

# Mitigation Plan

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September 9, 2016



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## Preface

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The Diversion Authority has prepared this Mitigation Plan to document the mitigation requirements that will be followed for the Fargo-Moorhead (FM) Area Diversion Project (Project). This Mitigation Plan has been drafted in coordination with the US Army Corps of Engineers (USACE), and in consultation with the North Dakota State Water Commission (NDSWC) and the Minnesota Department of Natural Resources (MDNR). Throughout this Mitigation Plan, the Project is commonly referred to as the 'FM Area Diversion Project', but it should be noted that USACE, other agencies, and certain documents identify the Project as the 'Fargo-Moorhead Metro Flood Risk Management Project'.

The Project has been studied extensively by the Diversion Authority, USACE, MDNR and others. The Project has received a Federal Record of Decision (ROD), Federal authorization by Congress through the Water Resources Reform and Development Act (WRRDA) of 2014. The Project received a "new start" and its first Federal construction appropriation in 2016. In addition, the Diversion Authority entered into a Project Partnership Agreement (PPA) with USACE on July 11, 2016.

This Mitigation Plan is intended to be a living document that will be reviewed and amended periodically as additional information and operations prompt updates.

This Mitigation Plan consists of both property mitigation and environmental mitigation plans. This document is a compilation of a series of plans for a variety of topics. Collectively, the mitigation plans for each individual topic serve as a component of the overall mitigation plan for the Project.

## Property Acquisition Philosophies

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### Mission

To acquire the property necessary for the FM Area Diversion Project, in compliance with State and Federal guidelines and in accordance with the philosophy of being friendly, fair, and flexible to those whose property is required for the Project.

### Over-Arching Property Acquisition Philosophies

- Follow the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (URA) (PL 91-646) as the basis for establishing the minimum standards for property acquisitions. The objectives of the URA are to:
  - Provide uniform, fair, and equitable treatment of persons whose real property is acquired or are displaced in connection with the Project.
  - Ensure relocation assistance is provided to displaced persons to lessen the emotional and financial impact of displacement.
  - Ensure no individual or family is displaced unless decent, safe, and sanitary housing is available within the displaced person's financial means.
- Work to be Friendly, Fair, and Flexible with those whose property is being acquired and in facilitating the acquisition and relocation process.
- Use Eminent Domain as a last resort measure to acquire the necessary property.
- Acquisition costs will stay within the program's annual budget.
- Program will comply with State law, the URA, permit requirements, interagency agreements, and applicable project agreements and Memorandums of Understanding as each applies to the acquisition process for the Diversion Authority, the Cass County Joint Water Resource District (CCJWRD), and the Moorhead-Clay County County Joint Powers Agreement (MCCJPA).
- Program will acquire land impacted by the project as opportunities arise with willing sellers.
- Payment for relocation benefits are a reimbursement of costs incurred by the displaced person(s).
- Negotiations: Negotiations are a necessary component of property acquisitions. Negotiation teams do their best to secure the property for the most equitable price possible and use Eminent Domain as a last resort. Land owners have been able to counter offer their appraised values and are encouraged to support these counter offers with factual data to support their position, this could include:
  - Updated comparable sales.
  - Updated cost approach information.
  - Updated financial information (for businesses).
  - Issues in the appraisal (i.e., square footage difference, missed features, incorrect data, etc.).
- Per the Project Partnership Agreement (PPA) executed on July 11, 2016, the federal government can also acquire land on behalf of the non-Federal sponsor.

## Property Acquisition Statistics

- Property Types:
  - In-Town Residential
  - Commercial Businesses
  - Oxbow Residential
  - Farms
  - Upstream Retention Area & Rural Residential
  - Flowage Easements
- Project Property Needs:
  - ≈1,650 parcels
  - ≈7,000 acres (footprint)
  - ≈\$400M value

## Typical MN Property Acquisition Process

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The Fargo-Moorhead Metro Flood Diversion Authority (DA) and Moorhead-Clay County Joint Powers Agreement (MCCJPA) are responsible for the acquisition of real property in Minnesota for the FM Area Diversion Project. The parties will utilize the following steps for acquiring properties in Minnesota:

### 1. Design Team (USACE or HMG)

- a. Advises Program Management Consultant (PMC) of Right of Way (ROW) needs when the work limits are defined.
- b. PMC establishes a budget for the acquisition needs by Phase or Work Package.

### 2. PMC-LAND

- a. Presents Land Acquisition Directive (with budget) to Diversion Authority's Finance Committee for approval.
- b. Submits the executed Land Acquisition Directive to MCCJPA.
- c. PMC assigns acquisition to a land acquisition firm.
- d. Land acquisition firm accepts assignment, prepares proposed fee for review by PMC.
- e. PMC initiates task order amendment for Land Agent, obtains MCCJPA approval, executes documents with Land Agent, and provides fully executed documents to parties.

### 3. Right of Entry

- a. PMC identifies parcels which require Right of Entry (ROE) for boundary surveying.
- b. Legal prepares ROE request for access to conduct boundary survey.
- c. Land agents are assigned by PMC. The land agent assigned to each property manages ROE request and receipt forms, conducts initial follow-up calls, and notifies PMC when ROE is acquired.

### 4. Survey Parcel

- a. PMC conducts boundary survey and supplies initial certificate of survey exhibits to Land Agent (and appraiser).

### 5. Notice of Intent to Acquire (NOI)

- a. Land Agent sends property owner certified letter of NOI.
- b. Land Agent contacts property owner by phone to describe acquisition process, offers to meet.

### 6. Parcel Appraisal

- a. Appraiser, using certificate of survey exhibit, conducts appraisal following federal standards.
- b. Appraiser submits draft appraisal report for review (see Appraisal Review Plan for additional details).
- c. Upon appraisal review, Just Compensation value approved by MCCJPA (in accordance with Minnesota Statutes Chapter 117).

### 7. Parcel Purchase Negotiation

- a. Land Agent presents appraisal to property owner and makes initial offer of just compensation based on appraisal amount.
- b. Land agent informs landowner of the condemning authority's obligation to reimburse for the landowner's appraisal in accordance with Chapter 117.
- c. Land Agent identifies tenants, if any.
- d. Land Agent has 45 days (goal) to negotiate fair market value for acquisition. Land Agent has 90 days (goal) to negotiate relocation benefits, where applicable.
- e. Legal team develops Purchase Agreement based on Land Agent recommendation.
- f. Land Agent meets with property owner to present Purchase Agreement; execute Purchase Agreement.

- g. If outstanding terms, negotiate additional terms and seek MCCJPA approval regarding any additional negotiations.
- h. PMC prepares final acquisition exhibits (Certificate of Survey) and supplies to legal team for inclusion in the closing documents.
- i. Upon final approval of Purchase Agreement by landowner and MCCJPA, legal team prepares deed and additional documents required for closing.
- j. Exhaust all reasonable negotiation opportunities via personal meetings and phone contacