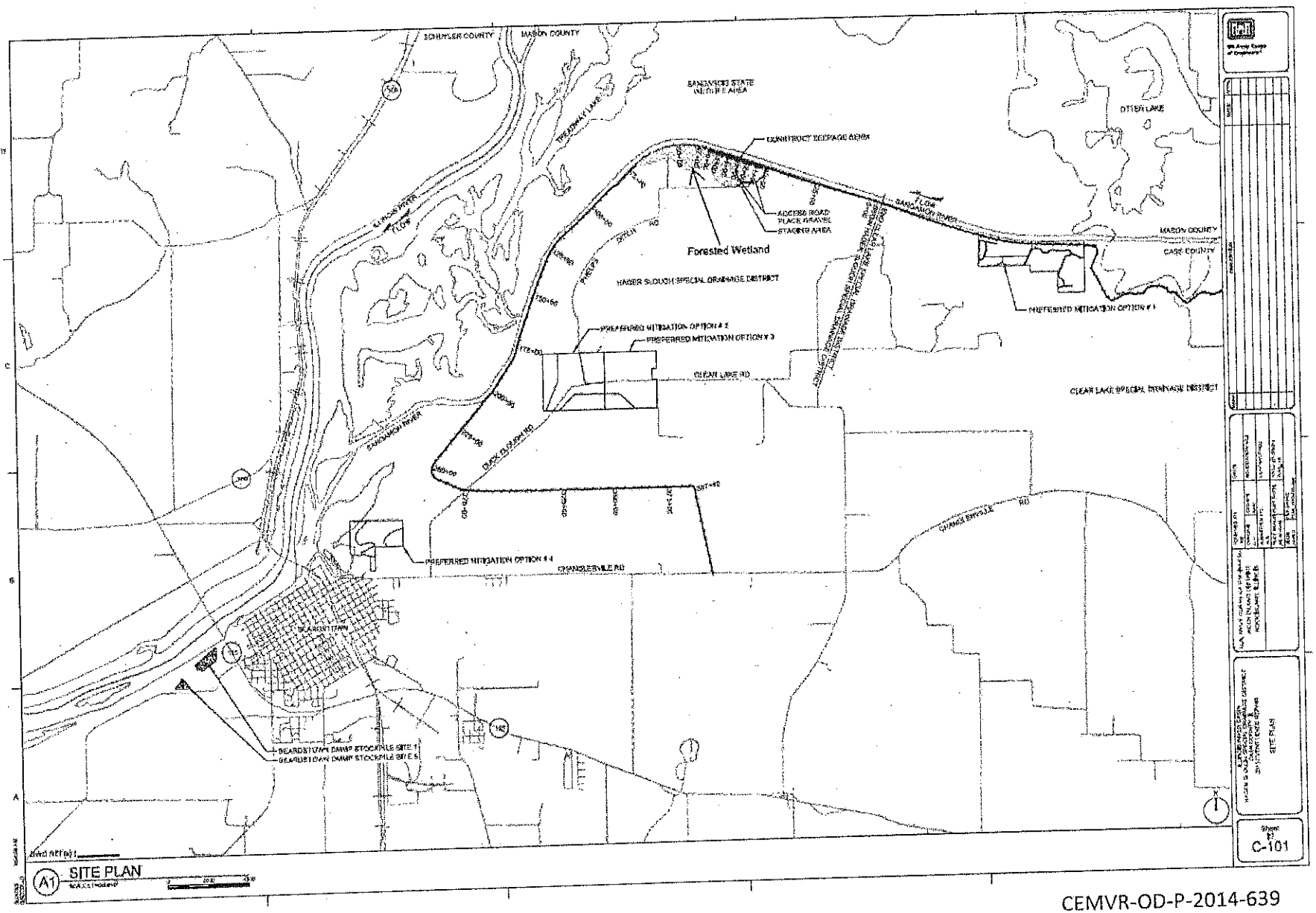
Tinka G. Hyde
Director, Water Division
U.S. Environmental Protection Agency
Region 5

CWA-05-2015-0015

ATTACHMENT 1 – 2 PAGES



CEMVR-OD-P-2014-639
Vicinity Map
Sheet 1 of 5

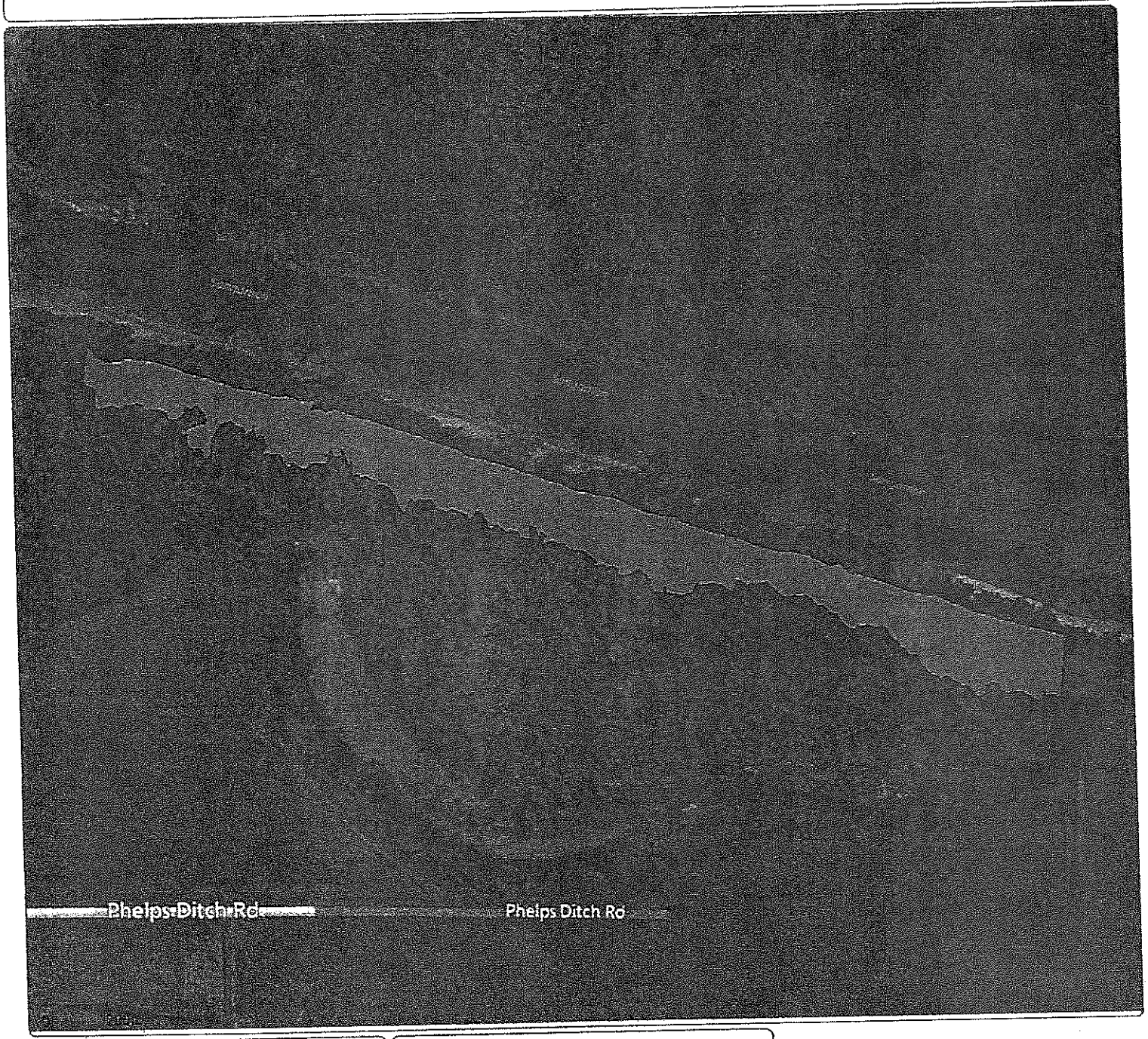


CEMVR-OD-P-2014-639
Overall Project Plan
Sheet 2 of 5

CWA-05-2015-0015

ATTACHMENT 2 – 2 PAGES

Boundary 2014 - South of levee



Grower : MARTY TURNER

Farm : area by Sangamon River

Field : South of levee

Year : 2014

Operation : Boundary

Crop / Product : NO Product

Op. Instance : Instance - 1

Field - Name

South of levee(12.85 ac)

CWA-05-2015-0015

ATTACHMENT 3

KLINGNER
& ASSOCIATES, P.C.
Engineers · Architects · Surveyors

WETLAND MITIGATION PLAN

Cass County, Illinois

September 23, 2015

Prepared for:

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT

9612 Chandlerville Road
Beardstown, IL 62618

Prepared by:

KLINGNER & ASSOCIATES, P.C.

616 North 24th Street
Quincy, IL 62301

Project No. 14-0255

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors

TABLE OF CONTENTS

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors

Exhibits:

Exhibit 1:	Project Location Map
Exhibit 2:	Site Planting Map
Exhibit 3:	Topographical Survey and Cross Section Details
Exhibit 4:	Monitoring Reporting Form
Exhibit 5:	Activity Schedule
Exhibit 6:	Planting Details
Exhibit 7:	Signed Pumping Agreement

1.0 INTRODUCTION

The Hager Slough Special Drainage District (HSSDD) has developed this Wetland Mitigation Plan to meet mitigation requirements for previous and proposed impacts to wetlands and forested areas associated with work on their existing levee in Cass County, IL.

A map showing the location of the levee improvement and wetland and forested impacts, the location of the proposed mitigation site, and directions to the mitigation site is provided as Exhibit 1 – Project Location Map.

2.0 OBJECTIVES

This Wetland Mitigation Plan provides the concepts to obtain mitigation credits for the disturbance of 13 acres of forest and forested wetlands through the establishment of a wetland on property historically used as an agricultural field (prior-converted cropland). The mitigation wetland site is intended to adequately compensate for the wetlands and forest being impacted, based on a 3:1 creation to impact ratio and 4.5:1 enhancement to impact ratio. The proposed site is located on a 44 acre tract. The proposed site includes 34.9 acres of created forested wetland, 6.1 acres of enhanced emergent wetland, and 3 acres of land which won't be planted (to allow room for drainage ditch maintenance along a portion of the site as well as a place to build a berm in the event adjacent land is used as an agriculture field at a future time). The proposed site will mimic natural aquatic sites and provide diversity within the surrounding areas. A Project Location Map, Site Planting Map and Topographical Survey with Cross-Section Details are provided as Exhibits 1, 2 and 3, respectively.

The proposed mitigation site will provide several wetland functions including, but not limited to the following:

- Sediment/toxicant removal: The site will filter, deposit, or transform water-borne sediments and toxicants, effectively improving the water quality.
- Nutrient removal/transformation: The site will aid in the transport and transformation of chemicals in the ecosystem; it will allow for nutrient and heavy metal exchange with adjacent waters or with waters that pass through it.
- Biological diversity: The site will provide habitat for wildlife and plants.

3.0 SITE SELECTION

An area located approximately one mile east of the proposed mitigation site was originally considered as a mitigation site; however, it was not big enough to meet the entire mitigation acreage requirements. HSSDD identified the proposed area as an alternative.

The mitigation site will include a total of 44 acres: 34.9 acres of a forested wetland, 6.1 acres of an emergent wetland, and 3 acres of land which won't be planted (to allow room for drainage ditch maintenance and a place to build a berm in the event the adjacent land is used as an agriculture field at a future time).

The proposed mitigation site is located in Cass County, within the Clear Lake Special Drainage District, which is located immediately east of the Hager Slough Special Drainage District. The mitigation will be "in-kind", as the proposed site is within the Lower Illinois River Drainage Basin - Hydrologic Unit Code 07130008, the same basin as the levee improvement project. The site has historically been used as an agricultural field, but is currently enrolled in the Farm Service Agency's Conservation Reserve Enhancement Program (CREP) until September 30, 2016 (see Exhibit1 – Project Location Map).

The site has been evaluated for its potential to successfully offset the permanent wetland and forested impacts associated with the levee improvement project. Site information is based on site visits, internet research, GIS data, Natural Resources Conservation Service (NRCS) soil data, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) information, USGS 7.5 minute quadrants, digital aerial orthophotographs, a wetland delineation and similar sources.

Considering the hydrology associated with the Sangamon River and adjacent drainage ditches and the naturally existing local seed bank, the site has a high potential for success as a self-sustaining mitigation site. Hydrophytic vegetation will be planted that is consistent with the native vegetation found nearby. The site's position in the watershed and relativity to the Sangamon River and the adjacent drainage ditches will assist in providing a source of hydrology from sources other than direct precipitation (see Section 7.1 – Wetland Hydrology) Additionally, the pump house used to maintain surface water elevations within the aforementioned drainage ditches will be manipulated (pumping operations will cease/decrease) in order for the surface water levels in the drainage ditches, and consequently the water level in the mitigation site, to rise to desired elevations. Additional details are provided in Section 7.3.

According to the Natural Resources Conservation Service (NRCS), the proposed mitigation site contains *Quiver silty clay loam* soil type, which is a hydric soil characterized by frequent flooding (long duration). These soils are typically found in floodplains, as is the case at this site. This type of soil is in a very poorly drained natural drainage class, which makes it a suitable soil for wetland creation. Data collected during the wetland delineation of this site generally agrees with

NRCS on the composition of the soil at the site; sampled areas contained clay, silty clay, and clay loam.

The mitigation site is located on a parcel of land generally encompassed by a drainage ditch and agriculture fields that will not contain future building sites, ensuring long term viability and preservation. An additional factor for site selection was ease of access to the area for construction and long-term maintenance.

4.0 SITE PROTECTION INSTRUMENT

HSSDD has signed a "Mutual Leasehold Agreement" with N. Korsmeyer, Inc., dated September 3, 2015, and has purchased a perpetual leasehold to establish a Conservancy Area in accordance with this Mitigation Plan; and HSSDD has granted a "Grant of Conservation Easement and Covenants" to N. Korsmeyer, Inc., dated September 3, 2015, for the purpose of conserving and preserving in perpetuity the Conservancy Area, all in accordance with an Administrative Compliance Order on Consent issued by the United States Environmental Protection Agency (USEPA), and signed by HSSDD on September 3, 2015. HSSDD agrees to have all of these documents filed and recorded with the Cass County Recorder.

5.0 BASELINE INFORMATION

A wetland delineation of the mitigation site was conducted at the site in September 2014 using the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*. The delineation report was provided under separate cover (report dated 10/31/14) and contains information on historic and existing plant communities and soil types.

The proposed mitigation site was formerly used as an agriculture field. At the time of the wetland delineation, the site typically contained an upland meadow-like habitat with a few depressional wetland fingers located on the site. The upland area contained species such as Canada goldenrod (*Solidago canadensis*), Mountain wood-sorrel (*Oxalis montana*), green foxtail (*Setaria viridis*), Japanese bristlegrass (*Setaria faberi*), and Canada wildrye (*Elymus canadensis*). The wetland areas contained hydrophytic species such as Pennsylvania smartweed (*Polygonum pensylvanicum*), bearded beggarticks (*Bidens aristosa*), rice cutgrass (*Leersia oryzoides*), barnyard grass (*Echinochloa crus-galli*), and Indian hemp (*Apocynum cannabinum*).

The soils observed on the site (clay, clay loam, and silty clay) were generally consistent with the NRCS designation of the area as hydric *Quiver silty clay loam* soil type. This type of soil is in a very poorly drained natural drainage class which makes it a suitable soil for wetland creation.

6.0 DETERMINATION OF CREDITS

HSSDD proposes a 3:1 (replacement to impact) ratio for forested wetland impacts and a 4.5:1 ratio for enhancement of wetlands to account for areas within the proposed mitigation site which are currently exhibiting all three wetland parameters. This will result in a 44 acre site: 34.9 acres of forested wetlands, 6.1 acres of emergent wetlands, and 3 acres of land which won't be planted (to allow room for drainage ditch maintenance and a place to build a berm in the event adjacent land is used as an agriculture field at a future time) for thirteen acres of impact. This is expected to satisfactorily compensate for wetland impacts due to project-related activity.

7.0 MITIGATION WORK PLAN

A boundary survey and a topographical survey were conducted of the mitigation site. A Site Planting Map and Topographical Survey with Cross Section Details can be found as Exhibits 2 and 3, respectively.

7.1 Wetland Hydrology

In order to get an understanding of baseline water levels at the site, six piezometers were installed in the locations of the permanent monitoring points (described more fully in Section 10.2 and shown on Exhibit 2). Monitoring will occur at the frequency described in Section 10.2 prior to and during the monitoring period. It is expected the first year of monitoring (year 2015) will ultimately differ from subsequent years, in that it will not begin at the onset of the growing season. [For purposes of this plan, the growing season typically begins between March 28th and the third week of April and ends generally when woody deciduous plants have lost their leaves, herbaceous plants stop flowering, and leaves become dry or brown due to cold, typically around the first week of November.] During 2015, daily monitoring will occur for two weeks following installation, and will taper to weekly monitoring throughout the remainder of the growing season. Monitoring will begin again in 2016 within one week of the start of the growing season. Daily monitoring will last for two weeks and then resume to weekly monitoring for the remainder of the growing season.

7.2 Site Preparation

Appropriate permits will be obtained prior to construction and erosion control measures will be implemented in accordance with the Contractor's Storm Water Pollution Prevention Plan, as necessary.

The site currently contains a meadow-like habitat with a few depressional wetland fingers located at the site (approximately 6.1 acres). The soils observed on the site consist of clay, clay loam, and silty clay in both upland and wetland areas. Wetland hydrology and hydrophytic vegetation are present within the depressional areas.

The property limits of the mitigation site have been staked. The placement of silt fence shall be located at surface runoff points of concentration. A survey for *Boltonia decurrens*, which was observed adjacent to the mitigation site will be conducted during the summer of 2016. If observed, *Boltonia* will be flagged to ensure the plant(s) aren't impacted during construction activities. Additionally, the location of any *Boltonia* will be mapped using GPS and information will be reported to USEPA, U.S. Fish and Wildlife Service, and the Illinois Department of Natural Resources within 7 days of discover.

The species to be planted (listed in Section 7.2.1, below) will provide for a healthy, diverse mixture of wetland plants across the site. This will be a favorable improvement to the largely homogenous mixture of plants currently present at the site.

A non-selective herbicide with no residual will be applied (sprayed) across the entire mitigation site in early October, 2016. Subsequently, a mixture of native grass seed will be planted in the forested wetland area; the mixture will contain 50% of Virginia Wildrye and 50% Indian woodoats (late October/early November, 2016). Spraying the site with a herbicide and planting native grasses in the forested wetland area will help control competing vegetation and allow the new plantings to be more successful. Plowing/tilling activities will occur in February-March, 2017 as needed; the land will be plowed or disked by HSSDD to prepare the site for planting/seeding.

7.2.1 Seeding/Planting Activities

The seeding and planting activities for the mitigation site will adhere to the *Rock Island District Mitigation and Monitoring Guidelines*. It is anticipated that the soil currently onsite will be suitable for use as a topsoil lining. The existing surface elevations over the site will create a microtopography which will provide more diversity and wet conditions in some areas during dry periods. It is anticipated that the adjacent farmland (to the north of the western portion of the site) will remain in CREP indefinitely. If in the future the land will again be used for agriculture, a berm planted with a buffer of native grasses (a mix of 50% Virginia Wildrye (*Elymus virginicus*) and 50% Indian woodoats (*Chasmanthium latifolium*) at a rate of 10 pls pounds/acre of each) will be constructed to prevent agricultural storm water containing chemicals from reaching the site. The berm allowance area is shown on Exhibit 2.

Care will be taken such that construction equipment will not excessively compact areas to be seeded. Plantings shall be completed as soon after site preparation activities as possible. If necessary, a non-selective herbicide may be used prior to site work to reduce competition for the new plantings.

The proposed activity schedule can be found as Exhibit 5.

Forested Wetland Area

During February-March, this area will be planted with a variety of mast-producing, floodplain and terrace species, including pecan (*Carya illinoinensis*), shellbark hickory (*Carya laciniosa*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), bur oak (*Quercus macrocarpa*), and overcup oak (*Quercus lyrata*). It is anticipated that species such as sycamore will naturally establish in this area. To add diversity to the site, the following shrub species will be planted: red-osier dogwood (*Cornus stolonifera*), buttonbush (*Cephalanthus occidentalis*), winterberry (*Ilex verticillata*), and gray dogwood (*Cornus racemos*). The trees and shrubs will be planted on an approximately 11.5' x 11.5' spacing. This will include a total of 302 trees per acre (~80% of which will be saplings and ~20% of which will be containerized trees) and 30 shrubs per acre, for a total of approximately 11,587 trees/shrubs across the 34.9 acres of forested wetland area. Tree tubes will be used on the seedlings to help prevent damage. Additional information on the proposed tree and shrub plantings are provided as Exhibits 2 and 7.

The forested wetland area will be planted with a mixture of bare root seedlings and containerized trees (~80%/20%, respectively). The bare root seedlings should be planted generally when they are dormant. Circular holes should be excavated using a dibble bar or spade. Holes shall be wider and deeper than the root systems of the bare root stock. The containerized trees must be 3-6 feet tall with a minimum ½ inch caliper reading at the root flair. Excavation should be approximately three times as wide as the root ball diameter. The root ball should be carefully removed from the container without damaging the root ball or plant and inspected. Any matted, dead, diseased, or twisted roots will be pruned.

Emergent Wetland Area

The emergent wetland portion of the site will be seeded with native, wetland plant seed mixtures in spring of 2017, ideally after the water level stabilizes. Seed should be sewn using a spreader or seeding machine. Seed will be distributed over the emergent wetland area by sowing equal quantity in two (2) directions at right angles. Illinois Department of Transportation (IDOT) seed mixes will be used for this area (specifically, IDOT Class 4B Wetland Grass & Sedge Mixture, and IDOT Class 5B Wetland Forb Mixture). Species in these mixes include the following:

Class 4B Wetland Grass & Sedge mix:

COMMON NAME	SCIENTIFIC NAME
BLUE JOINT GRASS	*CALAMAGROSTIS CANADENSIS*
HAIRY SEDGE	*CAREX LACUSTRIS*
AWL-FRUITED SEDGE	*CAREX STIPATA*
TUSSOCK SEDGE	*CAREX STRICTA*
FOX SEDGE	*CAREX VULPINOIDEA*
NEEDLE SPIKE RUSH	*ELEOCHARIS ACICULARIS*
BLUNT SPIKE RUSH	*ELEOCHARIS OBTUSA*
FOWL MANNA GRASS	*GLYCERIA STRIATA*
COMMON RUSH	*JUNCUS EFFUSUS*
SLENDER RUSH	*JUNCUS TENUIS*
TORREY'S RUSH	*JUNCUS TORREYI*
RICE CUT GRASS	*LEERSIA ORYZOIDES*
HARD-STEMMED BULRUSH	*SCIRPUS ACUTUS*
DARK GREEN RUSH	*SCIRPUS ATROVIRENS*
RIVER BULRUSH	*SCIRPUS FLUVIATILIS*
SOFTSTEM BULRUSH	*SCIRPUS VALIDUS*
CORD GRASS	*SPARTINA PECTINATA*

Class 5B – Wetland Forb mix:

COMMON NAME	SCIENTIFIC NAME
SWEET FLAG	*ACORUS CALAMUS*
ANGELICA	*ANGELICA ATROPURPUREA*
SWAMP MILKWEED	*ASCLEPIAS INCARNATA*
STEMMED ASTER	*ASTER PUNICEUS*
BEGGARTICKS	*BIDENS CERNUA*
SPOTTED JOE-PYE WEED	*EUPATORIUM MACULATUM*
BONESET	*EUPATORIUM PERFOLIATUM*
AUTUMN SNEEZE WEED	*HELENIUM AUTUMNALE*
BLUE FLAG IRIS	*IRIS VIRGINICA SHREVEI*
CARDINAL FLOWER	*LOBELIA CARDINALIS*
GREAT BLUE LOBELIA	*LOBELIA SIPHILITICA*
WINGED LOOSESTRIFE	*LYTHRUM ALATUM*
FALSE DRAGONHEAD	*PHYSOSTEGIA VIRGINIANA*
SMARTWEED	*POLYGONUM PENSYLVANICUM*
WATER SMARTWEED	*POLYGONUM LAPATHIFOLIUM*
MOUNTAIN MINT	*PYCNANTHEMUM VIRGINIANUM*
CUT LEAF CONEFLOWER	*RUDBECKIA LACINIATA*
RIDDEL GOLDENROD	*SOLIDAGO RIDDELLI*
GIANT BUR REED	*SPARGANIUM EURYCARPUM*

The Class 4B Wetland Grass and Sedge mix contains two species of filler plants (annual ryegrass (*Lolium perenne*) and spring oats (*Avena sativa*) which will be sewn at a rate of 25 pounds per acre, each. The remaining wetland grasses will be sewn at a rate of 6 pounds per acre. The Class 5B Wetland Forb mix will be sewn at a rate of 2 pounds per acre. A summary of the proposed grass and forb species, seeding rate and location, etc. is provided on the Site Planting Map and Planting Details exhibits, provided as Exhibit 2 and 6, respectively.

If necessary, weeds in this area shall be controlled with mulching, mowing, or approved herbicides. If rainfall or hydrology is not sufficient while the plantings are being established, the seeded area will be irrigated.

7.3 Achieving Hydrology

As described in Section 3.0 and shown on Exhibit 1, the mitigation site is located in a low-lying area adjacent to Sangamon River and is generally encompassed by agriculture drainage ditches which contain water year-round. In order to meet the hydrology performance standards as further described in Section 9.3 below, the water surface at the mitigation site should be at or near an approximate elevation of 437 or higher for fourteen (14) consecutive days of the growing season. In order to help accomplish this, the pump house used to maintain water elevations (reduce elevations) within these drainage ditches will be manipulated (pumping operations will cease) in order for the water levels in the drainage ditches, and consequently the water level in the mitigation site, to rise to desired levels. Water levels will be monitored by visual observations of the piezometers (described in Sections 9.3 and 10.2). The water surface elevation may be drawn down after the fourteen days of inundation by resuming pumping operations. This is a very reliable method of controlling the water level at the site and is proposed to be used as the primary method of controlling the hydrology throughout the monitoring period.

The mitigation site and the drainage ditch pump is located within the Clear Lake Special Drainage District, which is located immediately east of the Hager Slough Special Drainage District. Both districts have signed agreements allowing for the manipulation of the pump. Clear Lake Special Drainage District controls the pump house and will manage the pump manipulation through coordination with HSSDD. An agreement signed by both Districts is provided as Exhibit 7.

In the event that portions of the site do not achieve wetland hydrology, it is understood that some soil manipulation may be necessary. If necessary, this would likely involve removal of soil from elevated areas on the site that are not meeting the wetland criteria based on water level data. Upon coordination and approval with the USEPA, a site grading plan would be proposed based on site conditions and groundwater level data collected during the hydrology monitoring/piezometers up until that point.

HSSDD and Clear Lake Special Drainage District both understand the intent of the wetland mitigation site is to be successful in perpetuity. Manipulation of the pumping schedule will

continue in perpetuity. In addition, if pumps would fail in the future or the districts no longer exist, the wetland mitigation site will likely be inundated more frequently and would remain a wetland site.

8.0 MAINTENANCE PLAN

Maintenance will occur during three distinct periods; during plant establishment, short-term maintenance, and long-term maintenance. The level of maintenance should decrease with each period, with the goal of establishing a self-sustaining site. Long-term maintenance and management will begin after the mitigation site achieves its designated success criteria (see Section 9.0 – Performance Standards and Section 11.0 – Long-term Management Plan). Should adaptive management or corrective measures be necessary, HSSDD will submit their assessment and proposed actions to USEPA for approval prior to taking any action.

8.1 Plant Establishment and Short-term Maintenance Periods

Plant establishment is the initial and most intensive maintenance period, anticipated to last three (3) years. The short-term maintenance period starts once the three-year plant establishment period is complete and continues for the remainder of the monitoring period (anticipated to last seven (7) additional years) for a total of ten (10) years of maintenance/monitoring.

The newly installed plant community will be maintained regularly by HSSDD to ensure successful establishment. Irrigation will be used as necessary during plant establishment to minimize stress on the newly planted plants during times of drought.

Normal maintenance, which will be overseen by HSSDD, may include the following:

- Assess Plant Protection and Health – During inspections, trees will be checked for deer or rodent browse damage, insect damage, signs of disease or other types of stress. Plants substantially affected beyond their ability to recover unaided will be replaced. Locations will be marked and replanting will occur in the fall or winter, as appropriate.
- Install Replacement Plants – In the event of unsuccessful creation efforts (i.e. non-native species dominance or low native plant cover), remedial measures will be taken. In the second, forth, and sixth year of monitoring, if the survival rate falls below 80% of the required tree plantings, enough trees of suitable size will be replanted the following spring to raise the number of living trees to 100% of the required plantings. The 80% survival rate equates to the following: ~8,432 trees and ~838 shrubs.
- Weed Control – With the planting of native grasses in the forested area, it is expected that growth of invasive species will be minimized or eliminated in this

area. However, if it is determined that herbicide treatment or other pest control methods are necessary, only qualified individuals will perform the work. A selective herbicide may be used to spot spray weeds of concern. Additionally, mowing may be required 2 to 4 times during the first two growing seasons, if 20% of cover or more is determined to be invasive species. Trees will be avoided by use of flagging or markers.

- General Site Assessment – The site will be kept free of unnatural debris and trash. The access road will be maintained to ensure continued access to the site.

Inspections during the plant establishment maintenance and short-term maintenance periods will be completed following the schedules provided as Exhibit 5 – Activity Schedule:

During the Plant Establishment Maintenance Period (anticipated to last the first three (3) of the required ten (10) years of monitoring), **quarterly** inspections of the entire mitigation site should include the following:

Weed Control: Small infestations of invasive and noxious species removed immediately; mowing (during the first two growing seasons only) or herbicide use as necessary.

Assess Plant Protection and Health: Replacement planting in fall/winter, or as appropriate.

Conduct General Site Assessment: Implement corrective actions as needed. If issues are detected, HSSDD will notify USEPA immediately and actions will be taken immediately, as necessary.

During the Short-term Maintenance Period (begins at the end of the plant establishment maintenance period and continues until the end of the monitoring period (anticipated to last seven (7) years of the required ten (10) years of maintenance), **bi-annual** inspections of the entire mitigation site should include the following:

Weed Control: Small infestations removed immediately. Herbicide use typically timed for late winter, i.e. appearance of leaf rosettes, as needed.

Assess Plant Protection and Health: Replacement planting in fall/winter, or as appropriate.

Conduct General Site Assessment: Implement corrective actions as needed. If issues are detected, HSSDD will notify USEPA immediately and actions will be taken immediately, as necessary.

9.0 PERFORMANCE STANDARDS

The project will be considered complete when the Vegetation and Hydrology Performance Standards listed below are achieved after the monitoring period as specified by the USEPA. This will result in the successful establishment of self-sustaining forested wetland and emergent wetland.

During plant establishment, special care will be taken so as not to allow invasive and/or weedy plant species to establish and take over the new plantings. The site will be monitored for indication of invasion of the following species (this is a non-exhaustive list of common Illinois hydrophytic, invasive species of concern):

- Water hyacinth (*Eichornia crassipes*)
- Eurasian watermilfoil (*Myriophyllum spicatum*)
- Watercress (*Nasturtium officinale*)
- Flowering rush (*Butomus umbellatus*)
- Curly leaf pondweed (*Potamogeton crispus*)
- Brazilian elodea (*Egeria densa*)
- Alligator weed (*Alternanthera philoxeroides*)
- Reed canarygrass (*Phalaris arundinacea*)
- Common reed grass (*Phragmites australis*)
- Purple loosetrife (*Lythrum salicaria*)
- Hydrilla (*Hydrilla verticillata*)
- Garlic mustard (*Alliaria petiolata*)
- Poison hemlock (*Conium maculatum*)
- Bur cucumber (*Sicyos angulatus*)
- Giant hogweed (*Heracleum mantegazzianum*)
- Giant manna grass (*Glyceria grandis*)
- Japanese stiltgrass (*Microstegium vimineum*)
- Narrowleaf cattail (*Typha angustifolia*)
- Hybrid cattail (*Typha xgluauca*)
- European buckthorn (*Rhamnus cathartica*)
- Glossy buckthorn (*Frangula alnus*)

9.1 Emergent Wetland Performance Standards

1) Within three (3) months of permanent plantings, at least 75% of this area, as measured by aerial coverage, will be vegetated.
2) The cover of invasive species will be no more than 10% after the second monitoring year.

3) Emergent plantings shall exhibit 60% minimum absolute aerial cover, with greater than 50% of emergent species present being native and hydrophytic by the end of the second growing season.
4) By the end of the 5th growing season, emergent plantings shall exhibit a minimum of 80% absolute aerial cover, with greater than 75% of emergent species being native and hydrophytic.

9.2 Forested Wetland Performance Standards

1) Vegetation will be dominated with wetland species.
2) The cover of invasive tree species will be no more than 10% after the second monitoring year.
3) None of the three most dominant plant species may be non-native species.
4) In the second, forth, and sixth year of monitoring, if the survival rate falls below 80% of the *required* tree plantings (not actual plantings), enough trees of suitable size will be replanted the following spring to raise the number of living trees to 100% of the original *required* planting density (not actual plantings). The 80% survival rate equates to the following: ~8,432 trees and ~838 shrubs.
5) By the tenth year of monitoring, the site will have 80% absolute aerial coverage of trees/shrubs, with 75% of the coverage being native and hydrophytic.

9.3 Hydrology Performance Standards

Consistent with the Corps of Engineers Wetlands Delineation Manual (1987), the area shall have soils saturated within 12 inches or less of the ground surface for fourteen days during the growing season in most years (50% probability of recurrence).

During the monitoring period, the site must meet this hydrology definition in most years (at least 50%) receiving normal annual precipitation. Hydrology will be measured using piezometers installed in each monitoring quadrant (described in Section 10.2, below). Consistent with the 2008 Midwest supplement, the site shall consist of a minimum of one primary or two secondary hydrology indicators in each year of monitoring.

9.4 Hydric Soils Performance Standards

The amount of time for upland soils to develop wetland conditions is not well understood, and is based on soil types and the hydrology. For the purpose of this plan, soils will be evaluated annually. The upper 2-3 feet of the soil profiles will be evaluated and described. Depths and thickness of any hydric soil indicators, colors of matrix and redox features, and textures, at a minimum, will be recorded. "Field Indicators of Hydric Soils in the United States" (NRCS, Version 7.0, 2010 or latest version) and Munsell soil-color charts will be used as a reference. It is assumed that if hydrology and vegetation standards are continuously being met, then the

soils are acting as hydric soils. It is noted that a soil that does not contain a hydric soil indicator may in fact be hydric if it meets the definition of a hydric soil. During the ten years of monitoring, it is expected that non-hydric soils on the site may start to develop characteristics of hydric soils, such as the presence of redoximorphic features and changes in soil hues.

10.0 MONITORING REQUIREMENTS & METHODS

The Mitigation Site will be monitored annually during the growing season, as described below, until the performance standards are achieved, as required by the USEPA. Monitoring will be conducted by Klingner & Associates or another qualified firm. The primary party responsible for monitoring will be trained in the 1987 USACE Wetland Delineation Manual and the 2008 Midwest Supplement. The USACE Rock Island District Standard Mitigation Reporting Form (copy included as Exhibit 4) will be submitted annually to USEPA for review and approval.

Permanent photo stations will be set up to help document the progress of the mitigation site and will be included in the annual reports.

Monitoring reports, including photo documentation, will be submitted to the USEPA. In the reports, the party conducting the monitoring will provide conclusions regarding the success or failure of each planting, including specific evidence supporting the conclusions reached. The reports will be submitted by December 31 of the respective monitoring year.

The Hager Slough Special Drainage District will be released from further monitoring requirements, as well as any other obligations or requirements documented in this Mitigation Plan, once the performance standards are achieved and written concurrence is received from USEPA.

10.1 Wetland Delineation

To assess progression of the wetland performance standards, a routine wetland delineation shall be performed annually, beginning the year following the initial planting, to verify the total acreage of wetland achieved on site. Results will be included in the annual report. It is recognized that the actual acreage of aquatic resources/wetland may ultimately vary from that in the plans; however, it shall meet or exceed the acreage specified by agreements made between the USEPA and HSSDD. The wetland delineation will contain information described in the following section.

10.2 Vegetation, Soils & Hydrology Monitoring

Permanent monitoring point locations for monitoring will be established and plotted onto project drawings and the most current, readily available, aerial photograph of the mitigation site for

each annual monitoring report. The monitoring locations will be located in locations which provide representation of each proposed vegetative community. Based on the proposed plan and plant communities, as well as the size of the site, six (6) thirty foot (30') radius plots are proposed to be monitored; four plots located within the forested wetland area, and two plots located within the emergent wetland area. Proposed monitoring sites are shown on a map provided as Exhibit 2. If problems arise in the permanent plots (i.e. a portion of the plot is bare, or part of the plot has been damaged beyond the plants' ability to recover, etc.), a new monitoring plot will be identified and subsequent monitoring will be conducted in the new plot.

The vegetation and hydrology monitoring will be conducted annually (ideally in the spring) each year following the initial planting, throughout the monitoring period. Vegetation data to be collected may include, at a minimum, plant survival, percent cover by native and non-native species, list of plant species observed, and relative cover % for each dominant plant species. If any of the performance standards for vegetation are not on track, remediation or adaptive management practices may be employed.

Soils will be evaluated annually. The upper 2-3 feet of the soil profiles will be evaluated and described. Depths and thickness of any hydric soil indicators, colors of matrix and redox features, and textures, at a minimum, will be recorded. "Field Indicators of Hydric Soils in the United States" (NRCS, Version 7.0, 2010) and Munsell soil-color charts will be used as a reference. Site hydrology monitoring will be accomplished through the use of piezometers. Six piezometers will be installed, one in each of the permanent monitoring plots (discussed above). Wetland hydrology will be demonstrated from data gathered on periodic basis throughout the growing season (see below) and will determine if ground water levels are adequate to support vegetation across the site. Remediation or adaptive management practices may be employed if the performance standards are not being met.

Wetland hydrology monitoring, utilizing piezometers, will occur at the following frequency during the monitoring period:

- Daily monitoring for two weeks, beginning within the first week of the growing season (typically between March 28th and the third week of April)
- Weekly monitoring during the remainder of the growing season (typically around the first week of November)

The entire site will be periodically examined to assure an overall survival rate and success of the site.

11.0 LONG-TERM MANAGEMENT PLAN

HSSDD intends to have a conservation easement recorded on the title, to protect the site from development in perpetuity. The HSSDD will seek written USEPA approval of the easement prior to any work being conducted on the levee.

After the USEPA has determined that the wetland mitigation site has achieved performance standards and monitoring is no longer required, the following items will ensure the long-term sustainability of the site. The Hager Slough Special Drainage District will be responsible for the long-term maintenance of the site, including, but not limited to the following:

- General maintenance activities such as noxious plant species control
- Cleanup and trash removal
- Maintain access road
- Other maintenance activities to maintain the site in accordance with the maintenance and monitoring activities described in Sections 8 & 10.

12.0 ADAPTIVE MANAGEMENT PLAN

This section shall be considered HSSDD's Adaptive Management Plan:

The purpose of an Adaptive Management Plan is to provide a management strategy to address unforeseen changes in site conditions or other components of the wetland mitigation project. The Adaptive Management Plan will guide decisions for revising and implementing management practices to increase the mitigation site's long-term chances of success:

- Monitoring of the Site: As discussed in Section 10 above, the mitigation site will be monitored at least annually during the monitoring period. If potential problems are identified during monitoring events, this information will be provided to the Hager Slough Special Drainage District and USEPA. Particular issues to be monitored include the wetland processes (water-level fluctuations, sediment accretion and erosion) and functions, as well as presence of non-native or invasive species.
- Adaptive Management: The primary method of management on the site is anticipated to be mowing of the herbaceous layer regularly during the growing season within the first or second year after the site has been planted. Initially, mowing will occur in alternating strips. Possible adaptive management changes that may be implemented in response to changing site conditions may include mowing of the entire area (not strips only) or increasing the frequency of mowing events. If management problems persist, other methods of adaptive management may be needed such as experimental plots within the mitigation

site with different controls, replication, and different treatments and inputs to determine if the prescribed treatments are achieving desired goals. Other possible adaptive management practices may include: spraying of invasive species, burning after the third growing season (emergent areas only), grading the site, re-planting the site, enhancement of the site, or as a worst-case scenario; selecting a different mitigation site in the area.

- Irrigation is not expected to be required, but if during the monitoring period, the site experiences severe drought conditions which may detrimentally affect the plant community, an irrigation schedule may be employed.

If conditions arise which may have an impact on the site's ability to meet the performance standards or that require adaptive management or a modification to the work plan, the following steps will be taken, after consultation and coordination with the USEPA:

- Identify the problem.
- Develop a response, and if necessary, develop or adjust success criteria. Depending on the situation, the response may be as simple as increasing the length of monitoring or as involved as replanting or grading the site.
- Implement the solution.
- Monitor progress.
- Make adjustments as needed.
- All remedial steps will be documented and included in the annual monitoring reports.

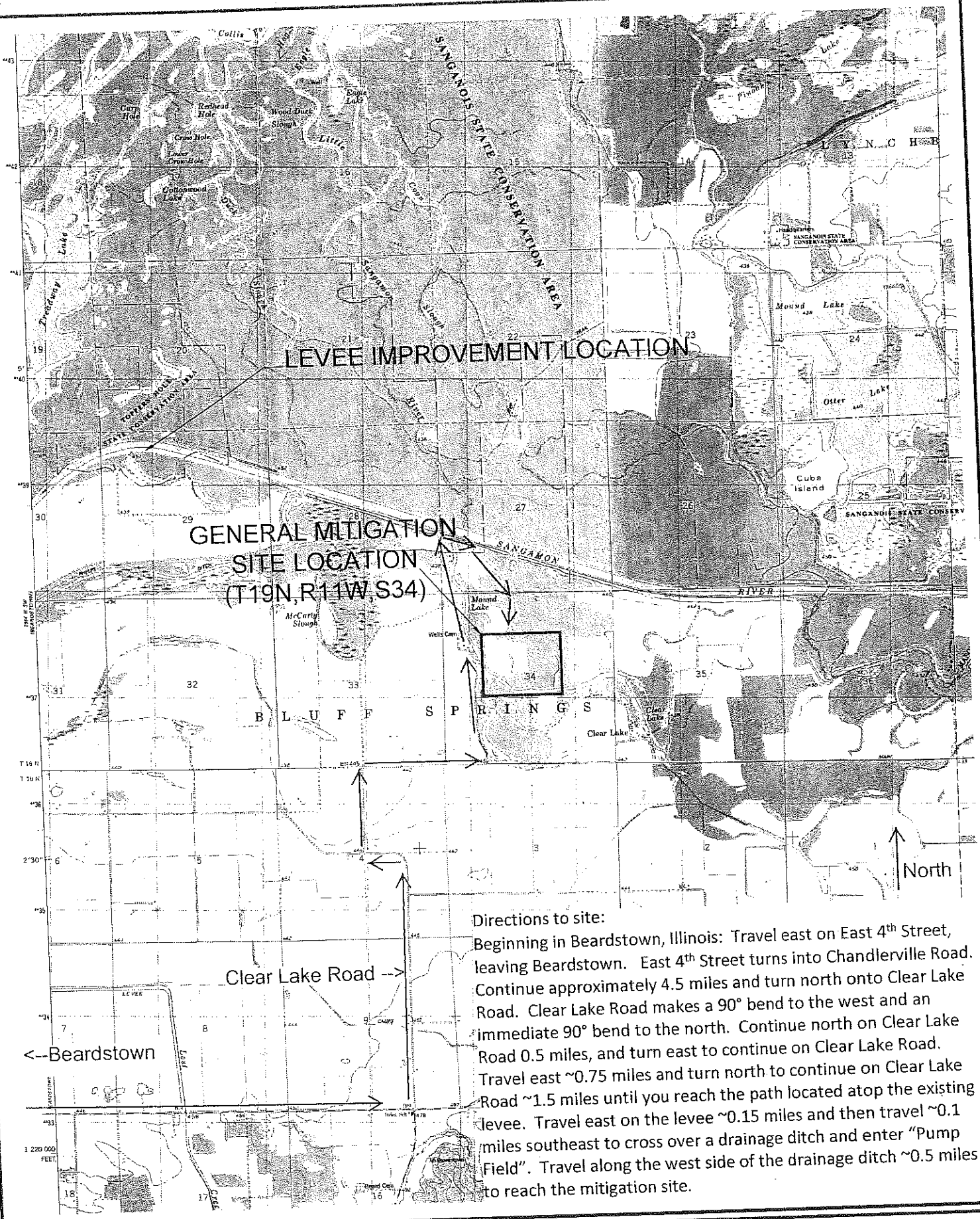
Contingency funds will be established for short- and long-term maintenance and monitoring costs and for the long-term management and monitoring costs. These funds are intended to provide assurances for unanticipated expenses. Costs associated with adaptive management would also be paid using these funds.

13.0 FINANCIAL ASSURANCES

Due to the location and nature of the selected mitigation site and its high probability of mitigation success, no financial assurances are required by the USEPA. HSSDD commits that the mitigation site will be constructed in accordance with this Mitigation Plan, and that it will persist, and it will not be subjected to uses incompatible with wetland functions. HSSDD recognizes its responsibility for providing alternative compensatory mitigation in the event that changes in statute, regulation, or agency needs or mission result in an incompatible use on public lands originally set aside for compensatory mitigation.

EXHIBIT 1

PROJECT LOCATION MAP



Directions to site:

Beginning in Beardstown, Illinois: Travel east on East 4th Street, leaving Beardstown. East 4th Street turns into Chandlerville Road. Continue approximately 4.5 miles and turn north onto Clear Lake Road. Clear Lake Road makes a 90° bend to the west and an immediate 90° bend to the north. Continue north on Clear Lake Road 0.5 miles, and turn east to continue on Clear Lake Road. Travel east ~0.75 miles and turn north to continue on Clear Lake Road ~1.5 miles until you reach the path located atop the existing levee. Travel east on the levee ~0.15 miles and then travel ~0.1 miles southeast to cross over a drainage ditch and enter "Pump Field". Travel along the west side of the drainage ditch ~0.5 miles to reach the mitigation site.

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors
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4540 Paris Gravel Road, Hannibal, MO
610 N. 4th Street, Suite 100, Burlington, IA
Ph 217.223.3670 - Fax 217.223.3602
Ph 573.221.0029 - Fax 573.221.0012
Ph 319.752.3603 - Fax 319.752.3605

NO.	APPR.	REVISION DESCRIPTION	DATE
		Non-Reduced Size: 8.5" x 11"	

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SCALE: NTS	
DESIGNED	DRAWN
FIELD	FIELD BOOK
CHECKED	CHECK DATE
FILE NAME: PROJECT LOCATION MAP	

PROJECT LOCATION MAP

HAGER SLOUGH
SPECIAL DRAINAGE DISTRICT

SHEET TITLE

PROJECT NO. 14-0255

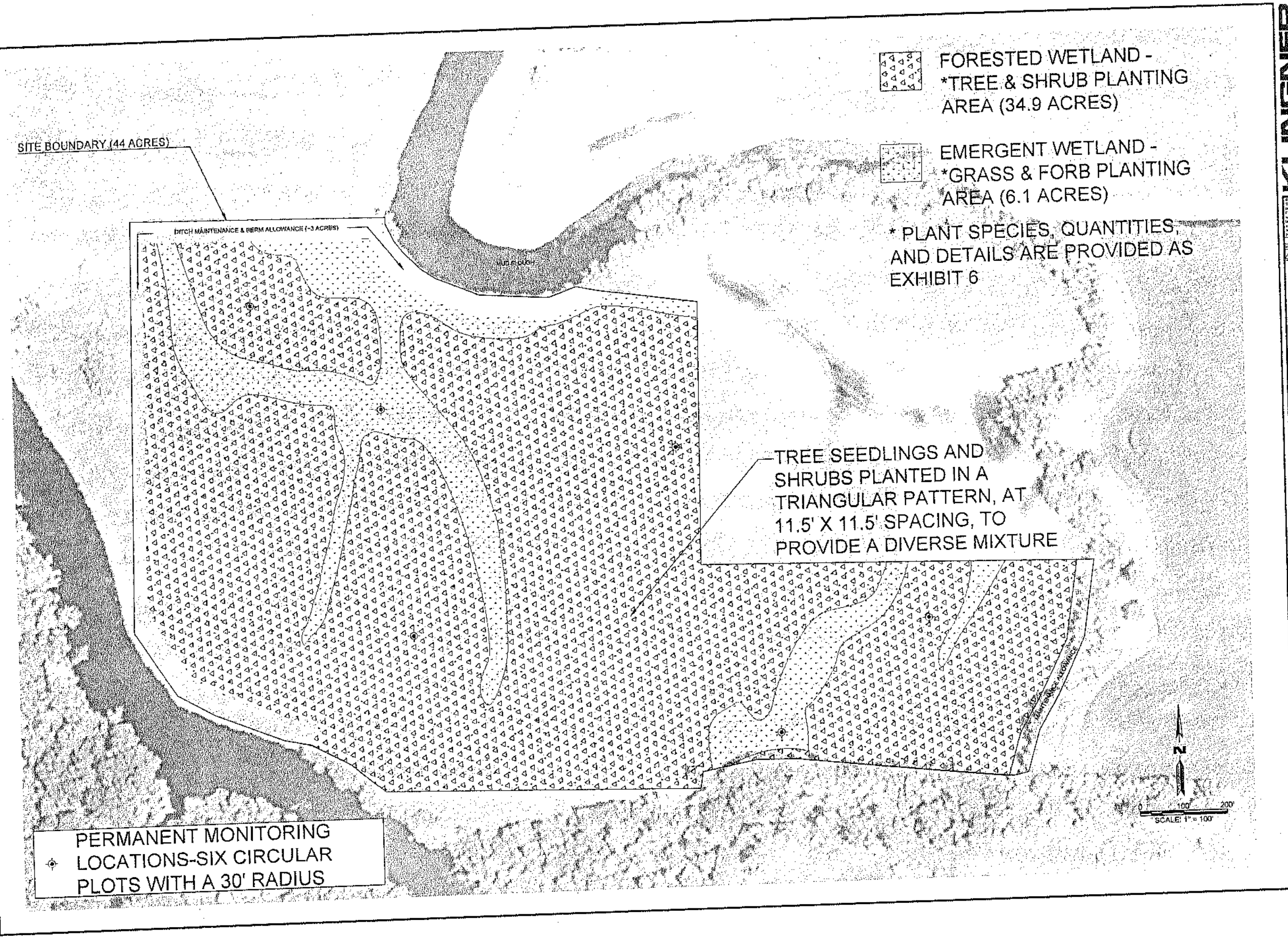
DRAWING ISSUE DATE: 10/7/2014

REV.

SHEET 1

EXHIBIT 2

SITE PLANTING MAP



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HAGER SLOUGH WETLAND MITIGATION

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT BEARDSTOWN, ILLINOIS

REVISION HISTORY

DESIGNED	DRAWN
FIELD	FIELD BOOK
CHECKED	CHECK DATE

SHEET TITLE

EXHIBIT 2 - SITE PLANTING MAP

PROJECT NO. 14-0265

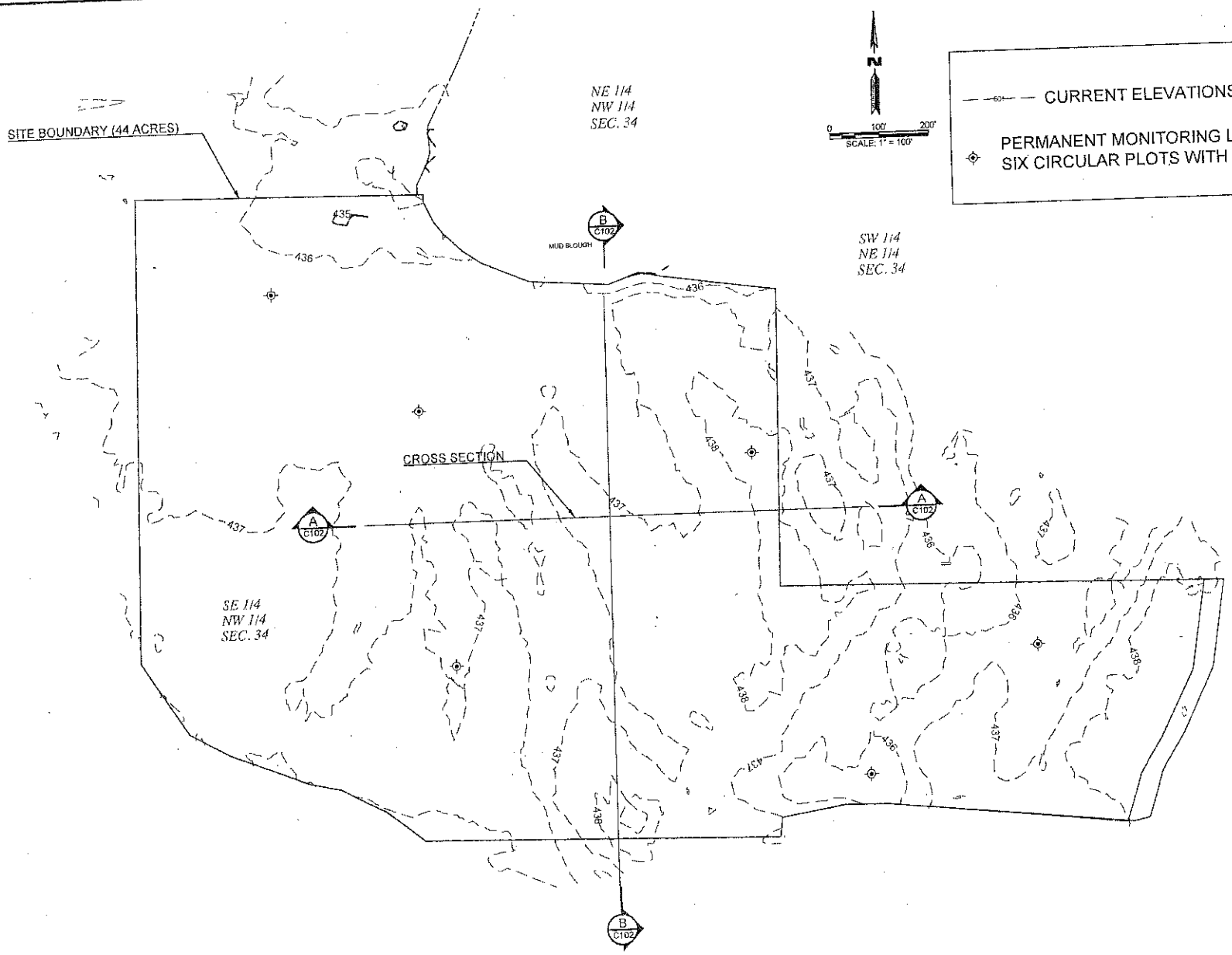
DRAWING ISSUED DATE: 04/01/2015

SHEET

EXHIBIT 2

EXHIBIT 3

TOPOGRAPHICAL SURVEY & CROSS SECTION DETAILS



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REVISION HISTORY

NUM	REVISION DESCRIPTION	DATE	APP'D

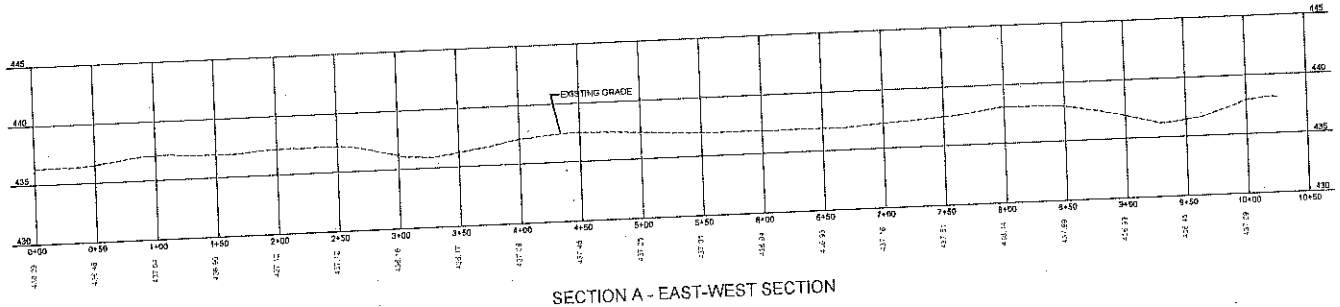
HAGER SLOUGH
WETLAND MITIGATION
HAGER SLOUGH SPECIAL
DRAINAGE DISTRICT
BEARDSTOWN, ILLINOIS

Non-Reduced Sheet Size: 22" x 34"

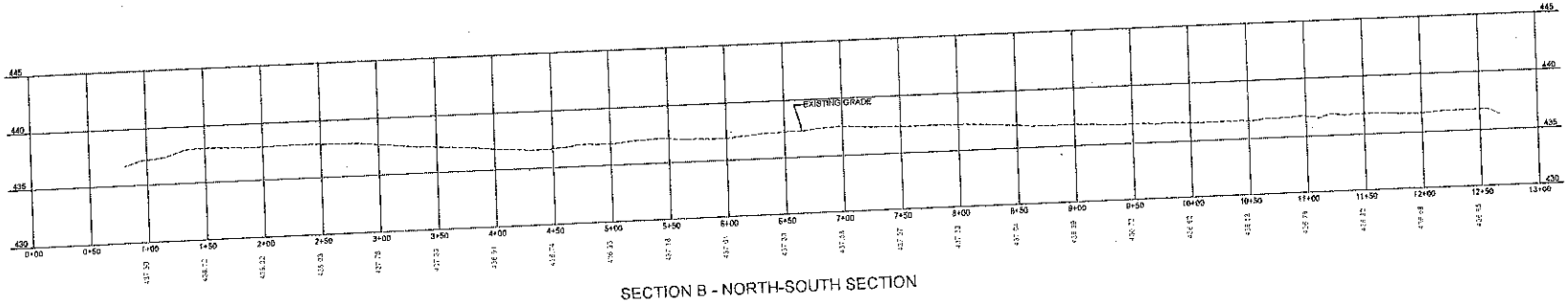
DESIGNED	DRAWN
FIELD	FIELD BOOK
CHECKED	CHECK DATE

SHEET TITLE
TOPOGRAPHICAL SURVEY

PROJECT NO.
14-0259
DRAWING ISSUED DATE:
06/1/2015
SHEET
EXHIBIT 3



SECTION A - EAST-WEST SECTION



SECTION B - NORTH-SOUTH SECTION

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors
Internet Address:

HAGER SLOUGH
WETLAND MITIGATION
HAGER SLOUGH SPECIAL
DRAINAGE DISTRICT
BEARDSTOWN, ILLINOIS

Non-Reduced Sheet Size: 22" x 34"

DESIGNED: DCD
DRAWN: CJH
FIELD:
FIELD BOOK:
CHECKED:
CHECK DATE:

SHEET TITLE
CROSS SECTIONS
DETAILS

PROJECT NO.
14-0355
DRAWING ISSUED DATE:
04/14/15
SHEET
C102

EXHIBIT 4

MONITORING REPORTING FORM

Department of the Army – Rock Island District
Standard Mitigation Reporting Form

1. Site Identification

COE Project Number: CEMVR-OD-P-

Name and contact number for the Permittee or agent:

The party responsible for monitoring and the dates of Monitoring:

Mitigation Purpose:

Mitigation Site Location Information (**See Figure 1**):

County: _____

Section: _____ Township: _____ Range: _____

HUC 8 Watershed: _____

USGS Quad: _____

Landmarks/Directions:

Date of Report

Check applicable box below:

Report #1 ☐
Report #2 ☐
Report #3 ☐
Report #4 ☐
Report #5 ☐

Date of Mitigation Site Completion:

2. Mitigation Site Description (e.g., Restoration Techniques, Control Structure, Plantings)

3. Project Mitigated by the Mitigation Site.

Permit No.	Project Location (County)	Emergent (acres)	Forested (acres)	Scrub-Shrub (acres)	*Other (acres)	Stream Channel Length (feet)

* Replace "Other' with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

4. Mitigation Design Objectives/Performance Measures

	Mitigation					
Type:	Emergent (acres)	Forested (acres)	Open-Water (acres)	*Other (acres)	Total (acres)	Stream Channel Length (feet)
Restoration:						
Creation:						
Enhancement:						
Preservation:						
Total:						

* Replace "Other' with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

5. **Actual Delineated Wetland Acreage – [YEAR]** (See Figure 2)

	Mitigation					
Type:	Emergent (acres)	Forested (acres)	Scrub-Shrub (acres)	*Other (acres)	Total (acres)	Stream Channel Length (feet)
Restoration:						
Creation:						
Enhancement:						
Preservation:						
Observed Total:						
Designed Total:						
Difference :						

* Replace "Other" with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

6. **Annual Progression Of Delineated Wetland**

	Year 1 [YEAR:]	Year 2 [YEAR:]	Year 3 [YEAR:]	Year 4 [YEAR:]	Year 5 [YEAR:]
Delineated Wetland (acres):					
Percent of Mitigation Completed :	%	%	%	%	%

7. **Monitoring Data Summary**

Site monitoring was conducted [# OF SITE VISITS] during [YEAR]. A spring visit was made on [DATE] to document hydrology and vegetation and summer/fall visit(s) were made on [DATE(S)] to document soils and to map vegetation. Ground-level photographs of the site were taken during both visits; the photographs depict existing hydrology and the development of the site's vegetation (see ***Figure 2*** *for photo point locations).*

Hydrology

Vegetation

Soils

8. Other 404 Permit Requirements Related to Mitigation

Requirement/Special Conditions	Status of Requirement or Permit Condition
	→
	→
	→
	→
	→
	→
	→

Total % of Permit Conditions Complete [ ] % The number of Permit Conditions that are fully satisfied (as a % of the total).

9. Conclusions

10. Specific recommendations for remedial actions.

11. Vegetation Community Species List

Community ID Number	Dominant Plant Species	Stratum (ground, shrub, etc.)	Relative Cover %	Indicator Status	Percent of Dominant Species that are **OBL**, **FACW**, or **FAC** (Excluding FAC-)
1	Common name (*Scientific name*)				[ ] %
			%		
			%		
			%		
			%		
2			%		[ ] %
			%		
			%		
			%		
			%		
3			%		[ ] %
			%		
			%		
			%		
			%		
4			%		[ ]%
			%		
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5			%		[ ]%
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			%		
			%		
			%		
7			%		[ ]%
			%		
			%		
			%		
			%		
8			%		[ ]%
			%		
			%		
			%		
			%		

Notes:

13. Vegetative cover map indicating the dominant species in each area, an assessment of wetland hydrology according to the *1987 Corps of Engineers Wetland Delineation Manual* as well as the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, a map with drawn boundaries in relation to the boundaries approved in your original mitigation plan. Identify areas meeting the definition of wetland in the *1987 Corps of Engineers Wetland Delineation Manual* as well as the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, and any corrective actions taken or needed:

14. **Photos** [Photo Page]

Department of the Army – Rock Island District
Standard Mitigation Reporting Form

1. Site Identification

COE Project Number: CEMVR-OD-P-

Name and contact number for the Permittee or agent:

The party responsible for monitoring and the dates of Monitoring:

Mitigation Purpose:

Mitigation Site Location Information (**See Figure 1**):

County: _____

Section: _____ Township: _____ Range: _____

HUC 8 Watershed: _____

USGS Quad: _____

Landmarks/Directions:

Date of Report

Check applicable box below:

Report #6 ☐
Report #7 ☐
Report #8 ☐
Report #9 ☐
Report #10 ☐

Date of Mitigation Site Completion:

2. Mitigation Site Description (e.g., Restoration Techniques, Control Structure, Plantings)

[

3. Project Mitigated by the Mitigation Site.

Permit No.	Project Location (County)	Emergent (acres)	Forested (acres)	Scrub-Shrub (acres)	*Other (acres)	Stream Channel Length (feet)

* Replace "Other' with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

4. Mitigation Design Objectives/Performance Measures

	Mitigation					
Type:	Emergent (acres)	Forested (acres)	Open-Water (acres)	*Other (acres)	Total (acres)	Stream Channel Length (feet)
Restoration:						
Creation:						
Enhancement:						
Preservation:						
Total:						

* Replace "Other' with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

5. Actual Delineated Wetland Acreage – [YEAR] (See **Figure 2**)

	Mitigation					
Type:	Emergent (acres)	Forested (acres)	Scrub-Shrub (acres)	*Other (acres)	Total (acres)	Stream Channel Length (feet)
Restoration:						
Creation:						
Enhancement:						
Preservation:						
Observed Total:						
Designed Total:						
Difference :						

* Replace "Other" with actual type of impacts ("Open Water", "Upland", "Woodland", etc.)

6. Annual Progression Of Delineated Wetland

	Year 6 [YEAR:]	Year 7 [YEAR:]	Year 8 [YEAR:]	Year 9 [YEAR:]	Year 10 [YEAR:]
Delineated Wetland (acres):					
Percent of Mitigation Completed :	%	%	%	%	%

7. Monitoring Data Summary

Site monitoring was conducted [# OF SITE VISITS] during [YEAR]. A spring visit was made on [DATE] to document hydrology and vegetation and summer/fall visit(s) were made on [DATE(S)] to document soils and to map vegetation. Ground-level photographs of the site were taken during both visits; the photographs depict existing hydrology and the development of the site's vegetation (see ***Figure 2*** *for photo point locations).*

Hydrology

Vegetation

Soils

8. Other 404 Permit Requirements Related to Mitigation

Requirement/Special Conditions	Status of Requirement or Permit Condition
	→
	→
	→
	→
	→
	→
	→

Total % of Permit Conditions Complete [%] The number of Permit Conditions that are fully satisfied (as a % of the total).

9. Conclusions

10. Specific recommendations for remedial actions.

11. Vegetation Community Species List

Community ID Number	Dominant Plant Species	Stratum (ground, shrub, etc.)	Relative Cover %	Indicator Status	Percent of Dominant Species that are **OBL**, **FACW**, or **FAC** (Excluding FAC-)
1	Common name (*Scientific name*)				[ ] %
			%		
			%		
			%		
			%		
2			%		[ ] %
			%		
			%		
			%		
			%		
3			%		[ ] %
			%		
			%		
			%		
			%		
4			%		[ ]%
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7			%		[ ]%
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			%		
			%		
8			%		[ ]%
			%		
			%		
			%		
			%		

Notes:

13. Vegetative cover map indicating the dominant species in each area, an assessment of wetland hydrology according to the *1987 Corps of Engineers Wetland Delineation Manual* as well as the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, a map with drawn boundaries in relation to the boundaries approved in your original mitigation plan. Identify areas meeting the definition of wetland in the *1987 Corps of Engineers Wetland Delineation Manual* as well as the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region*, and any corrective actions taken or needed:

14. Photos [Photo Page]

EXHIBIT 5

ACTIVITY SCHEDULE

Exhibit 5 - Activity Schedule

General Activities			
Activity	Tentative Schedule	Responsible Party	Notes
Re-survey for *Boltonia decurrens*	Prior to construction (Summer 2016)	Klingner	
Flag *Boltonia* in the field	Prior to construction (Summer 2016)	Klingner	
Submit stormwater permit application & SWPPP to IEPA	Spring/Summer 2016	Klingner	to be completed by Contractor
Stormwater Permit - Anticipated Receipt	Fall 2016		
Mowing for pre-tree planting	not expected; late winter/early spring 2017, if required	HSSDD	
Site Preparation-Herbicide Application	Early October 2016	HSSDD	Use non-selective, non-residual herbicide
Site Preparation - Native grass planting in forested wetland area	Prior to freezing, anticipated late October/early November 2016	HSSDD	Use mixture of 50% Virginia Wildrye/50% Indian woodoats
Emergent wetland seeding/mulching	Spring 2017	Contractor	conducted before June 30, best done later in the spring after water levels stabilize
Permanent Planting - Forested Area	late winter/early spring 2017	Contractor	
Mowing/Burning	During growing season, during 1st and 2nd full growing season, as needed	HSSDD	
Weed Control/Herbicide, as needed	Quarterly during Plant Establishment Maintenance Period; bi-annually during Short-term Maintenance Period	HSSDD/Contractor	Begins 2017; anticipated months during Plant Establishment Period: April, July, October, December, anticipated months during Short-term Maintenance period: May & October
Assess Plant Protection & Health	Quarterly during Plant Establishment Maintenance Period; bi-annually during Short-term Maintenance Period	HSSDD/Contractor	Begins 2017; anticipated months during Plant Establishment Period: April, July, October, December, anticipated months during Short-term Maintenance period: May & October
Conduct General Site Assessment	Quarterly during Plant Establishment Maintenance Period; bi-annually during Short-term Maintenance Period	HSSDD/Contractor	Begins 2017; anticipated months during Plant Establishment Period: April, July, October, December, anticipated months during Short-term Maintenance period: May & October

Deliverables		
Deliverable	Due Date	Notes
Boundary and Topographical survey	completed; information included with submittal of revised Wetland Mitigation Plan (April 2015)	
Annual monitoring reports	December 31 of each monitoring year	First report due 12/31/2017; anticipated to last 10 years
Draft conservation easement to USEPA for review	Spring 2015	
Copy of filed & stamped conservation easement to USEPA	Fall 2015	
Formal documentation from current landowner stating of their intent to allow use of property as mitigation site	Spring/Summer 2015	
SWPPP to USEPA	anticipate Fall 2016	
As-Built Report	30-60 days from the date of completion	Report to include site preparation details, number of trees/shrubs planted, roughly where, final location of monitoring stations, etc

EXHIBIT 6

PLANTING DETAILS

KEY	BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE SPREAD	PLANTING SIZE	QUANTITY PER ACRE	SPACING	TOTAL PLANTS	REMARKS
	FORESTED WETLAND TREE & SHRUB PLANTINGS								
CI	*CARYA ILLINOINENSIS*	PECAN	70'-100'	40'-75'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 40 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1396 SAPLINGS	MAST BEARING
CL	*CARYA LACINIOSA*	SHELLBARK HICKORY	60'-80'	40'-60'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 40 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1396 SAPLINGS	MAST BEARING
QB	*QUERCUS BICOLOR*	SWAMP WHITE OAK	70'	50'-70'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 40 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1396 SAPLINGS	FLOODPLAIN & TERRACE SP.
QP	*QUERCUS PALUSTRIS*	PIN OAK	70'-80'	25'-40'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 40 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1396 SAPLINGS	FLOODPLAIN & TERRACE SP.
QB	*QUERCUS MACROCARPA*	BUR OAK	70'-90'	60'-80'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 40 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1396 SAPLINGS	MAST BEARING
QP	*QUERCUS LYRATA*	OVERCUP OAK	45'-70'	35'-50'	CONTAINERIZED & SAPLINGS	10 CONTAINERIZED; 42 SAPLINGS	11.5'x11.5'	349 CONTAINERIZED; 1466 SAPLINGS	MAST BEARING
CS	*CORNUS STOLONIFERA*	RED-OSIER DOGWOOD	7'10'	8'-10'	SEEDLINGS	8	11.5'x11.5'	279	PREFERS FULL SUN; USE ON BORDER
CO	*CEPHALANTHUS OCCIDENTALIS*	BUTTONBUSH	6'-12'	6'-15'	SEEDLINGS	8	11.5'x11.5'	279	FULL SUN; USE ON BORDER
IV	*ILEX VERTICILLATA*	WINTERBERRY	6'-9'	6'-9'	SEEDLINGS	8	11.5'x11.5'	279	FULL SUN TO PARTIAL SHADE; USE ON BORDER
CR	*CORNUS RACEMOSA*	GRAY DOGWOOD	10'-12'	10'-12'	SEEDLINGS	6	11.5'x11.5'	210	FULL SUN TO SHADE; MASSING

EMERGENT WETLAND ENHANCEMENT SEEDING PLAN			
USE A MIXTURE OF ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT) CLASS 4B & CLASS 5B SEED MIXES			
IDOT CLASS 4B - WETLAND GRASS & SEDGE MIXTURE:			25 LBS/ACRE
ANNUAL RYEGRASS (*LOLIUM PERENNE*)			25 LBS/ACRE
SPRING OATS (*AVENA SATIVA*)			6LBS/ACRE
WETLAND GRASSES (BELOW)			
	COMMON NAME	SCIENTIFIC NAME	
	BLUE JOINT GRASS	*CALAMAGROSTIS CANADENSIS*	12%
	HAIRY SEDGE	*CAREX LACUSTRIS*	6%
	AWL-FRUITED SEDGE	*CAREX STIPATA*	6%
	TUSSOCK SEDGE	*CAREX STRICTA*	6%
	FOX SEDGE	*CAREX VULPINOIDEA*	3%
	NEEDLE SPIKE RUSH	*ELEOCHARIS ACICULARIS*	3%
	BLUNT SPIKE RUSH	*ELEOCHARIS OBTUSA*	14%
	FOWL MANNA GRASS	*GLYCERIA STRIATA*	6%
	COMMON RUSH	*JUNCUS EFFUSUS*	6%
	SLENDER RUSH	*JUNCUS TENUIS*	6%
	TORREY'S RUSH	*JUNCUS TORREYI*	10%
	RICE CUT GRASS	*LEERSIA ORYZOIDES*	3%
	HARD-STEMMED BULRUSH	*SCIRPUS ACUTUS*	3%
	DARK GREEN RUSH	*SCIRPUS ATROVIRENS*	3%
	RIVER BULRUSH	*SCIRPUS FLUVIATILIS*	3%
	SOFTSTEM BULRUSH	*SCIRPUS VALIDUS*	4%
	CORD GRASS	*SPARTINA PECTINATA*	
IDOT CLASS 5B - WETLAND FORB MIX			2LBS/ACRE
	COMMON NAME	SCIENTIFIC NAME	
	SWEET FLAG	*ACORUS CALAMUS*	3%
	ANGELICA	*ANGELICA ATROPURPUREA*	6%
	SWAMP MILKWEED	*ASCLEPIAS INCARNATA*	2%
	STEMMED ASTER	*ASTER PUNICEUS*	10%
	BEGGARTICKS	*BIDENS CERNUA*	7%
	SPOTTED JOE-PYE WEED	*EUPATORIUM MACULATUM*	7%
	BONESET	*EUPATORIUM PERFOLIATUM*	7%
	AUTUMN SNEEZE WEED	*HELENIUM AUTUMNALE*	2%
	BLUE FLAG IRIS	*IRIS VIRGINICA SHREVEI*	2%
	CARDINAL FLOWER	*LOBELIA CARDINALIS*	5%
	GREAT BLUE LOBELIA	*LOBELIA SIPHILITICA*	5%
	WINGED LOOSESTRIFE	*LYTHRUM ALATUM*	2%
	FALSE DRAGONHEAD	*PHYSOSTEGIA VIRGINIANA*	5%
	SMARTWEED	*POLYGONUM PENSYLVANICUM*	10%
	WATER SMARTWEED	*POLYGONUM LAPATHIFOLIUM*	10%
	MOUNTAIN MINT	*PYCNANTHEMUM VIRGINIANUM*	5%
	CUT LEAF CONEFLOWER	*RUDBECKIA LACINIATA*	5%
	RIDDEL GOLDENROD	*SOLIDAGO RIDDELLI*	2%
	GIANT BUR REED	*SPARGANIUM EURYCARPUM*	5%

GRADING NOTES:

1. INSTALL SILT FENCE AND EROSION CONTROL PRIOR TO EARTHWORK OPERATIONS. PLACEMENT OF SILT FENCE TO BE COORDINATED WITH EARTHWORK OPERATIONS. SILT FENCE TO BE LOCATED AT SURFACE RUNOFF POINTS OF CONCENTRATION.

2. UTILIZE TIMBER MATS, PREFABRICATED EQUIPMENT MATS, AND/OR LOW GROUND PRESSURE EQUIPMENT IN WETLANDS TO MINIMIZE DISTURBANCE.

3. A TOPSOIL LINING SHALL BE PROVIDED WITHIN THE MITIGATION AREA THAT IS 12-18 INCHES THICK. TOPSOIL SHALL BE HANDLED AS LITTLE AS POSSIBLE AND RE-SPREAD AS SOON AS POSSIBLE.

4. BOTTOM ELEVATIONS SHALL VARY TO PROVIDE MORE DIVERSITY AND WET CONDITIONS IN SOME AREAS DURING DRY PERIODS.

SEEDING NOTES:

1. PLANTINGS SHALL BE COMPLETED AS SOON AFTER SITE PREPARATION OPERATIONS AS POSSIBLE. IF NECESSARY, A NON-SELECTIVE HERBICIDE MAY BE USED PRIOR TO EARTHWORK.

2. WEEDS SHALL BE CONTROLLED WITH MULCHING, MOWING, OR APPROVED HERBICIDES. IF RAINFALL IS NOT SUFFICIENT WHILE PLANTINGS ARE BEING ESTABLISHED, THE CONTRACTOR SHALL IRRIGATE THE SEEDED AREA.

3. SEED SHALL BE SEWN USING A SPREADER OR SEEDING MACHINE.

4. SEED SHALL BE DISTRIBUTED OVER THE EMERGENT WETLAND AREA BY SEWING EQUAL QUANTITY IN TWO (2) DIRECTIONS AT RIGHT ANGLES.

TREE & SHRUB PLANTING NOTES:

1. BARE ROOT SEEDLINGS SHALL GENERALLY BE PLANTED WHEN THEY ARE DORMANT. CIRCULAR HOLES SHOULD BE EXCAVATED USING A DIBBLE BAR OR SPADE. HOLES SHALL BE WIDER AND DEEPER THAN THE ROOT SYSTEMS OF THE BARE ROOT STOCK.

2. CONTAINERIZED TREES MUST BE 3-6' TALL WITH A MINIMUM $\frac{1}{2}$" CALIPER READING AT THE ROOT FLAIR. EXCAVATION SHOULD BE APPROXIMATELY THREE TIMES AS WIDE AS THE ROOT BALL DIAMETER. THE ROOT BALL SHOULD BE CAREFULLY REMOVED FROM THE CONTAINER AND INSPECTED FOR ANY ROOT ISSUES.

KLINGER & ASSOCIATES, P.C.
Engineers · Architects · Surveyors

PLANTING DETAILS

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT
BEARDSTOWN, ILLINOIS

Non-Reduced Sheet Size: 11" x 17"
DESIGNED | DRAWN
FIELD | FIELD BOOK
CHECKED | CHECK DATE
SHEET TITLE: EXHIBIT 7 - PLANTING DETAILS
PROJECT NO. 14-0255
DRAWING ISSUED DATE: 06/11/2015
SHEET

EXHIBIT 6

EXHIBIT 7

SIGNED PUMPING AGREEMENT

By order of the United States Environmental Protection Agency (USEPA), the Hager Slough Special Drainage District is creating a Wetland Mitigation site on a parcel of land located in the northwest corner of the Clear Lake Special Drainage District (locally known as the "Pump Field"). The site is generally encompassed by district drainage ditches.

In order for the Wetland Mitigation Project to be successful, the site shall meet certain hydrology requirements including soil saturation within 12 inches or less of the ground surface for at least 14 consecutive days of the growing season in most years (50% probability of recurrence). Based on a topographic survey of the mitigation site, in order to meet the hydrology requirements, the water surface (surface water or groundwater) should be maintained at an approximate elevation of 437 feet above mean sea level or higher for at least fourteen (14) consecutive days during the growing season (for this purpose, considered to be within March 28 – November 7). In order to achieve the water surface elevation as mentioned above, during certain years, it may be necessary to manipulate the pumping operations to maintain drainage ditch surface water elevations at higher elevations than typically maintained. By agreeing to meet the hydrology requirements of the Wetland Mitigation Plan, the Districts understand this may result in the saturation or inundation of other lands at lower elevations within the District boundaries, with the potential for areas to be inaccessible or unable to be farmed at times. This manipulation of surface water elevation of drainage ditches is projected to begin during the growing season of 2017 and will continue in perpetuity, so long as the Districts are pumping water for the Drainage Districts.

This document serves to indicate the Hager Slough Special Drainage District and the Clear Lake Drainage District's agreement to allow for manipulation of the pumps as described above.

Hager Slough Special Drainage District
Beardstown, Illinois

Agreed to this 8 day of July, 2015.

Clear Lake Special Drainage District
Beardstown, Illinois

Agreed to this 8 day of July, 2015.

KLINGNER
& ASSOCIATES, P.C.
Engineers • Architects • Surveyors

WETLAND DELINEATION – PROPOSED MITIGATION SITE

Hager Slough Special Drainage District
Cass County, IL

October 31, 2014

Prepared for:

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT

9612 Chandlerville Road
Beardstown, IL 62618

Prepared by:

KLINGNER & ASSOCIATES, P.C.

616 North 24th Street
Quincy, IL 62301

Project No. 14-0255

KLINGNER & ASSOCIATES, P.C.
Engineers • Architects • Surveyors

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Project Description

The Hager Slough Special Drainage District (District) located in Cass County, Illinois has proposed making improvements to their existing levee along the south bank of the Sangamon River. Due to potential impacts to wetlands that may occur as part of that project, as well as previous impacts to wetlands, the District is required to provide wetland mitigation in the amount of thirty-nine (39) acres of forested wetland creation. A wetland delineation was done on a parcel of land to assess the feasibility of using it as a wetland mitigation site. The results are included in this report. A map showing the location of the proposed site is included as Appendix A.

1.2 Executive Summary

The survey resulted in the following:

- Completion of five (5) Wetland Determination Data Forms for the identification and delineation of wetlands.
- Identification and delineation of wetlands on the site.
- Determination that the site contains favorable conditions for the successful creation of a wetland mitigation site

2.0 REGULATORY BACKGROUND

Federal permits from the U.S. Army Corps of Engineers (USACE) are required under Section 404 of the Clean Water Act for projects involving the discharge of dredged or fill material into waters of the U.S, including wetlands, streams, rivers, lakes and ponds. Other agencies and departments, such as the U.S. Fish and Wildlife Service (FWS), Illinois Department of Natural Resources, and the Illinois State Historic Preservation Office may review and comment on applications for permit authorization to impact jurisdictional areas in some cases.

The principal statutes pertinent to the permitting process are listed below.

- *Rivers and Harbors Act of 1899: Section 10 (33 U.S.C. 403)* authorizes the Corps to issue permits for structures (piers, pipelines, weirs, etc.) and associated construction activities in federal navigable waters of the United States

- *Clean Water Act: Section 404 (33 U.S.C. 1344)* authorizes the Corps to issue permits for discharge of dredged or fill material in waters of the United States, including wetlands
- *Fish and Wildlife Coordination Act (16 U.S.C. 661-664)* authorizes the US Fish and Wildlife Service and Illinois Department of Natural Resources to review Corps permit applications with respect to the conservation and preservation of the State's natural resources

3.0 FIELD INVESTIGATION – APPROACH & METHODOLOGY

The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) was utilized extensively to assist in the delineation of wetlands. The document is one of a series of Regional Supplements to the Corps of Engineers Wetland Delineation Manual (hereafter called the Corps Manual). The Corps Manual provides technical guidance and procedures, from a national perspective, for identifying and delineating wetlands that may be subject to regulatory jurisdiction under Section 404 of the Clean Water Act (33 U.S.C. 1344) or Section 10 of the Rivers and Harbors Act (33 U.S.C. 403): According to the Corps Manual, identification of wetlands is based on a three-factor approach involving indicators of hydrophytic vegetation, hydric soil, and wetland hydrology. The Regional Supplement presents wetland indicators, user notes, delineation guidance, and other information that is specific to the Midwest Region.

The Regional Supplement was designed for use with the current version of the Corps Manual (Environmental Laboratory 1987) and all subsequent versions. Where differences in the two documents occur, the Regional Supplement takes precedence over the Corps Manual for applications in the Midwest Region.

Indicators and procedures given in the Supplement are designed to identify wetlands as defined jointly by the Corps of Engineers (33 CFR 328.3) and Environmental Protection Agency (40 CFR 230.3). Wetlands are a subset of the "waters of the United States" that may be subject to regulation under Section 404. One key feature of the definition of wetlands is that, under normal circumstances, they support "a prevalence of vegetation typically adapted for life in saturated soil conditions." Many waters of the United States are unvegetated and thus are excluded from the Corps/EPA definition of wetlands, although they may still be subject to the Clean Water Act regulation. Other potential waters of the United States in the Midwest include, but are not limited to, unvegetated seasonal pools, lakes, mud flats, and perennial, intermittent, and ephemeral stream channels. Delineation of these waters is based on the "ordinary high water mark" (33 CFR 328.3e) or other criteria and is beyond the scope of the Regional Supplement.

The term "wetlands" means those areas that are inundated or saturated by surface or ground water 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.

Nonwetlands – include uplands and lowland areas that are neither deepwater aquatic habitats, wetlands, nor other special aquatic sites. They are seldom or never inundated, or if frequently inundated, they have saturated soils for only brief periods during the growing season, and, if vegetated, they normally support a prevalence of vegetation typically adapted for life only in aerobic soil conditions.

Most of the remaining wetlands in the Midwest Region that are not in agricultural use can be classified generally as prairie wetlands, riverine wetlands, and eastern forested wetlands.

1) Prairie Wetlands – Examples include seasonally flooded basins, wet prairies, sedge meadows, shallow and deep marshes, and open water systems (up to 6.6 feet in depth).
2) Riverine Wetlands – include floodplain forests, hardwood swamps, shrub swamps, and backwater marshes (generally along or near rivers, creeks, streams).
3) Eastern Forested Wetlands – Not common in our area, but may be in depressions in forested areas.

Wetland delineation methodology, as described in the USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) requires the investigation of three wetland parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. The parameters are further defined as:

1) Hydrophytic Vegetation – the community of macrophytes (aquatic plants) that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence on the plant species.
2) Hydric Soils – a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.
3) Wetland Hydrology – hydrology characteristics causing saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions. This can be identified by observation of surface water or saturated soils, evidence of recent inundation (water marks, drift deposits), evidence of current or recent soil saturation, or other (gauge data).

HYDROPHYTIC VEGETATION

The manual uses a plant-community approach to evaluate vegetation. Hydrophytic vegetation decisions are based on the assemblage of plant species growing on a site, rather than the presence or absence of particular indicator species. Hydrophytic vegetation is present when the

plant community is dominated by species that can tolerate prolonged inundation or soil saturation during the growing season.

Species are classified as Obligate Wetland (OBL) if they almost always occur in wetlands (>99% of the time), Faculative Wetland (FACW) if they usually occur in wetlands (67-99% of the time), Faculative (FAC) if they are equally likely to occur in wetlands or non-wetland (34-66% of the time), Faculative Upland (FACU) if they usually occur in non-wetlands (67-99% of the time), and Obligate Upland (UPL) if they almost always occur in non-wetlands (>99% of the time). Hydrophytic vegetation decisions are based on the wetland indicator status (Reed 1988, or current approved list) of species that make up the plant community. The dominance test (Indicator 1) is the basic hydrophytic vegetation indicator and should be applied in every wetland determination. The dominance test is passed if more than 50 percent of the dominant plant species across all strata are rated OBL, FACW, or FAC.

HYDRIC SOILS

Nearly all hydric soils exhibit characteristic morphologies that result from repeated periods of saturation or inundation for more than a few days. Saturation or inundation, when combined with microbial activity in the soil, causes the depletion of oxygen. This anaerobiosis promotes certain biogeochemical processes, such as the accumulation of organic matter and the reduction, translocation, or accumulation of iron and other reducible elements. These processes result in distinctive characteristics that persist in the soil during both wet and dry periods, making them particularly useful for identifying hydric soils in the field (USDA Natural Resources Conservation Service 2010).

Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment.

To observe and document a hydric soil using the USACE methodology, a hole may be dug to describe the soil profile. In general, the hole should be dug to the depth needed to document an indicator or to confirm the absence of indicators. For most soils, the recommended excavation depth is approximately 20 in. (50 cm) from the soil surface.

The completed profile description is then used to determine which hydric soil indicators have been met as compared to Field Indicators of Hydric Soils in the United States (USDA Natural Resources Conservation Service 2010).

HYDROLOGY

Wetland hydrology indicators are used in combination with indicators of hydric soil and hydrophytic vegetation to determine whether an area is a wetland under the Corps Manual. Indicators of hydrophytic vegetation and hydric soil generally reflect a site's medium- to long-term wetness history. If hydrology has not been altered, vegetation and soils provide strong evidence that wetland hydrology is present (National Research Council 1995). Wetland hydrology indicators provide evidence that the site has a continuing wetland hydrologic regime

and that hydric soils and hydrophytic vegetation are not relicts of a past hydrologic regime. Wetland hydrology indicators confirm that an episode of inundation or soil saturation occurred recently, but may provide little additional information about the timing, duration, or frequency of such events (National Research Council 1995).

Some hydrology indicators are naturally temporary or seasonal, and many are affected by recent or long-term meteorological conditions. For example, indicators involving direct observation of surface water or saturated soils often are present only during the normal wet portion of the growing season and may be absent during the dry season or during drier-than-normal years. Hydrology indicators also may be subject to disturbance or destruction by natural processes or human activities. Most wetlands in the Midwest Region will exhibit one or more of the hydrology indicators. However, some wetlands may lack any of these indicators due to temporarily dry conditions, disturbance, or other factors. Therefore, the lack of an indicator is not evidence for the absence of wetland hydrology.

3.1 Land Use

The proposed site is located in north-western Cass County, Illinois, in an area formally used as an agriculture field. The site is currently enrolled in a Conservation Reserve Enhancement Program (CREP) isn't being farmed currently. The field is enrolled in the program until 2016. The site is located south of the Sangamon River (see Appendix A - Project Location Map).

CASS COUNTY:

Cass County is located in the west-central part of Illinois. The county is on the Springfield Plain of the Central Lowland Province. The soils on the uplands formed mainly in loess, and the soils on terraces formed mainly in sandy and loam material. Major bottom land areas are along the Illinois and Sangamon Rivers.

Cass County is cold in the winter and hot in the summer with occasional cool spells. In the winter, the average temperature is 25.4 degrees F and in summer, the average temperature is 76 degrees F. The total annual precipitation is 37.11 inches. Of this, 23.78 inches, or 65 percent, usually falls in April through September. The average seasonal snowfall is 20.1 inches.

3.2 National Wetland Inventory (NWI)

Areas classified as wetlands by the National Wetland Inventory are shown on a map as Appendix B.

3.3 Natural Resources Conservation Service (NRCS) Soil Survey

A USDA Natural Resources Conservation Service Custom Soil Resource Report was created for the project area surveyed. The report provides identification and description of the soils,

which are mapped according to the boundaries of major land resource areas (MLRAs). A soil map is included. A copy of this report can be found as Appendix C.

According to the NRCS report, the site reviewed contains *Quiver silty clay loam* soil type, which is characterized by soils that are frequently flooded for long durations. During the site visit, clay, clay loam, and silty clay soil types were observed, generally consistent with the NRCS report.

A non-certified wetland determination was provided by the Cass County - Virginia Field Office. A copy is provided as Appendix H.

4.0 FIELD SURVEY RESULTS

4.1 Wetland Survey

The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0) was utilized extensively to assist in the delineation of wetlands. The investigation activities are documented in Appendix E – USACE Wetland Determination Data Forms and Photographs.

Due to the homogeneity of the vegetation across the majority of the site, a total of five (5) data forms were completed to represent the wetland and non-wetland areas of the site. The data point locations are shown as a map as Appendix D.

A summary of data point results are included in Table 1 below.

TABLE 1 – DATA POINT SUMMARY		
Sampling Point	**Within NWI**	**Sampled Area Within a Wetland**
#1	No	No
#2	No	Yes
#3	No	No
#4	No	Yes
#5	No	No

Areas identified as wetlands are identified on a Wetland Map, provided as Exhibit F. A conservative delineation of the wetland areas was performed based on a combination of field observations (utilization of a hand-held global positioning system (GPS)) and a review of historical aerial photographs of the project area. Historical photographs are provided as Appendix G.

5.0 CONCLUSIONS / RECOMMENDATIONS

Based on the results of the NWI and wetlands delineation survey and analysis performed, the following is concluded:

- Wetlands are present on the site.
- Due to the proximity of the site to permanent water (Sangamon River and local drainage ditches), the local topography, existing soil types and current presence of wetlands within the site, the site appears to have favorable conditions for the successful creation of a wetland mitigation site.

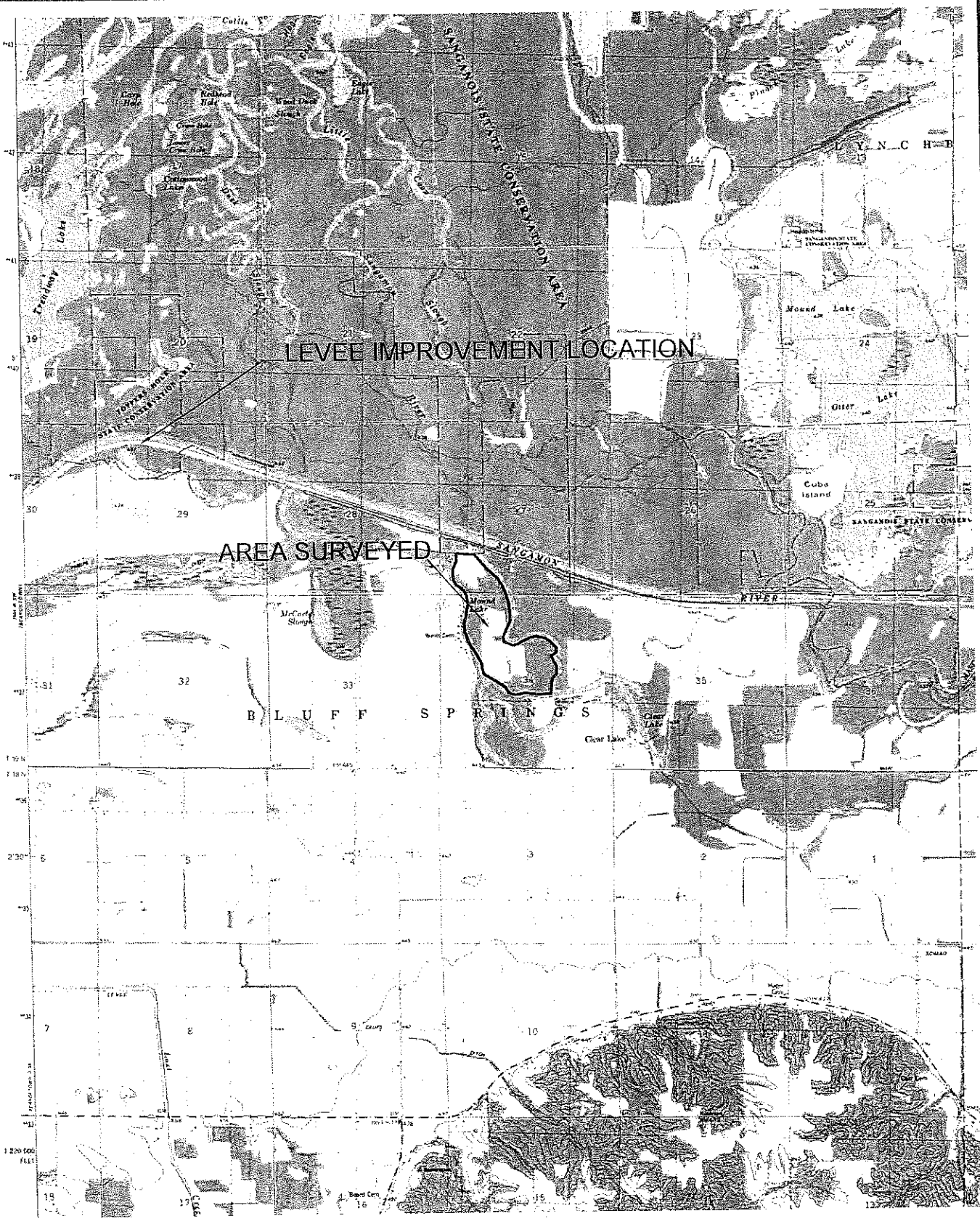
6.0 REFERENCES

- U. S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0),* ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-010-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- Munsell® Soil Color Charts, 2000, X-rite, Grand Rapids, MI.
- United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetland Delineation Manual. *Technical Report* Y-87-1, U.S. Army Corps of Engineers (USACE) Waterways Experiment Station. Vicksburg, MS.
- United States Army Corps of Engineers (USACE). 1992. *Clarification and interpretation of the 1987 manual.* Memorandum for Distribution, Major General Arthur E. Williams, March 6, 1992.
- United States Department of Agriculture (USDA). Natural Resources Conservation Service. 2010. *Field Indicators of Hydric Soils in the United States,* Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- United States Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS). Soil Survey Cass County, Illinois.
- United States Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS). United States Department of the Army. Guidance on Conducting Wetland Determinations for the Food Security Act of 1985 and Section 404 of the Clean Water Act, February 25, 2005.
- National Food Security Act Manual (3rd Edition, 1996)
- U.S. Department of Fish and Wildlife, 1996. *A field Guide to the Wetlands of Illinois.*
- George A. Petrides, 1988. A Field Guide to Eastern Trees Eastern United States and Canada.
- Michael D. Williams, 2007. Identifying Trees. An All-Season Guide to Eastern North America
- Roger Tory Peterson / Margaret McKenny, 1968. A Field Guide to Wildflowers of Northeastern and North Central North America.
- U. S. Department of Agriculture. Natural Resources Conservation Service. Plants Database at http://plants.usda.gov
- U. S. Fish and Wildlife Service. October 2014. National Wetlands Inventory website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D. http://www.fws.gov/wetlands/.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed 10/7/14.

APPENDICES

APPENDIX A

PROJECT LOCATION MAP



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SCALE:	NTS
DESIGNED	DRAWN
FIELD	FIELD BOOK
CHECKED	CHECK DATE
FILE NAME:	PROJECT LOCATION MAP

PROJECT LOCATION MAP

HAGER SLOUGH
SPECIAL DRAINAGE DISTRICT

SHEET TITLE

PROJECT NO. 14-0255

DRAWING ISSUE DATE: 10/7/2014

REV.

SHEET A

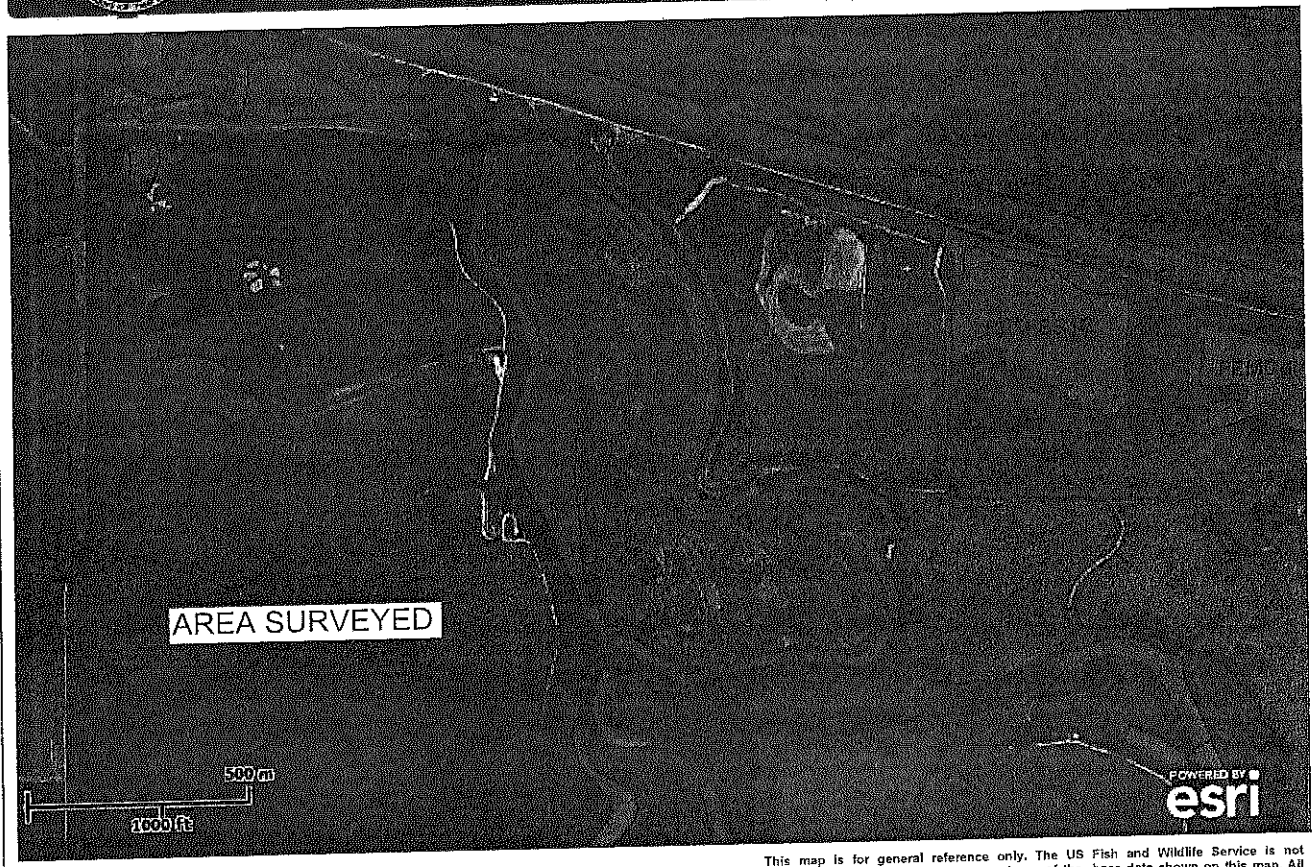
APPENDIX B

NATIONAL WETLAND INVENTORY MAP

U.S. Fish and Wildlife Service

National Wetlands Inventory

Oct 7, 2014



Wetlands

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

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

User Remarks:

APPENDIX C

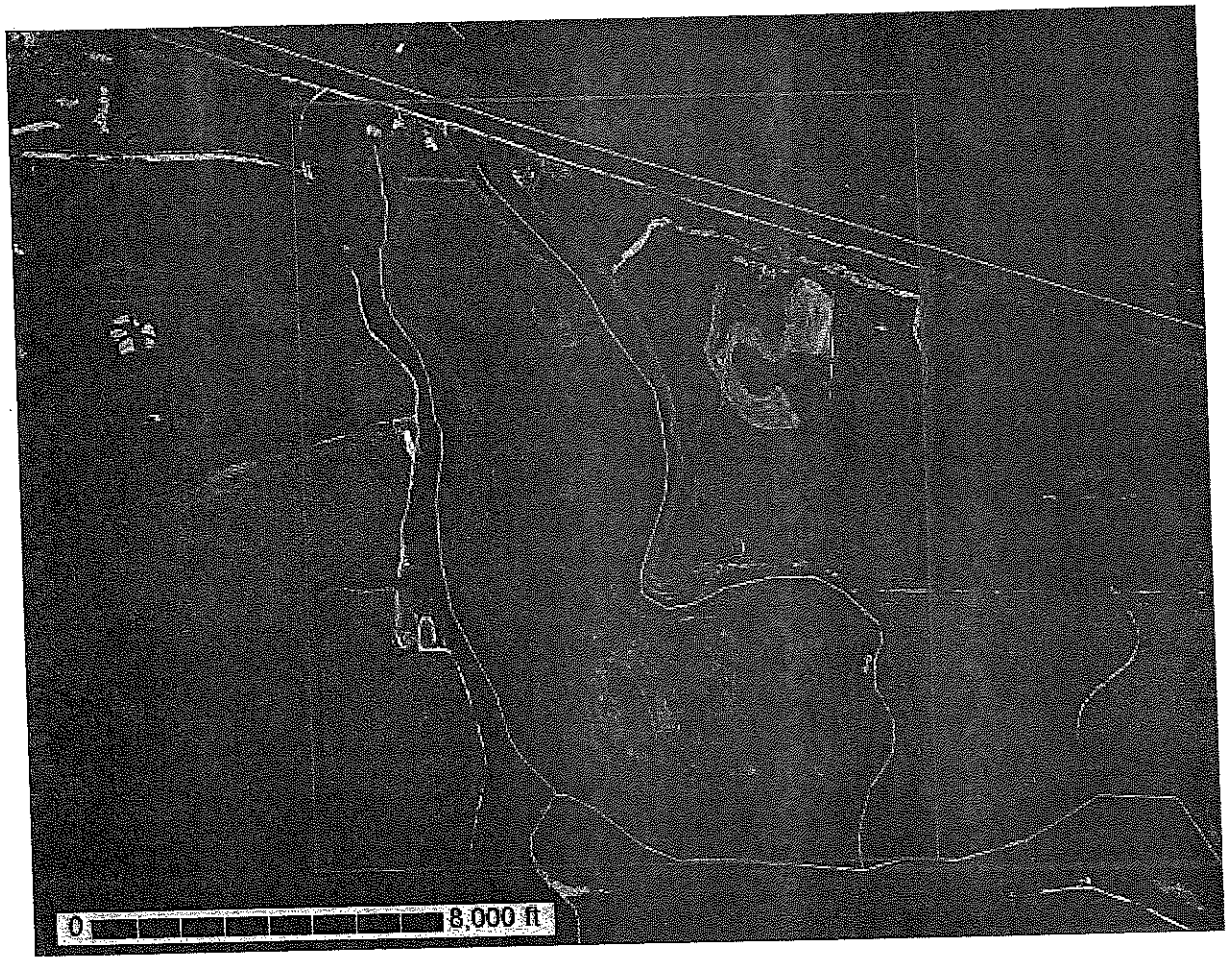
USDA CUSTOM SOIL RESOURCE MAP

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cass County, Illinois



October 7, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

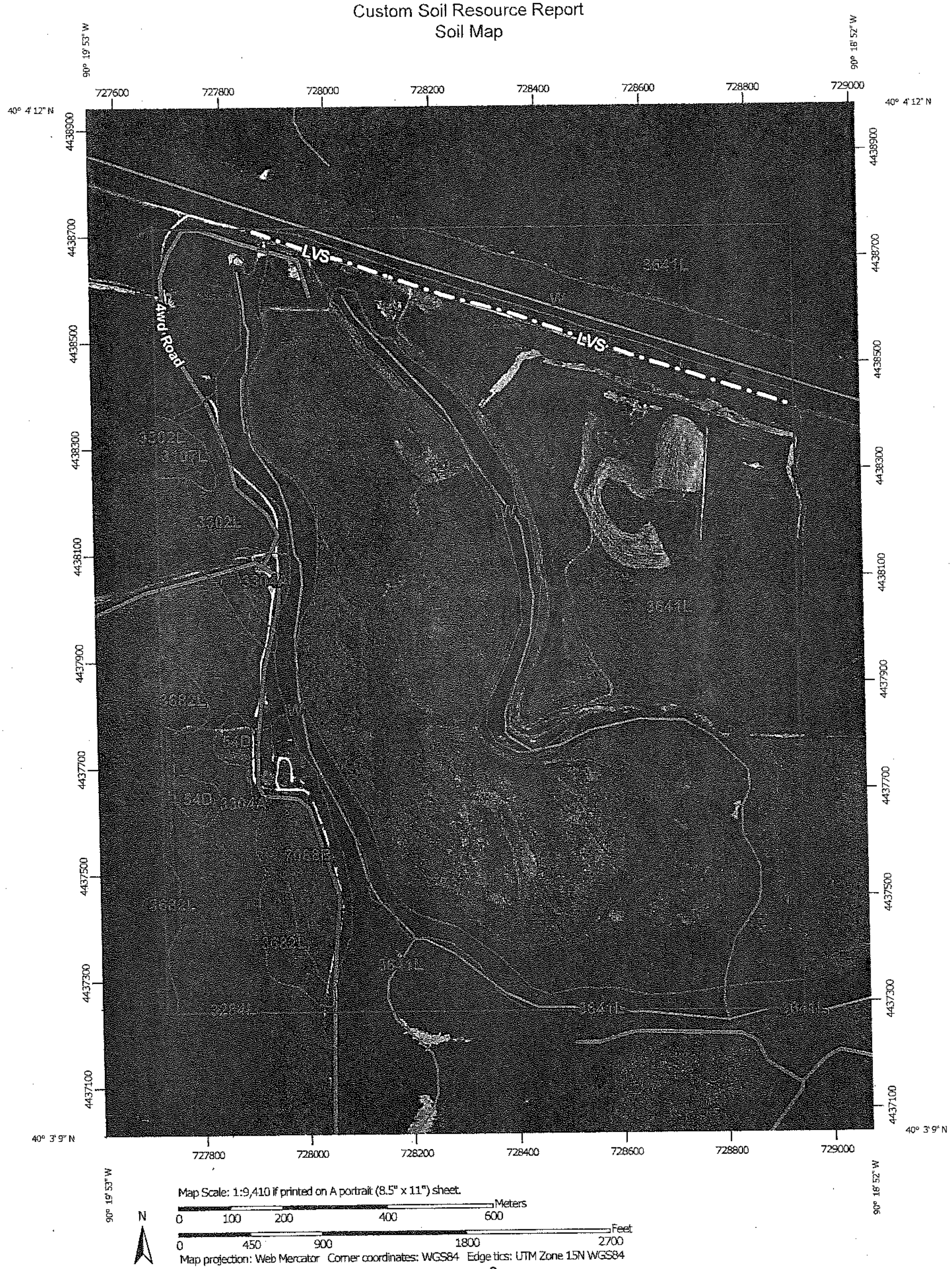
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map


90° 19' 53" W
90° 18' 52" W
40° 4' 12" N
40° 3' 9" N
727600
727800
728000
728200
728400
728600
728800
729000
4438900
4438700
4438500
4438300
4438100
4437900
4437700
4437500
4437300
4437100
LVS
4wd Road
3641L
Map Scale: 1:9,410 if printed on A portrait (8.5" x 11") sheet.
Meters
0 100 200 400 600
Feet
0 450 900 1800 2700
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Cass County, Illinois
Survey Area Data: Version 9, Dec 11, 2013

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

Date(s) aerial images were photographed: Aug 31, 2011—Oct 6, 2011

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

Map Unit Legend

Cass County, Illinois (IL017)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
54D	Plainfield sand, 7 to 15 percent slopes	3.0	0.7%
3107L	Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	2.4	0.5%
3284L	Tice silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	0.2	0.0%
3302L	Ambraw clay loam, 0 to 2 percent slopes, frequently flooded, long duration	12.7	2.9%
3304A	Landes fine sandy loam, 0 to 2 percent slopes, frequently flooded	35.8	8.1%
3641L	Quiver silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration	318.1	71.7%
3682L	Medway loam, 0 to 2 percent slopes, frequently flooded, long duration	7.6	1.7%
7088B	Sparta loamy sand, 1 to 6 percent slopes, rarely flooded	12.3	2.8%
W	Water	51.4	11.6%
Totals for Area of Interest		**443.4**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called

noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cass County, Illinois

54D—Plainfield sand, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: 8tg2
Elevation: 340 to 1,360 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Plainfield and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Plainfield

Setting

Landform: Knolls on outwash plains, knolls on dunes
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian sands

Typical profile

A - 0 to 7 inches: sand
B - 7 to 27 inches: sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

3107L—Sawmill silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration

Map Unit Setting

National map unit symbol: 1khhd
Elevation: 590 to 930 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Sawmill and similar soils: 92 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sawmill

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 32 inches: silty clay loam
H2 - 32 to 58 inches: silty clay loam
H3 - 58 to 65 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

3284L—Tice silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration

Map Unit Setting

National map unit symbol: 8tgx
Elevation: 340 to 1,020 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Tice and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tice

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

A - 0 to 17 inches: silty clay loam
B - 17 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Very high (about 12.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

3302L—Ambraw clay loam, 0 to 2 percent slopes, frequently flooded, long duration

Map Unit Setting

National map unit symbol: 1khzv

Elevation: 400 to 1,000 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Ambraw and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ambraw

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 17 inches: clay loam
H2 - 17 to 43 inches: clay loam
H3 - 43 to 80 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D

3304A—Landes fine sandy loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 8tgz
Elevation: 340 to 1,020 feet
Mean annual precipitation: 27 to 45 inches
Mean annual air temperature: 45 to 57 degrees F
Frost-free period: 140 to 210 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Landes and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Landes

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

H1 - 0 to 14 inches: fine sandy loam
H2 - 14 to 32 inches: fine sandy loam
H3 - 32 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A

3641L—Quiver silty clay loam, 0 to 2 percent slopes, frequently flooded, long duration

Map Unit Setting

National map unit symbol: 8thg
Elevation: 430 to 540 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 48 to 57 degrees F
Frost-free period: 155 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Quiver and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quiver

Setting

Landform: Flood plains
Landform position (three-dimensional): Flat
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

H1 - 0 to 9 inches: silty clay loam
H2 - 9 to 65 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D

3682L—Medway loam, 0 to 2 percent slopes, frequently flooded, long duration

Map Unit Setting

National map unit symbol: sk08
Elevation: 900 to 1,040 feet
Mean annual precipitation: 37 to 45 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 180 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Medway and similar soils: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Medway

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Loamy alluvium

Typical profile

A - 0 to 15 inches: loam
B - 15 to 38 inches: loam
BC - 38 to 49 inches: stratified fine sandy loam to silty clay loam
C - 49 to 60 inches: stratified loamy sand to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D

7088B—Sparta loamy sand, 1 to 6 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: sjth
Elevation: 500 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sparta and similar soils: 91 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sparta

Setting

Landform: Terraces on flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Eolian sands and/or sandy alluvium

Typical profile

H1 - 0 to 23 inches: loamy sand
H2 - 23 to 34 inches: loamy sand
H3 - 34 to 60 inches: sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

Landform: Oxbows, rivers, channels, drainageways, perenial streams, lakes

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

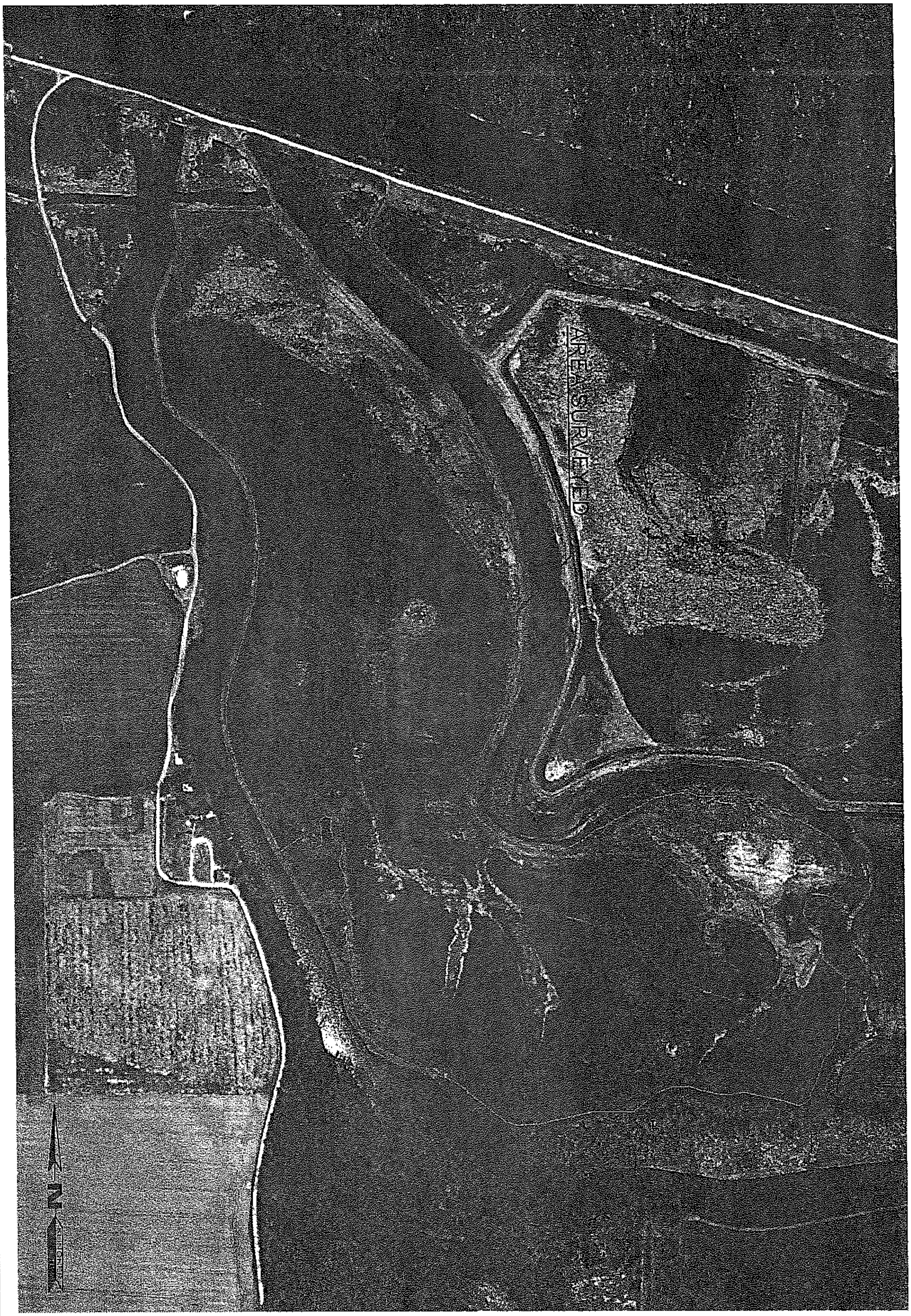
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX D

DATA POINT LOCATION MAP



SHEET TITLE:	DATA POINT LOCATION MAP HAGER SLOUGH SPECIAL DRAINAGE DISTRICT 9612 CHANDLERVILLE RD
SHEET	D

SCALE:		NO.	APPR.	REVISION DESCRIPTION	DATE
DESIGNED	DRAWN KLK				
FIELD	FIELD BOOK				
CHECKED	CHECK DATE				

Non-Reduced Size: 11" x 17"

KLINGNER & ASSOCIATES, P.C.
Engineers · Architects · Surveyors

APPENDIX E

USACE WETLAND DETERMINATION DATA FORMS & PHOTOGRAPHS

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Pump Field City/County: Cass County Sampling Date: 9/24/14

Applicant/Owner: Hager Slough Special Drainage District State: IL Sampling Point: 1

Investigator(s): KLK Section, Township, Range: S35, T19N, R11W

Landform (hillslope, terrace, etc.): SE corner of tract; open land Local relief (concave, convex, none): none

Slope (%): 1 Lat: 40.05649 Long: -90.31789 Datum: NAD 83

Soil Map Unit Name: Quiver silty clay loam NWI or WWI classification: n/a

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Solidago canadensis*	85	Y	FACU
2. *Oxalis montana*	20	N	FACU
3. *Setaria viridis*	10	N	NI
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	115 = Total Cover		
Woody Vine Stratum (Plot size: n/a)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	105 (A)		420 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

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[1]	Loc[2]	Texture	Remarks
0-8	10YR/3/1	100					clay	
8-15+	10YR/3/1	20	10YR/3/4	70	c		clay loam	
			10YR/5/2	10	d			

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

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): _____

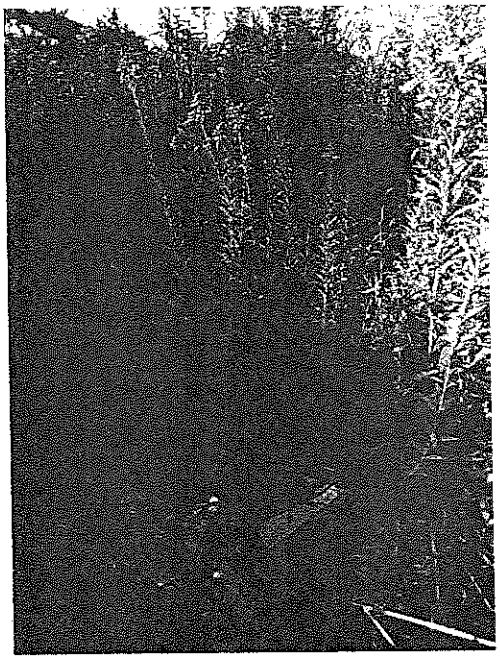
Water Table Present? Yes _____ No X Depth (inches): _____

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

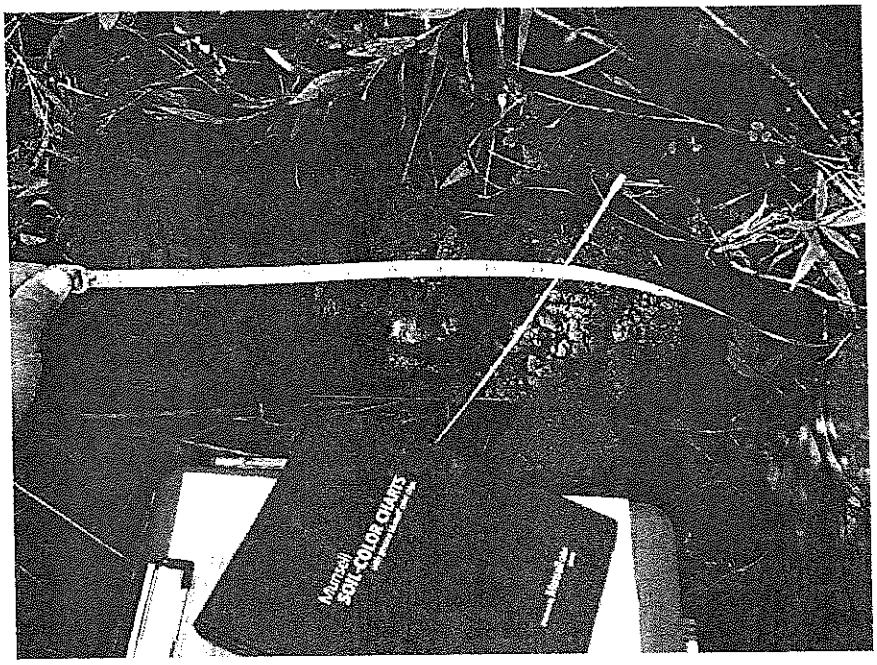
Wetland Hydrology Present? Yes _____ No X

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

Remarks:



Description	Data Point #1 – General View	1
Date	9/24/14	



Description	Data Point #1 – Soil Profile	2
Date	9/24/14	

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Pump Field City/County: Cass County Sampling Date: 9/24/14

Applicant/Owner: Hager Slough Special Drainage District State: IL Sampling Point: 2

Investigator(s): KLK Section, Township, Range: S35, T19N, R11W

Landform (hillslope, terrace, etc.): Depressed area in open field Local relief (concave, convex, none): locally concave

Slope (%): 1 Lat: 40.05705 Long: -90.31831 Datum: NAD 83

Soil Map Unit Name: Quiver silty clay loam NWI or WWI classification: n/a

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: n/a)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Polygonum pensylvanicum*	85	Y	FACW
2. *Bidens aristosa*	60	Y	FACW
3. *Leersia oryzoides*	40	N	OBL
4. *Echinochloa crus-galli*	30	N	FACW
5. *Setaria faberi*	5	N	FACU
6.			
7.			
8.			
9.			
10.			
	220 = Total Cover		
Woody Vine Stratum (Plot size: n/a)			
1.			
2.			
	_____ = 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	175	x 2 =	350
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	220 (A)		410 (B)

Prevalence Index = B/A = 1.86

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

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[1]	Loc[2]	Texture	Remarks
0-8.5	10YR/2/1	100					clay	tight clay
8.5-15+	10YR/2/1	70	10YR/4/2	30	d		clay	tight clay

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X 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[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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)
- X 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 X No _____ Depth (inches): 9"

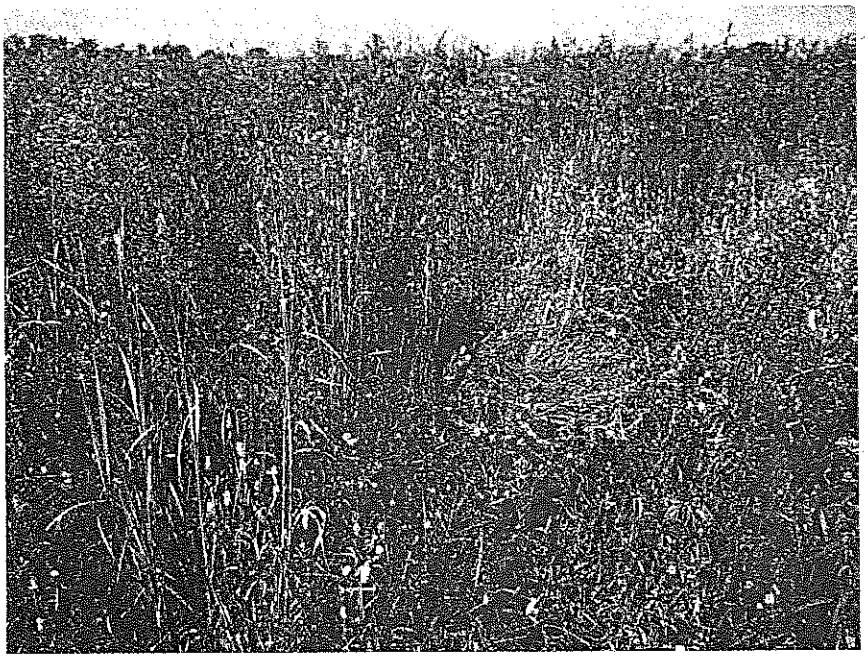
Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

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

Remarks:

a few Ranids present



Description	Data Point #2 – General View	1
Date	9/24/14	

Photo Not Available

Description	Data Point #2 – Soil Profile	2
Date	9/24/14	

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Pump Field City/County: Cass County Sampling Date: 10/16/14

Applicant/Owner: Hager Slough Special Drainage District State: IL Sampling Point: 3

Investigator(s): KLK Section, Township, Range: S35, T19N, R11W

Landform (hillslope, terrace, etc.): open area Local relief (concave, convex, none): none

Slope (%): 1 Lat: 40.05666 Long: -90.32243 Datum: NAD 83

Soil Map Unit Name: Quiver silty clay loam NWI or WWI classification: n/a

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

The adjacent Sanamon River was at an elevated stage due to recent rainfall events

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: n/a)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: n/a)			
1. *Solidago canadensis*	85	Y	FACU
2. *Setaria faberi*	5	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: n/a)			
1.			
2.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	90 (A)		360 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

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)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR/3/1	100					clay	
10-18	10YR/3/1	95	10YR/3/3	5	C	M	" "	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

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): _____

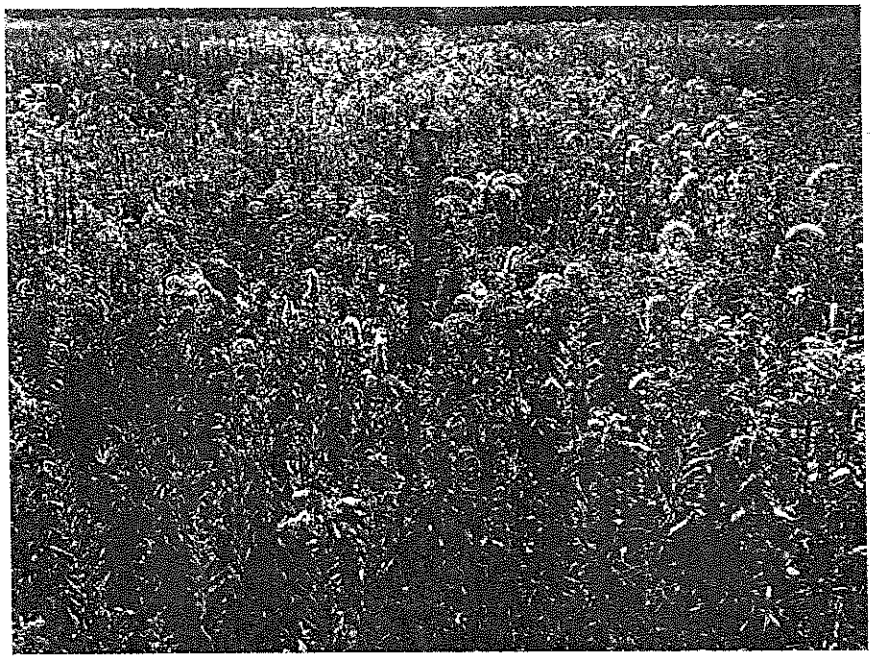
Water Table Present? Yes _____ No X Depth (inches): _____

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

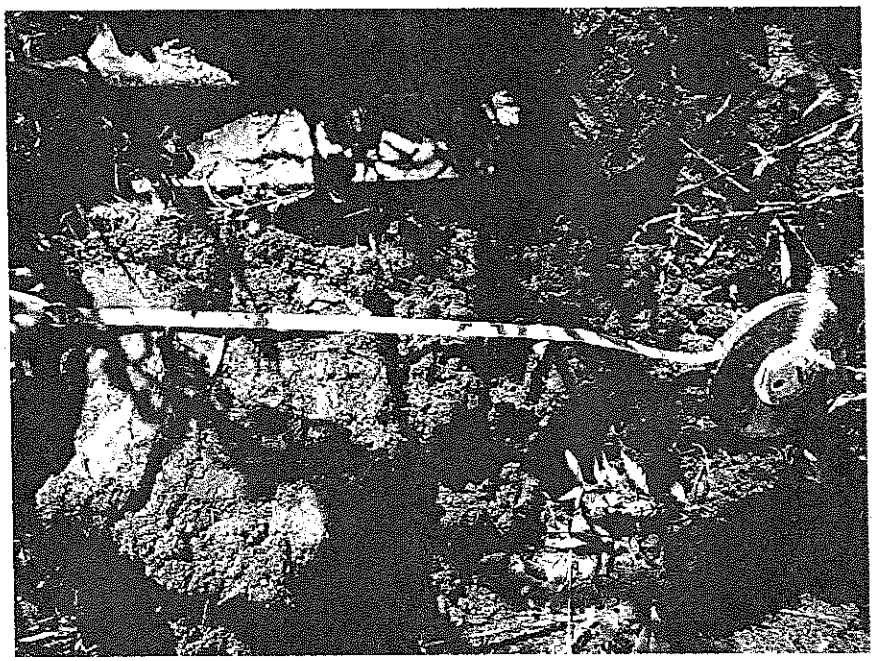
Wetland Hydrology Present? Yes _____ No X

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

Remarks:



Description	Data Point #3 – General View	1
Date	10/16/14	



Description	Data Point #3 – Soil Profile	2
Date	10/16/14	

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Pump Field City/County: Cass County Sampling Date: 10-16-14

Applicant/Owner: Hager Slough Special Drainage District State: IL Sampling Point: 4

Investigator(s): KLK Section, Township, Range: S35, T19N, R11W

Landform (hillslope, terrace, etc.): minor depression in open field Local relief (concave, convex, none): locally concave

Slope (%): 1 Lat: 40.05682 Long: 90.32222 Datum: NAD 83

Soil Map Unit Name: Quiver silty clay loam NWI or WWI classification: n/a

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: n/a)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. *Polygonum pensylvanicum*	50	Y	FACW
2. *Apocynum cannabinum*	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: n/a)			
1.			
2.			
	= 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	70 (A)		160 (B)

Prevalence Index = B/A = 2.29

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No _____

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)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	10YR/3/1	100					silty clay	

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X 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[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Soil sample should've been taken deeper. Based on presence of hydrophytic vegetation and hydrology, we can assume a depleted matrix lies below

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): _____

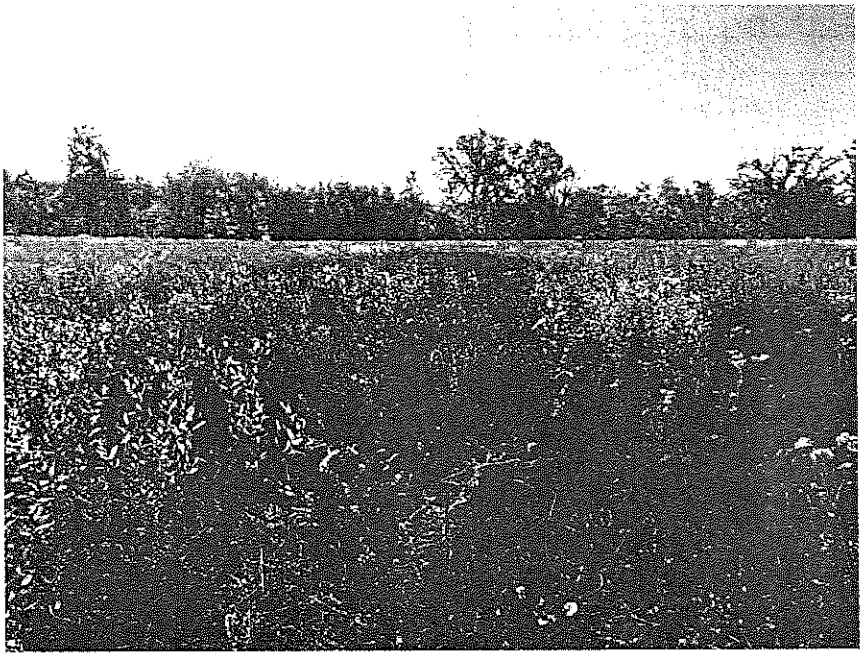
Water Table Present? Yes X No _____ Depth (inches): 9"

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 7"

Wetland Hydrology Present? Yes X No _____

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

Remarks:



Description	Data Point #4 – General View	1
Date	10/16/14	

Description	Data Point #4 – Soil Profile	2
Date	10/16/14	

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Pump Field City/County: Cass County Sampling Date: 5

Applicant/Owner: Hager Slough Special Drainage District State: IL Sampling Point: 10/16/14

Investigator(s): KLK Section, Township, Range: S35, T19N, R11W

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

Slope (%): _____ Lat: _____ Long: _____ Datum: NAD 83

Soil Map Unit Name: Sawmill silty clay loam NWI or WWI classification: _____

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

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

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

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

The adjacent Sanamon River was at an elevated stage due to recent rainfall events

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: n/a)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: n/a)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. *Elymus canadensis*	50	Y	FACU
2. *Polygonum pensylvanicum*	30	Y	FACW
3. *Ambrosia trifida*	20	N	FAC
4. *Solidago canadensis*	20	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = 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: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	120 (A)		400 (B)

Prevalence Index = B/A = 3.33

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No X

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

SOIL

Sampling Point: 10/16/14

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[1]	Loc[2]	Texture	Remarks
0-18	10YR/3/1	100					silty clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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 _____ Depth (inches): _____

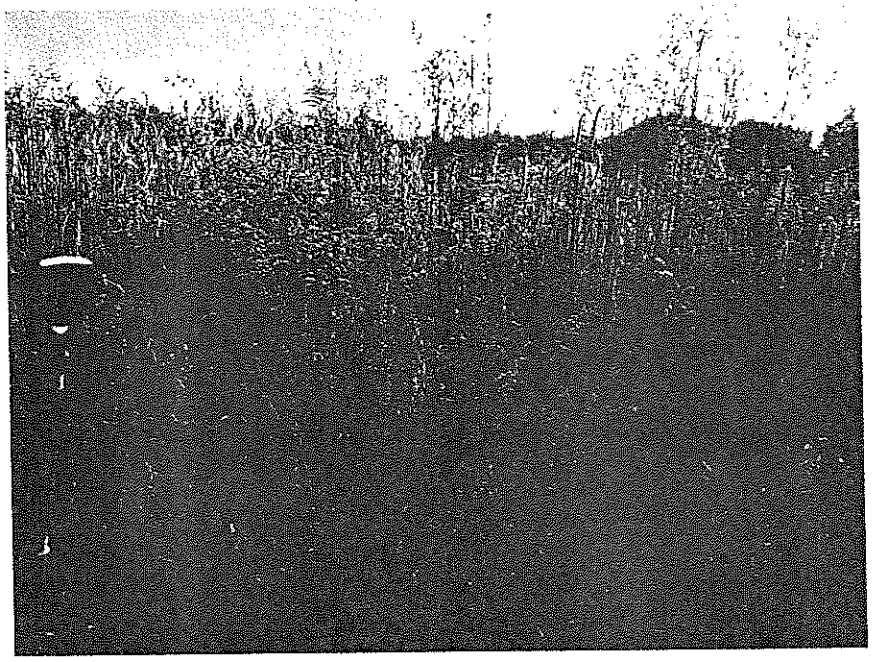
Water Table Present? Yes X No _____ Depth (inches): 7"

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

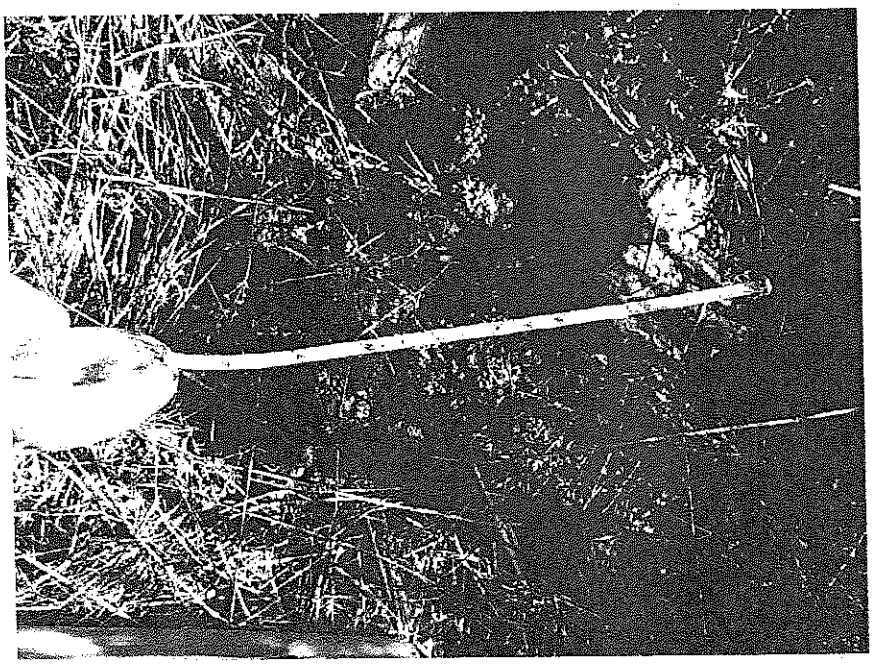
Wetland Hydrology Present? Yes X No _____

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

Remarks:



Description	Data Point #5 – General View	3
Date	10/16/14	



Description	Data Point #5 – Soil Profile	4
Date	10/16/14	

APPENDIX F

WETLAND MAP

WETLAND MAP

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT
9612 CHANDLERVILLE RD
BEARDSTOWN, IL 62618

SHEET TITLE

SHEET F

DESIGNED: · DRAWN: KLK

FILE NAME: 2014 1824 WETLAND

Non-Reduced Size: 11" x 17"

NO.	APPR.	REVISION DESCRIPTION	DATE

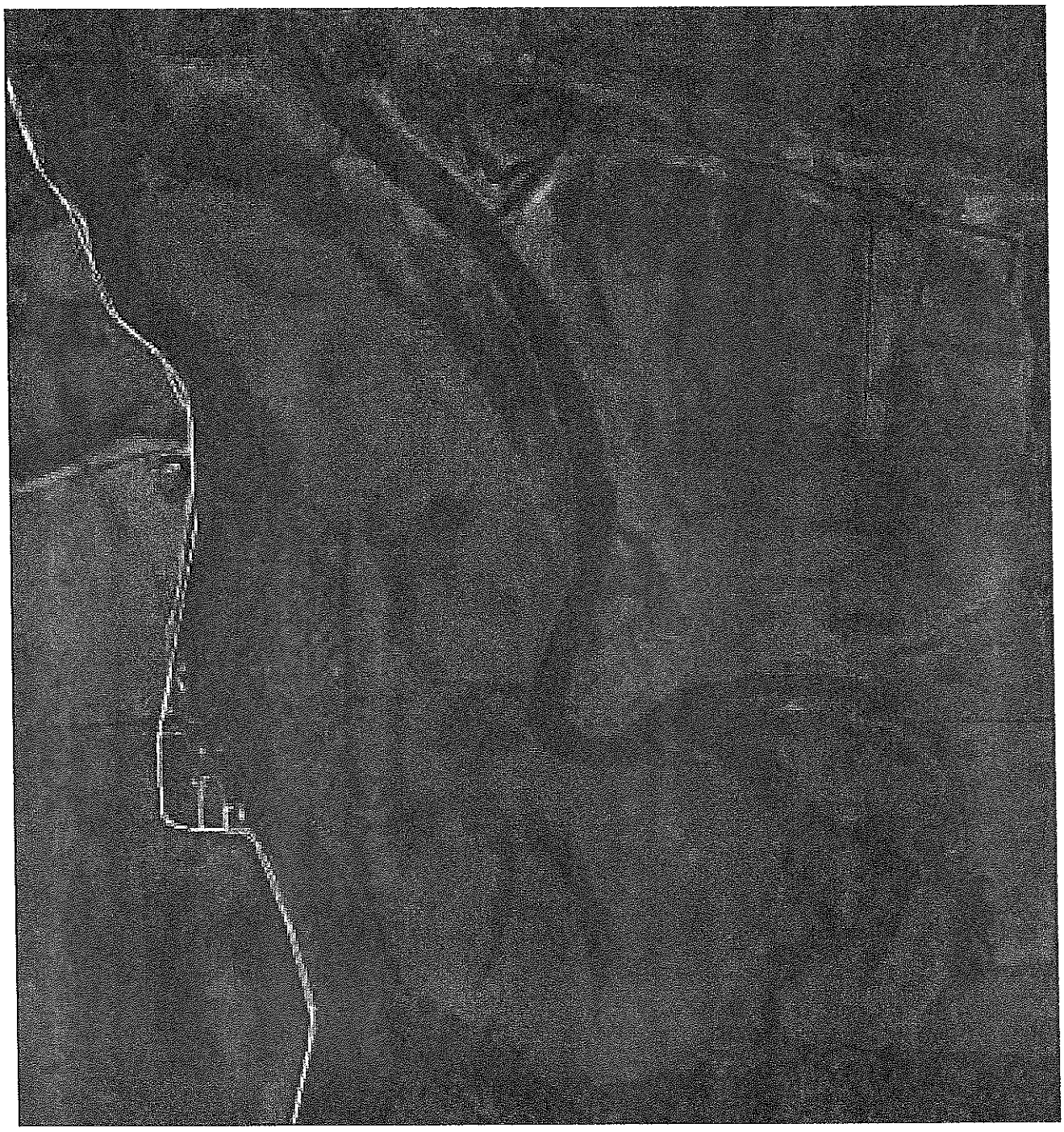
KLINGNER & ASSOCIATES, P.C.
Engineers · Architects · Surveyors

Internet Address: www.klingner.com

APPENDIX G

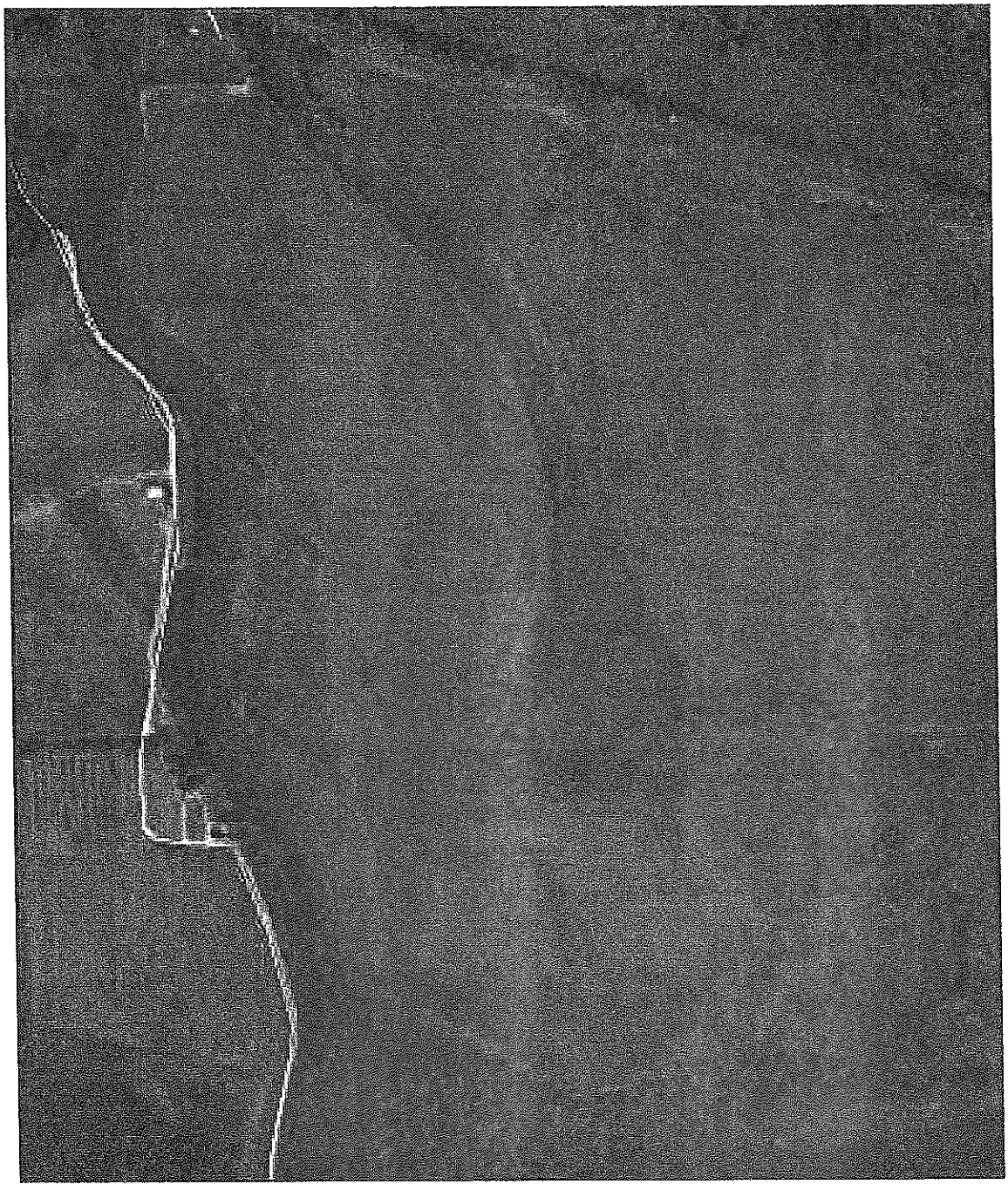
HISTORICAL AERIAL PHOTOGRAPHS

1998



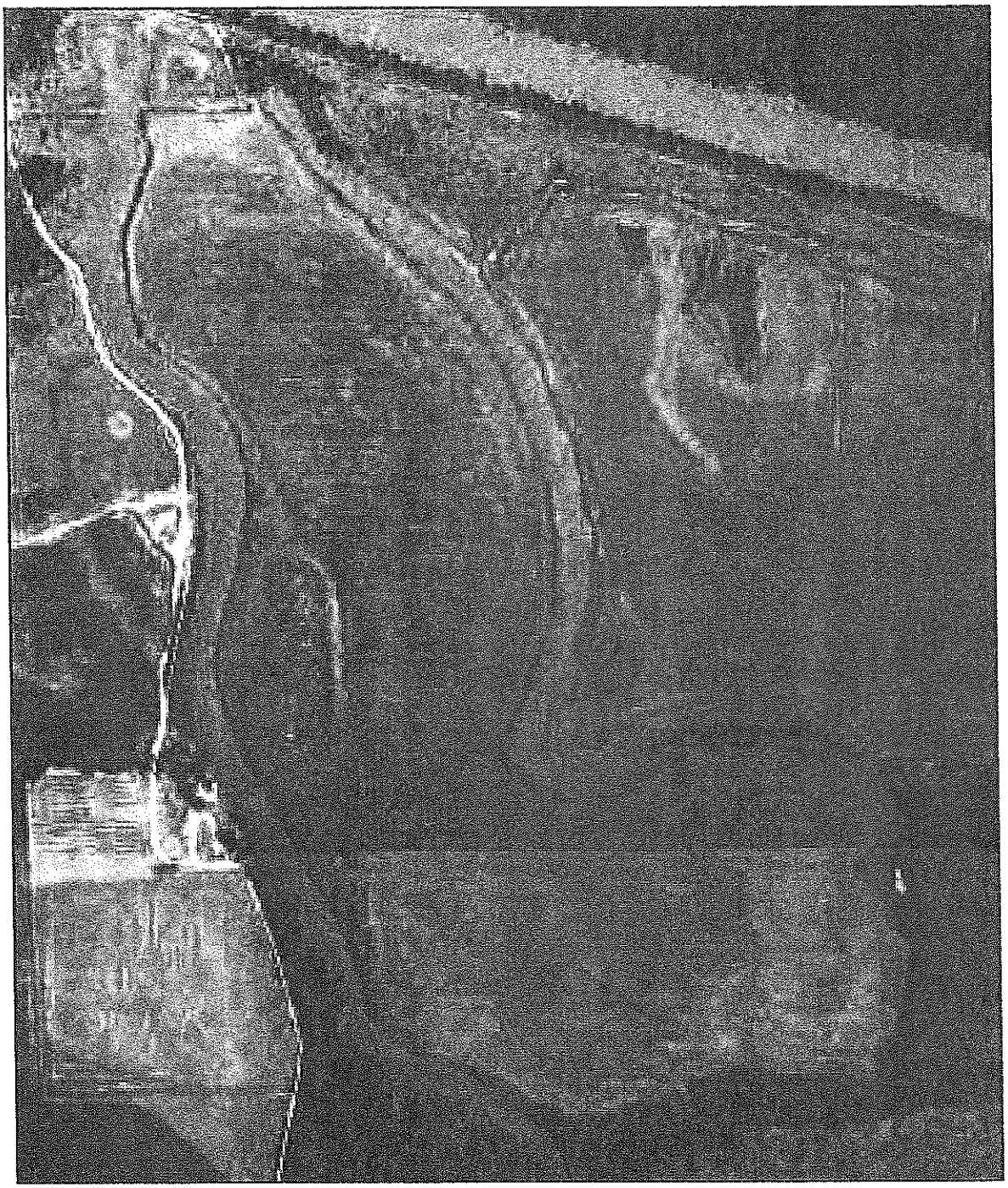
2/2005

9/2005

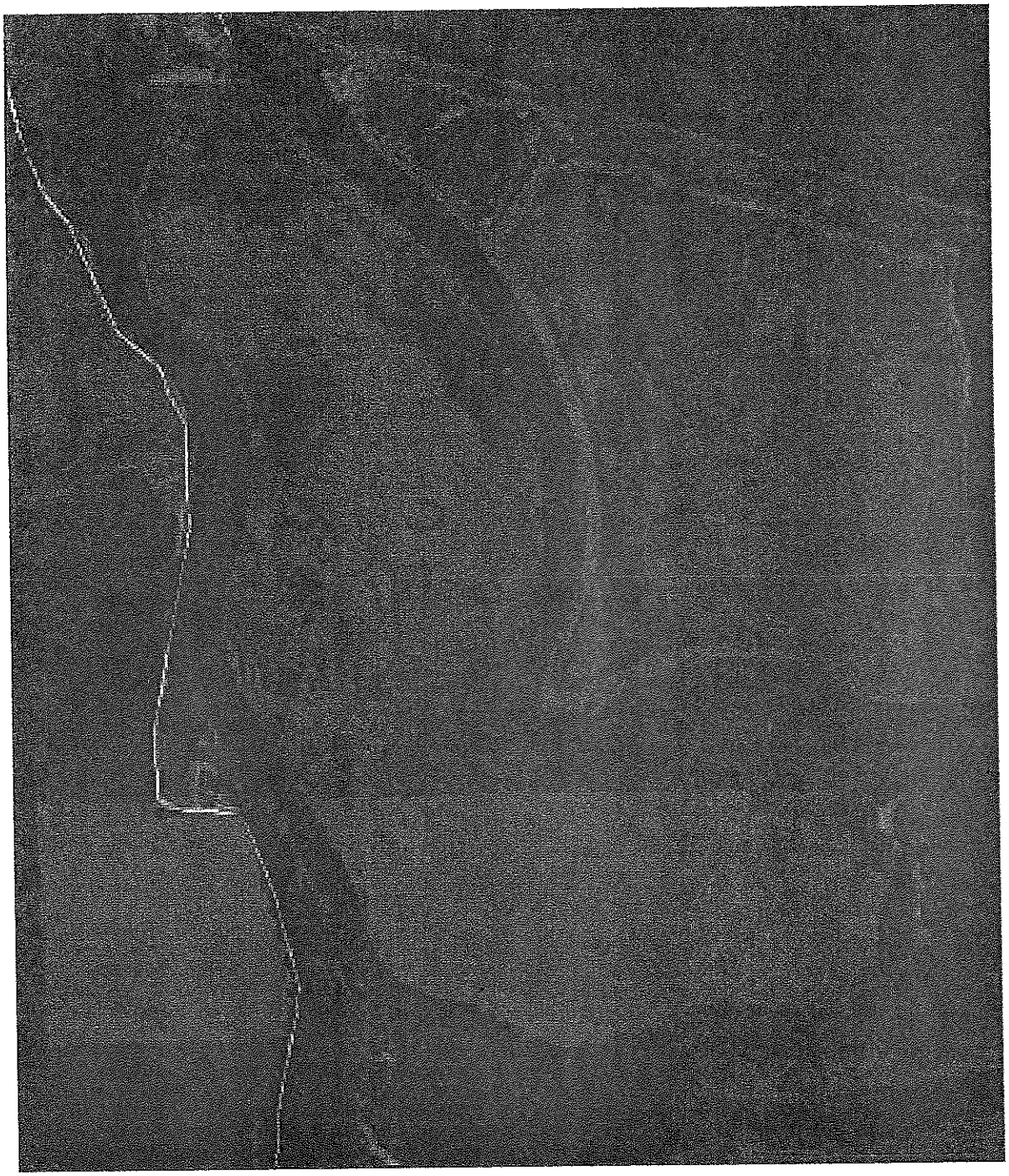


8/2006

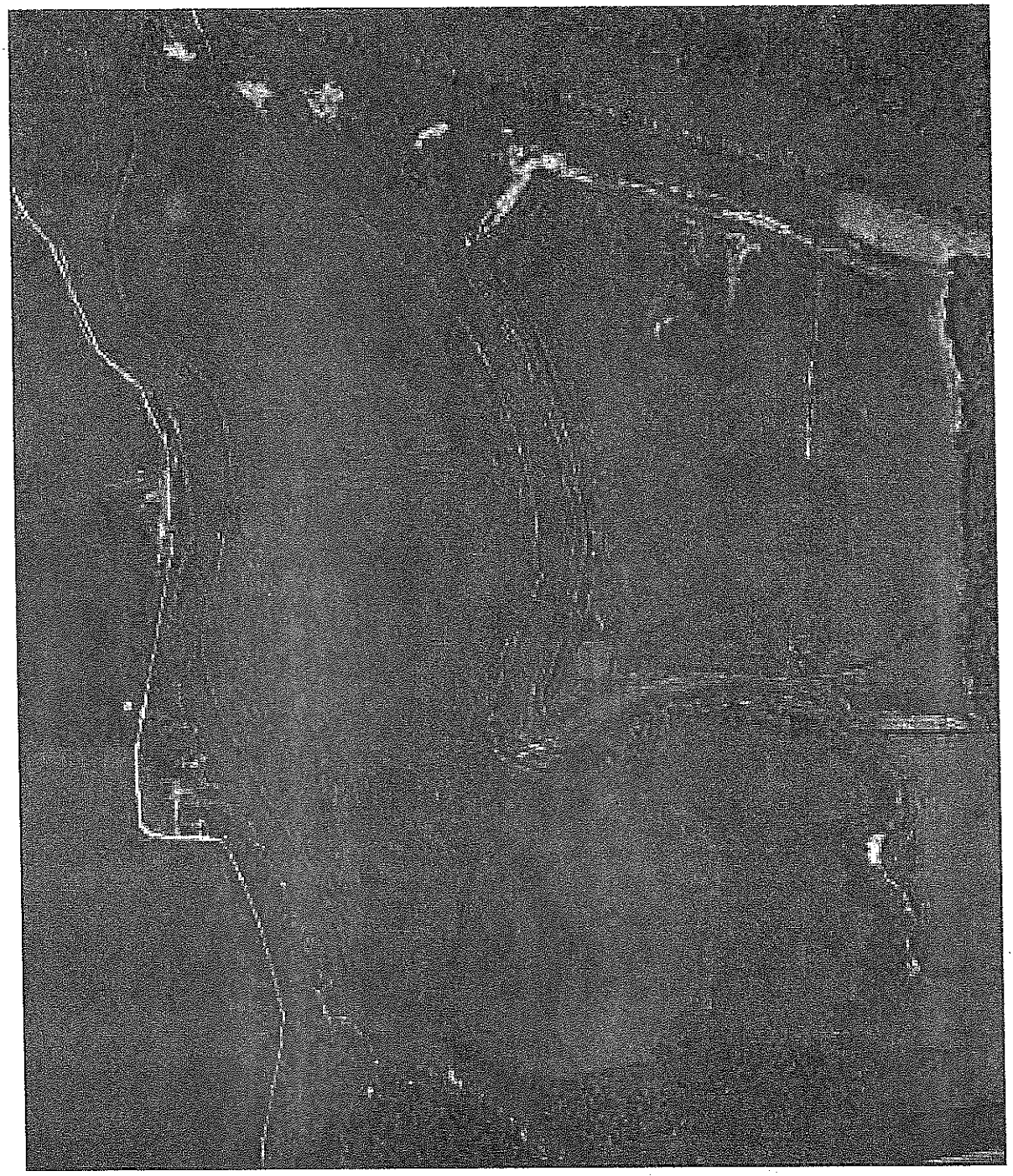
8/2007



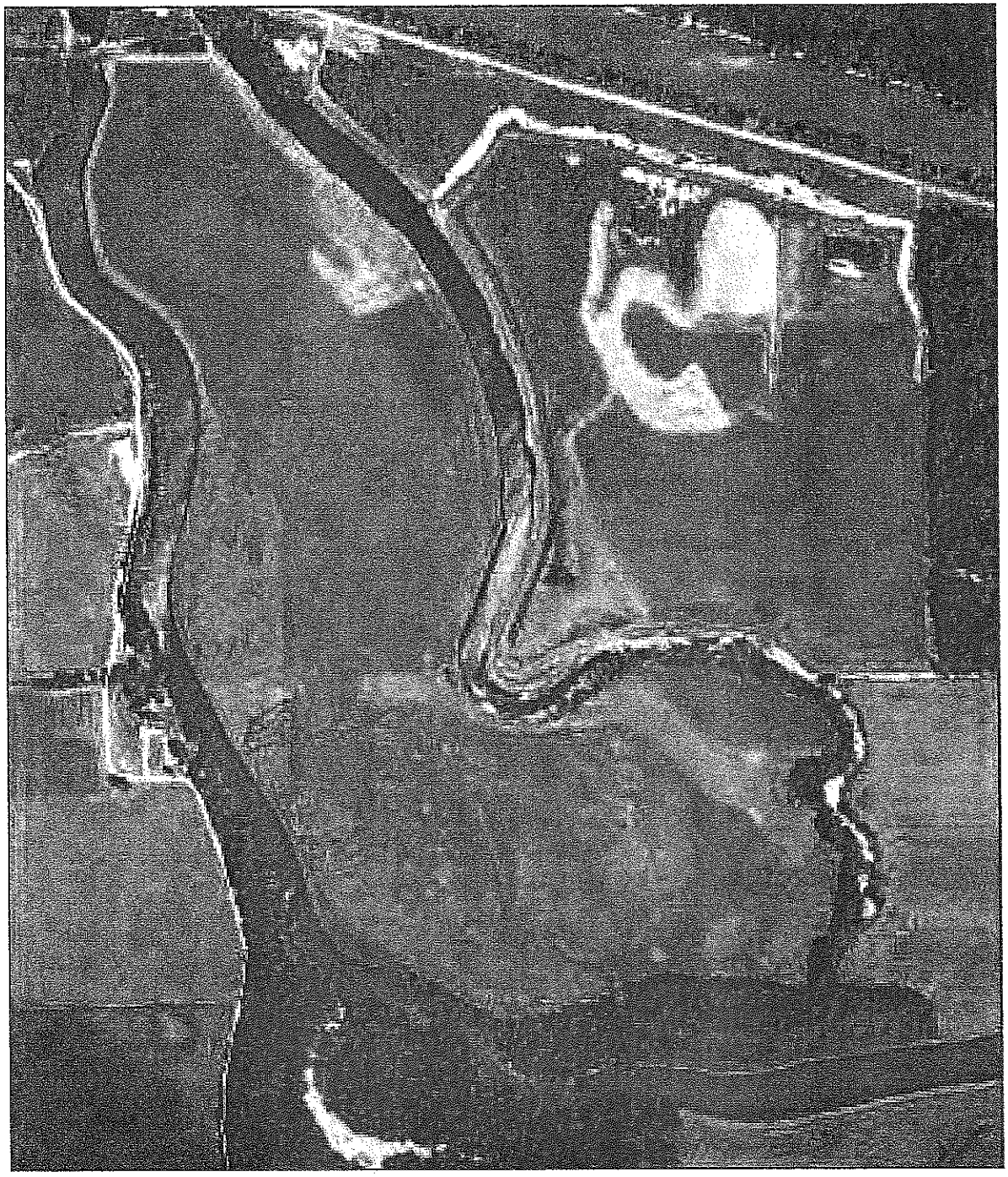
10/2009



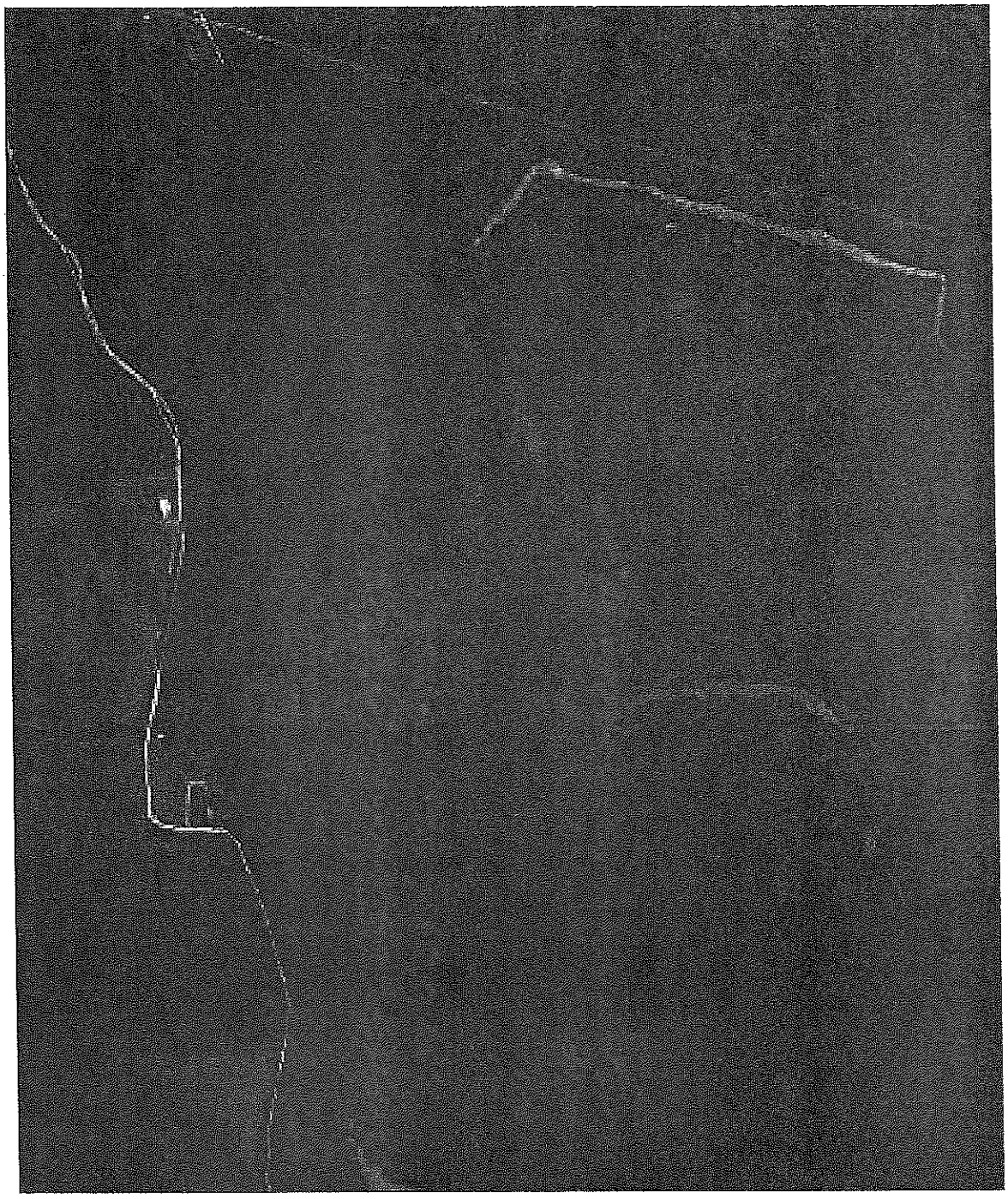
8/2010



11/2011

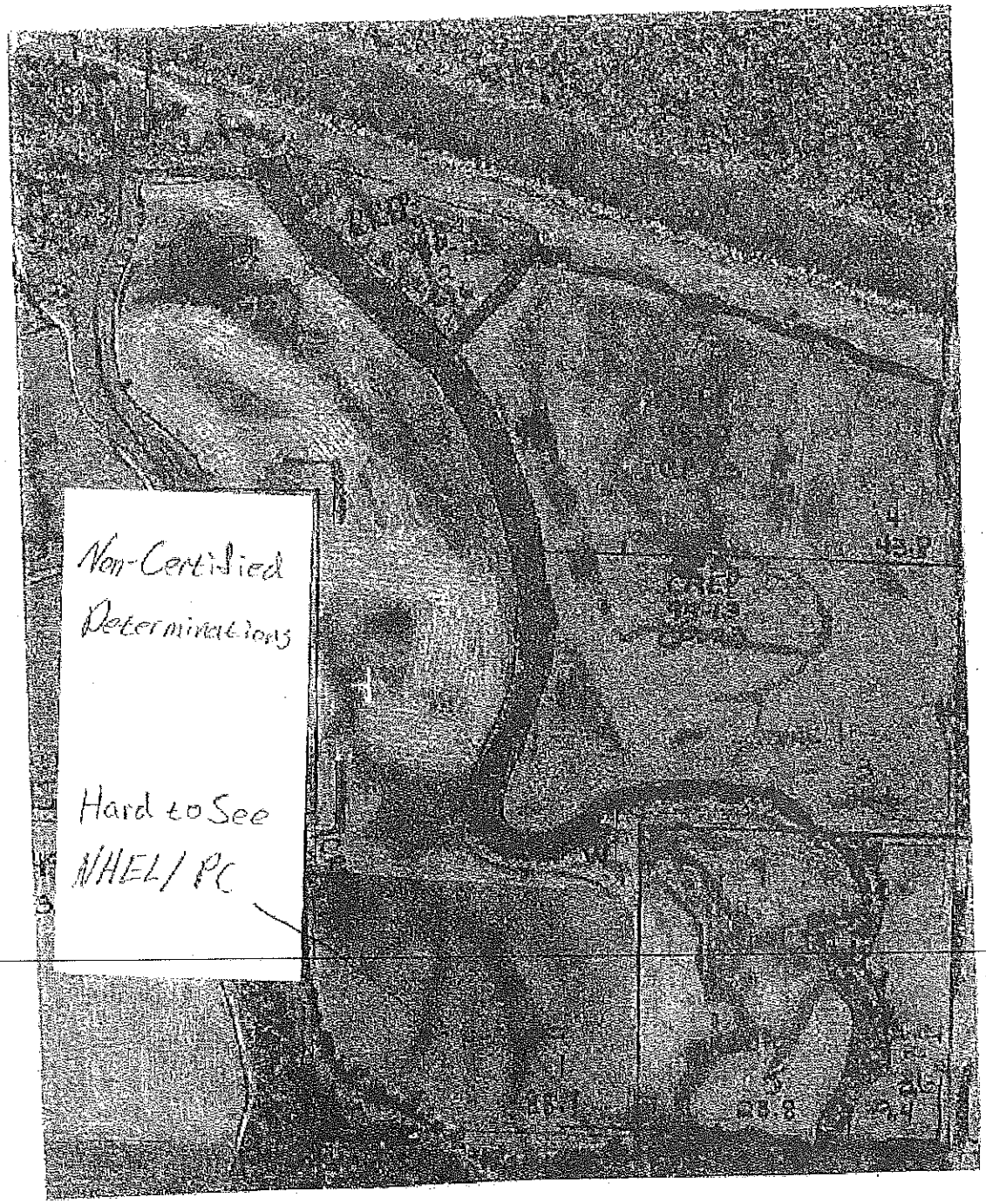


7/2012



APPENDIX H

NRCS – NON-CERTIFIED WETLAND DETERMINATION


Non-Certified
Determinations
Hard to See
W/HEL/PC

MUTUAL LEASEHOLD AGREEMENT

This is a Mutual Leasehold Agreement between **N. KORSMEYER, INC.**, hereinafter known as "Owner", and **HAGER SLOUGH SPECIAL DRAINAGE DISTRICT**, hereinafter known as "District".

WHEREAS, Owner currently owns acreage located within the Hager Slough Special Drainage District in Cass County, Illinois.

WHEREAS, the District is desirous of purchasing a perpetual leasehold for the purpose of establishing a Conservancy Area in accordance with an Administrative Compliance Order on Consent issued by the United States Environmental Protection Agency, Region 5, and signed by the District on September 3, 2015.

WHEREAS, the Owner's previously mentioned land, which is to subject to said leasehold, has already been surveyed and approved by the United States Environmental Protection Agency, Region 5, for the Conservancy Area.

WHEREAS, the Owner also agrees and consents to the District establishing the Conservancy Area on the land subject to this leasehold.

NOW, THEREFORE, for and in consideration of the sum more fully described below, the covenants and obligations contained herein, and other good and valuable consideration, the parties hereto hereby agree as follows:

1. **Purchase Amount.** The District shall pay to the Owner the sum of Twenty-Four Thousand Dollars ($24,000) as follows: Eight Thousand Dollars ($8,000) upon the signing of this Agreement; Eight Thousand Dollars ($8,000) upon the one (1) year anniversary of this Agreement; and Eight Thousand Dollars ($8,000) upon the two (2) year anniversary of this Agreement.

2. **Leasehold.** Owner hereby grants to the District a leasehold to the acreage more specifically described in Exhibit "A" attached hereto.

3. **Duration of Leasehold.** Said leasehold is perpetual and shall never cease to exist, and shall run with the land.

4. **Additional Easement.** This Agreement is subject to an additional access easement executed by the Owner to the District granting access to subject leasehold across the Owner's land. Said easement shall be duly recorded in the Cass County Illinois Clerk and Recorder's Office in the Cass County Illinois Courthouse.

5. **Entire Agreement.** This Agreement constitutes the entire agreement the parties, and supersedes any prior understanding or representation of any kind preceding the date of this Agreement. There are no other promises, conditions, understandings or other agreements, whether oral or written, relating to the subject matter of this Agreement.

6. **Severability.** If any part or parts of this Agreement shall be held unenforceable for any reason, the remainder of this Agreement shall continue in full force and effect. If any provision of this Agreement is deemed invalid or unenforceable by any court of competent jurisdiction, and if limiting such provision would make the provision valid, then such provision shall be deemed to be construed as so limited.

Dated: September 3, 2015.

N. KORSMEYER, INC.

By: Alecia Crowe

Alecia Crowe, President

HAGER SLOUGH SPECIAL DRAINAGE DISTRICT

By: Martin Turner

Martin Turner, Commissioner

[*Notary pages follow*]

STATE OF ILLINOIS)
) **ss.**
COUNTY OF CASS)

I, BETH ANN YOST, a Notary Public in and for the county and state aforesaid do hereby certify that **MARTIN TURNER,** personally known to me to be the same person whose name is subscribed to the foregoing MUTUAL LEASEHOLD AGREEMENT appeared before me this day in person and severally acknowledged that he signed, sealed, and delivered the foregoing instrument, as his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 3RD day of September, 2015.

Beth Ann Yost

Notary Public

NOTARY PUBLIC OFFICIAL SEAL STATE OF ILLINOIS
BETH ANN YOST
MY COMMISSION EXPIRES
JULY 3, 2016

STATE OF ILLINOIS)
) ss.
COUNTY OF CASS)

I, Beth Ann Yost, a Notary Public in and for the county and state aforesaid do hereby certify that **ALECIA CROWE,** personally known to me to be the President of **N. KORSMEYER, INC.,** and personally known to me to be the same person whose name is subscribed to the foregoing MUTUAL LEASEHOLD AGREEMENT appeared before me this day in person and severally acknowledged that as such President, she signed, sealed, and delivered the foregoing instrument, as her free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 3RD day of September, 2015.

Beth Ann Yost

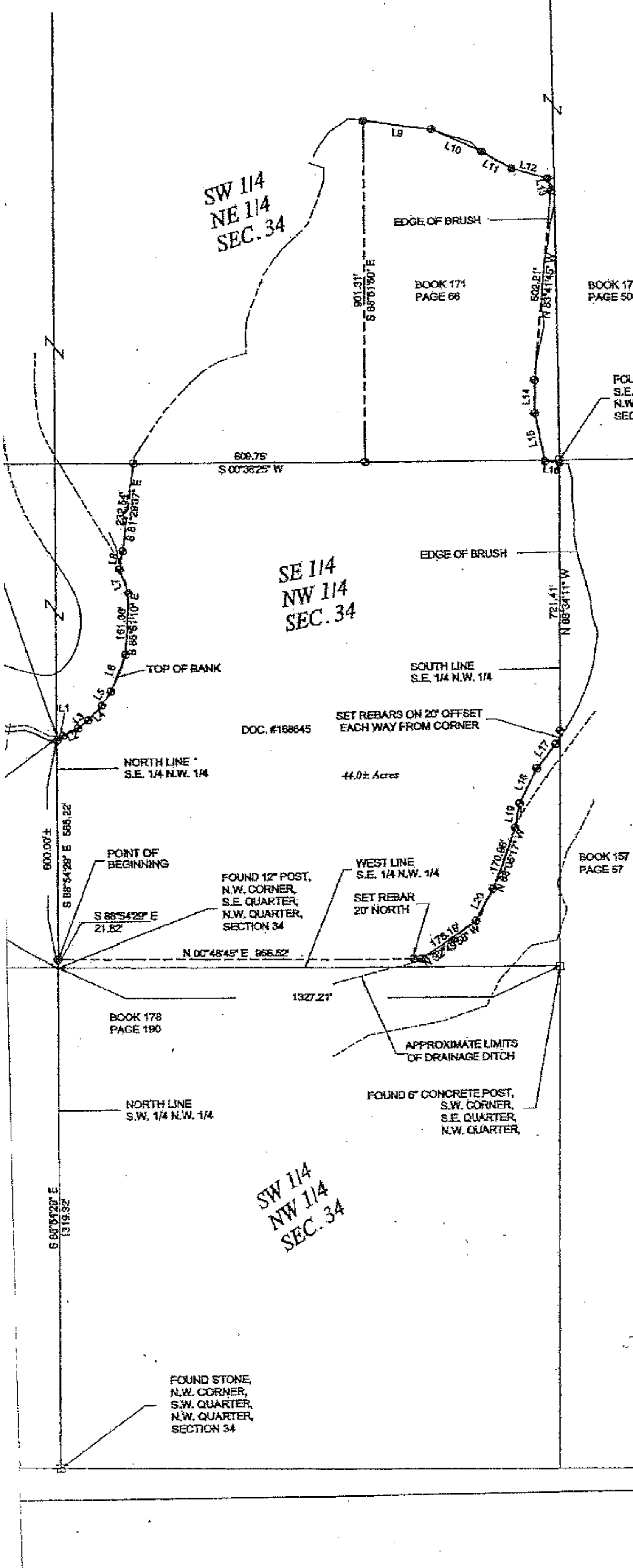
Notary Public

NOTARY PUBLIC OFFICIAL SEAL STATE OF ILLINOIS
BETH ANN YOST
MY COMMISSION EXPIRES
JULY 3, 2016

DOCUMENT PREPARED BY:
Attorney Timothy J. Wessel
Wessel Law Office
114 East Second Street, P.O. Box 81
Beardstown, IL 62618-0081
Telephone: 217-323-3305

MUTUAL LEASEHOLD AGREEMENT

EXHIBIT A



FULL SIZED PLANS HAVE BEEN PREPARED USING STANDARD SCALES. REDUCED SIZED PLANS MAY NOT CONFORM TO STANDARD SCALES. USE GRAPHIC SCALES WHEN MAKING MEASUREMENTS ON REDUCED PLANS.

PERMANENT CONSERVATION EASEMENT DESCRIPTION:

A part of the North Half of Section 34 in Township 19 North of the Base Line and Range 11 West of the Third Principal Meridian, Cass County, Illinois, being more particularly bounded and described as follows:

Commencing at a stone marking the northwest corner of the Southwest Quarter of the Northwest Quarter of said Section 34, thence South 88 degrees 54 minutes 29 seconds East on the north line of the Southwest Quarter of said Northwest Quarter, a distance of 1319.32 feet to the northwest corner of the Southeast Quarter of said Northwest Quarter, , thence continuing South 88 degrees 54 minutes 29 seconds East on the north line of the Southeast Quarter of said Northwest Quarter a distance of 21.82 feet to the true point of beginning, thence continuing South 88 degrees 54 minutes 29 seconds East on said north line 585.22 feet, thence South 00 degrees 00 minutes 43 seconds East 16.27 feet, thence South 24 degrees 54 minutes 30 seconds East 44.83 feet, thence South 38 degrees 53 minutes 21 seconds East 34.46 feet, thence South 45 degrees 28 minutes 03 seconds East 52.34 feet, thence South 54 degrees 50 minutes 42 seconds East 43.71 feet, thence South 68 degrees 39 minutes 00 seconds East 105.80 feet, thence South 85 degrees 51 minutes 10 seconds East 161.36 feet, thence North 70 degrees 13 minutes 15 seconds East 88.03 feet, thence South 77 degrees 56 minutes 28 seconds East 48.07 feet, thence South 61 degrees 29 minutes 37 seconds East 232.54 feet, thence South 00 degrees 38 minutes 25 seconds West 609.75 feet, thence South 88 degrees 51 minutes 50 seconds East 901.31 feet, thence South 08 degrees 23 minutes 45 seconds West 180.04 feet, thence South 24 degrees 38 minutes 39 seconds West 146.27 feet, thence South 30 degrees 15 minutes 19 seconds West 92.00 feet, thence South 16 degrees 57 minutes 02 seconds West 99.17 feet, thence South 77 degrees 05 minutes 12 seconds West 33.72 feet, thence North 83 degrees 41 minutes 45 seconds West 502.21 feet, thence North 89 degrees 06 minutes 12 seconds West 87.09 feet, thence South 79 degrees 32 minutes 30 seconds West 128.89 feet, thence South 07 degrees 26 minutes 25 seconds West 39.25 feet to a point on the south line of the Northwest Quarter of said Section 34, thence North 88 degrees 34 minutes 11 seconds West on said south line 721.41 feet, thence North 50 degrees 50 minutes 27 seconds West 100.02 feet, thence North 81 degrees 45 minutes 28 seconds West 102.91 feet, thence North 77 degrees 56 minutes 48 seconds West 64.91 feet, thence North 88 degrees 05 minutes 17 seconds West 170.98 feet, thence North 58 degrees 49 minutes 41 seconds West 95.17 feet, thence North 32 degrees 49 minutes 58 seconds West 176.19 feet, thence North 00 degrees 48 minutes 45 seconds East parallel with the west line of the Southeast Quarter of the Northwest Quarter 958.52 feet to the point of beginning, containing 44.00 acres, more or less, subject to any recorded or unrecorded easements across said lands,

TOGETHER WITH a 12 foot wide ingress and egress easement beginning at a point that is South 88 degrees 54 minutes 29 seconds East 600.00 feet, more or less, from the southwest corner of the Northeast Quarter of the Northwest Quarter of Section 34, said easement being generally described as 12 feet, more or less, normally distant westerly from and parallel with the west bank of a drainage ditch, commonly known as Mud Slough, which runs in a general northerly-southerly direction through the Northeast Quarter of the Northwest Quarter of Section 34 and the South Half of the Southwest Quarter of Section 27.

BASIS OF BEARINGS: GPS OBSERVATIONS

SURVEYED FOR: HAGER SLOUGH SPECIAL DRAINAGE DISTRICT

FIELD WORK COMPLETED AUGUST 6, 2015.

DESIGN FIRM NO. 184-2738

KLINGNER & ASSOCIATES, P.C.

Engineers · Architects · Surveyors

- 616 North 24th Street, Quincy, IL Ph (217)223-3670 - Fax (217)223-3603
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Internet Address: www.klingner.com

NO.	APPR.	REVISION DESCRIPTION	DATE

FULL SCALE DRAWING IS 22"x34"

DESIGNED	DRAWN	CHECKED
	RJH	
FIELD	NOTES	DATE
JCC/ECB	235/19	MARCH, 2015.
PROJECT NO.	FILE NO.	SCALE
14-0265	140265.DWG	1" = 200'

PERMANENT CONSERVATION EASEMENT

PART OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER AND PART OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 34 IN TOWNSHIP 19 NORTH OF THE BASE LINE AND RANGE 11 WEST OF THE THIRD PRINCIPAL MERIDIAN, CASS COUNTY, ILLINOIS

PLAT OF SURVEY

SHEET NO.

1 OF 1

N

200 100 0 200
SCALE: 1" = 200'

LEGEND

	SECTION LINE		EDGE PAVEMENT/SIDEWALK
	SAME OWNERSHIP		POWER POLE
	PROPERTY LINE		SURVEY MARKER FOUND
	FENCE LINE		SURVEY MARKER SET
	CENTERLINE		SURVEY MONUMENT FOUND
	EASEMENT		6" CONCRETE POST FOUND
	STREAM		PIPE CULVERT
	STRUCTURE		
	WETLAND THIS EASEMENT		

LINE	BEARING	DISTANCE
L1	S 00°00'43" E	16.27'
L2	S 24°54'30" E	44.83'
L3	S 36°53'21" E	34.48'
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L6	S 66°39'00" E	105.80'
L7	N 70°13'15" E	66.03'
L8	S 77°56'28" E	48.07'
L9	S 08°23'45" W	180.04'
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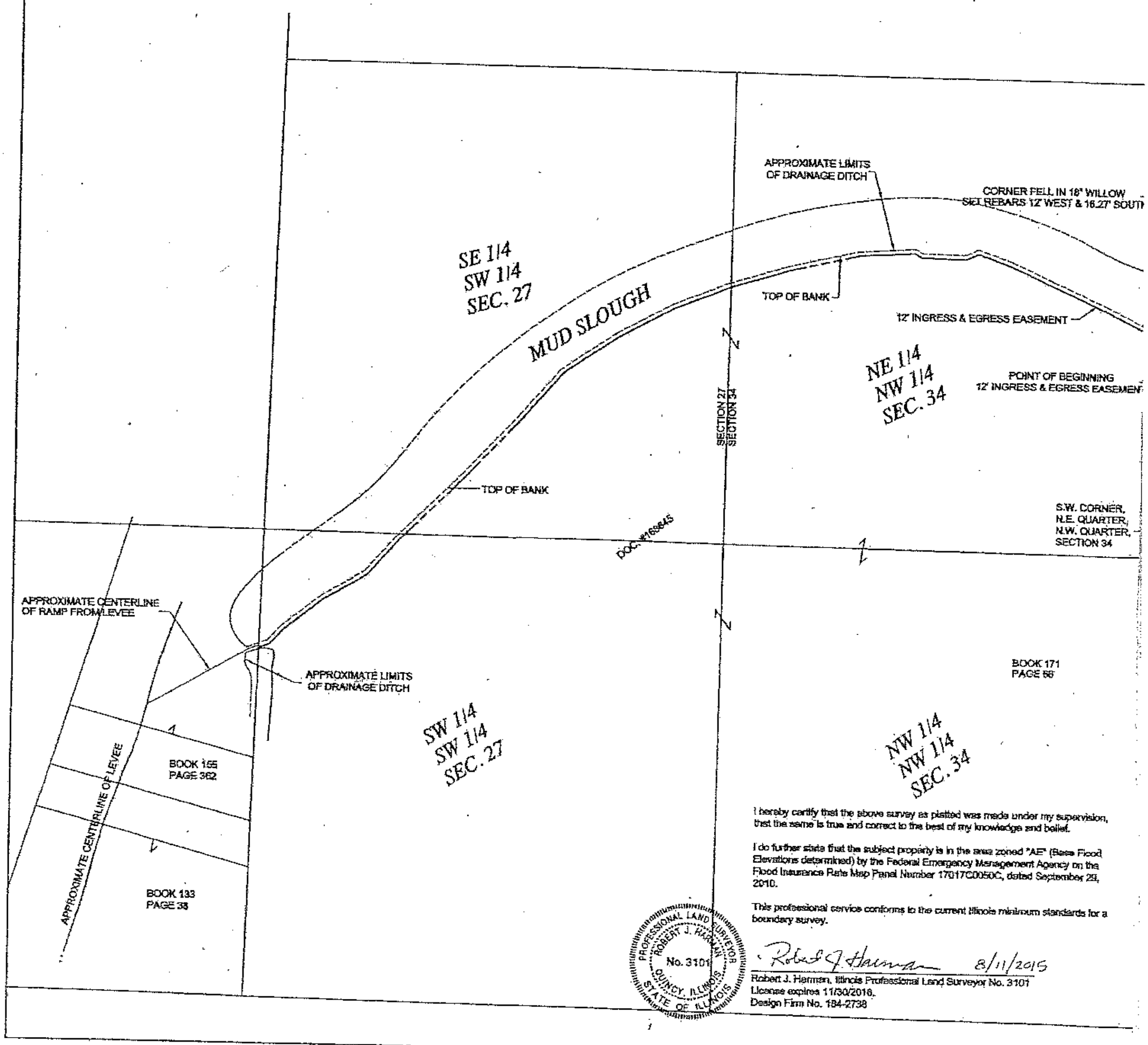

I hereby certify that the above survey as plotted was made under my supervision, that the same is true and correct to the best of my knowledge and belief.

I do further state that the subject property is in the area zoned "AE" (Base Flood Elevations determined) by the Federal Emergency Management Agency on the Flood Insurance Rate Map Panel Number 17017C0050C, dated September 29, 2010.

This professional service conforms to the current Illinois minimum standards for a boundary survey.

PROFESSIONAL LAND SURVEYOR ROBERT J. HARMAN No. 3101 QUINCY, ILLINOIS STATE OF ILLINOIS

Robert J. Harman 8/11/2015

Robert J. Harman, Illinois Professional Land Surveyor No. 3101
License expires 11/30/2016.
Design Firm No. 184-2738

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CWA-05-2015-0015

GRANT OF CONSERVATION EASEMENT AND COVENANTS

This GRANT OF THIS CONSERVATION EASEMENT is made by **HAGER SLOUGH SPECIAL DRAINAGE DISTRICT**, (hereinafter referred to collectively as the "Grantor") to **N. KORSMEYER, INC.**, (hereinafter referred to as "Grantee").

WITNESS THAT:

WHEREAS, the Grantor is the owner of a perpetual leasehold in certain real property located in the County of Cass, in the State of Illinois, described more particularly as Exhibit "A" attached hereto and referred to herein as the "Conservancy Area"; and

WHEREAS, the Grantor desires and intends that the natural elements and the ecological and aesthetic values of the Conservancy Area be maintained and improved in accordance with the terms and conditions of this Easement and these Covenants; and

WHEREAS, the Grantor and Grantee both desire, intend and have common purpose of conserving and preserving in perpetuity the Conservancy Area in a relatively natural condition by placing restrictions on the use of the Conservancy Area and by transferring from the Grantor to the Grantee, by the creation of a conservation easement on, over and across the Conservancy Area, Affirmative rights to ensure the preservation of the natural elements and values of the Conservation Area; and

WHEREAS, the Grantor has received valuable consideration pursuant to a Mutual Agreement for the granting of this Easement and the making of these Covenants; and

NOW THEREFORE, the Grantor, for valuable consideration received, does hereby give, grant, bargain and convey to the Grantee, its successors and assigns, forever, a Conservation Easement and the making of these Covenants.

a. The right of the Grantee to enforce by proceedings at law or in equity the Covenants hereinafter set forth. The right shall include but not be limited to, the right to bring an action in any court of competent jurisdiction to enforce the terms of these Covenants, to require the restoration of this property to its natural condition or to enjoin non-compliance by appropriate injunctive relief. The Grantee does not waive or forfeit the right to take action as may be necessary to ensure compliance with terms of these Covenants by any prior failure to act. Nothing herein shall be construed to entitle the Grantee to institute any enforcement action against the Grantor for any changes to the Conservancy Area due to causes beyond the Grantor's control and without the Grantor's fault or negligence (such as changes caused by fire, flood, storm, civil or military authorities undertaking emergency action or unauthorized wrongful acts of third parties).

b. The right of the Grantee, its contractors, agents and invitees, to enter the Conservancy Area, in a reasonable manner and at reasonable times, for the purpose of inspecting the Conservancy Area to determine if the Grantor is complying with the Covenants and promises, and further to observe, study, record and make scientific studies and educational observations.

c. The right of the Grantee to install, operate and maintain water control structures for the purpose of protecting, re-establishing and enhancing wetlands and their functional values. This includes the right to transport construction materials to and from the site of any existing or proposed water control structure.

d. The right of the Grantee to establish or re-establish vegetation through seedings or plantings.

e. The right of the Grantee to manipulate vegetation, topography and hydrology on the Conservancy Area through diking, pumping, water management, excavating, burning, cutting pesticide application and other suitable methods for the purpose of protecting, enhancing wetlands and wetland vegetation.

AND IN FURTHERANCE of the foregoing affirmative rights, the Grantor makes the following covenants on behalf of itself and its heirs, successors and assigns, which covenants shall run with and bind the Conservancy Area in perpetuity:

COVENANTS

a. USES. There shall be no commercial, industrial or residential activity undertaken or allowed within the Conservancy Area.

b. BUILDINGS AND STRUCTURES. There shall be no buildings, dwellings, barns, roads, advertising signs, billboards or other structures built or placed in the Conservancy Area.

c. TOPOGRAPHY. There shall be no dredging, filling, excavating, mining, drilling or removal of any topsoil, sand, gravel, rock, minerals or other materials. There shall be no plowing or any other activity that would alter the topography of the Conservancy Area, except such activities that are consistent with, and/or necessary for, the establishment and maintenance of the Conservancy Area.

d. DUMPING/DISPOSAL. There shall be no dumping of trash, ashes, garbage or other unsightly or offensive material, especially including any hazardous or toxic waste.

e. WATER. The hydrology of the Conservancy Area will not be altered in any way or by any means including pumping, draining, diking, impounding or diverting surface or ground water into or out of the Conservancy Area, except such activities that are consistent with, and/or necessary for, the establishment and maintenance of the Conservancy Area.

f. AGRICULTURAL USES. No plowing, tilling, cultivating, planting, timbering, or other agricultural activities may take place within the Conservancy Area.

g. The Grantor is responsible for compliance with all federal, state and local laws governing the safety and maintenance of the property, including the control of noxious weeds within the Conservancy Area.

h. There shall be no operation of any motorized watercraft, vehicle, or equipment within the Conservancy Area.

i. VEGETATION. Except in conjunction with the authorized uses set forth in paragraph g. above, there shall be no removal, cutting, mowing or alteration of any vegetation or change in the natural habitat in any manner.

NOTWITHSTANDING the foregoing restrictions, the Grantor and Grantee may construct and maintain any project features or mitigation features expressly required by any Corp permit.

RESERVED RIGHTS

These covenants do not authorize entry upon or use of the Conservancy Area by the general public.

The Grantor and its invitees may hunt and fish in the Conservancy Area so long as they comply with all federal, state and local game and fishery regulations.

Nothing herein shall be construed as limiting the right of the Grantor to sell, give or otherwise convey the Conservancy Area, or any portion or portions thereof, provided that the conveyance is subject to the terms of these Covenants.

GENERAL PROVISIONS

These Covenants shall run with and burden the Conservancy Area in perpetuity and shall bind the Grantor, its heirs, successors and assigns. These Covenants are fully valid and enforceable by any assignee of the Grantee, whether assigned in whole or in part.

The Grantor is seized of the Conservancy Area pursuant to a Mutual Leasehold Agreement signed by the parties on September 3, 2015 and, as such, has good right to grant and convey all property interests in the Conservancy Area which may be impaired by the granting of these Covenants or that there are no outstanding mortgages, tax liens, encumbrances, or other interests in the Conservancy Area which have not been expressly subordinated to these Covenants by signing below. If it is determined at any time that there is any party who may have a property interest in the Conservancy Area that is superior to these Covenants, then the Grantor shall immediately obtain and record a consent and subordination agreement signed by the other party. Acceptance of these Covenants does not release the Grantor from the obligation to obtain and record a consent and subordination agreement signed by any party who may have a property interest in the Conservancy Area that is superior to these Covenants, even if such interest was of record at time of acceptance.

The Grantor agrees to pay any and all real property taxes and assessments levied by competent authority on the Conservancy Area.

The Grantor agrees that the terms, conditions, covenants and restrictions set forth in this instrument will be inserted in any subsequent conveyance of any interest in said property. The Grantor agree to notify the Grantee of any such conveyance in writing and by certified mail within 15 days after the conveyance.

The Grantee may assign or transfer the right to enforce these Covenants to any federal or state agency or private conservation organization for management and enforcement.

The terms "Grantor" and "Grantee" as used herein shall be deemed to include, respectively, the Grantor and its heirs, successors, personal representatives, executors and assigns, and the Grantee and its successors and assigns.

The Grantor hereby warrants and represents that the Grantor is seized of the Conservation Area pursuant to a Mutual Leasehold Agreement signed by the parties on September 3, 2015 and, as such, has the good right to grant and convey this Conservation Easement and make these Covenants, that the Conservancy Area is free of all encumbrances, except as hereinafter set forth.

EXECUTIONS AND ACKNOWLEDGMENTS

IN WITNESS THEREOF, the Grantor, by its representatives, has hereto set its hand and seal this 3RD day of September, 2015.

Martin Turner, Commissioner

Douglas Hobrock, Commissioner

Accepted, this 3RD day of September, 2015.

Grantee:

N. KORSMEYER, INC.,

Alecia Crowe, President

[*Notary pages follow*]

STATE OF ILLINOIS)
) **ss.**
COUNTY OF CASS)

I, BETH ANN YOST, a Notary Public in and for the county and state aforesaid do hereby certify that **MARTIN TURNER and DOUGLAS HOBROCK,** personally known to me to be the same persons whose names are subscribed to the foregoing GRANT OF CONSERVATION EASEMENT AND COVENANTS appeared before me this day in person and severally acknowledged that they signed, sealed, and delivered the foregoing instrument, as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 3RD day of September, 2015.

Beth Ann Yost

Notary Public

NOTARY PUBLIC OFFICIAL SEAL STATE OF ILLINOIS
BETH ANN YOST
MY COMMISSION EXPIRES
JULY 3, 2016

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I, Beth Ann Yost, a Notary Public in and for the county and state aforesaid do hereby certify that **ALECIA CROWE,** personally known to me to be the President of **N. KORSMEYER, INC.**, and personally known to me to be the same person whose name is subscribed to the foregoing GRANT OF CONSERVATION EASEMENT AND COVENANTS appeared before me this day in person and severally acknowledged that as such President, she signed, sealed, and delivered the foregoing instrument, as her free and voluntary act, for the uses and purposes therein set forth.

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Beth Ann Yost

Notary Public

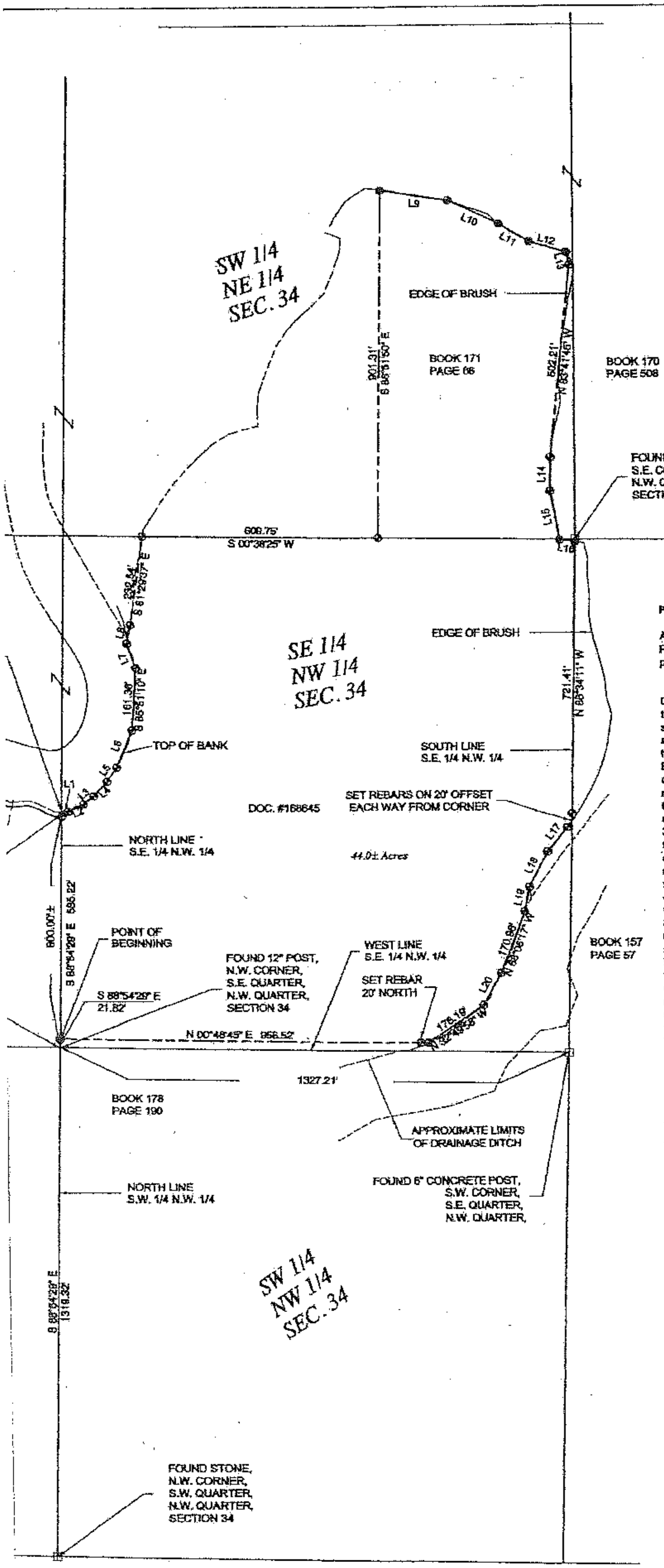
NOTARY PUBLIC OFFICIAL SEAL STATE OF ILLINOIS
BETH ANN YOST
MY COMMISSION EXPIRES
JULY 3, 2016

This instrument was drafted by:
Attorney Timothy J. Wessel
Wessel Law Office
114 East Second Street, P.O. Box 81
Beardstown, IL 62618
Telephone: 217-323-3305
Using a form developed by the
Rock Island District, U. S. Army
Corps of Engineers

GRANT OF CONSERVATION EASEMENT

AND COVENANTS

EXHIBIT A



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BASIS OF BEARINGS: GPS OBSERVATIONS

SURVEYED FOR: HAGER SLOUGH SPECIAL DRAINAGE DISTRICT

FIELD WORK COMPLETED AUGUST 6, 2015.

DESIGN FIRM NO. 184-2739

KLINGNER & ASSOCIATES, P.C.

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PLAT OF SURVEY

SHEET NO.

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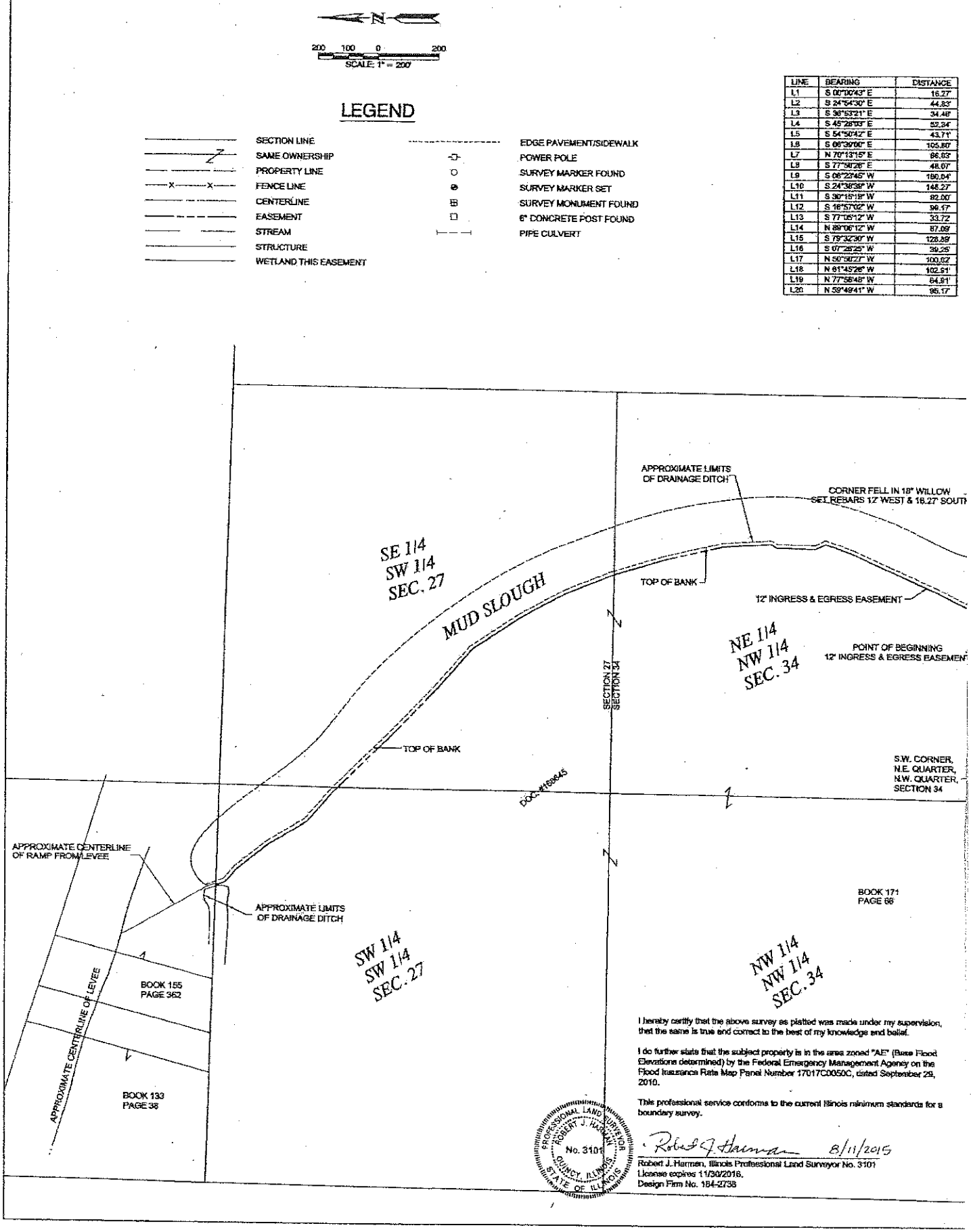

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PROFESSIONAL LAND SURVEYOR ROBERT J. HARMAN No. 3101 QUINCY, ILLINOIS STATE OF ILLINOIS

Robert J. Harman 8/11/2015

Robert J. Harman, Illinois Professional Land Surveyor No. 3101
License expires 11/30/2016.
Design Firm No. 184-2738

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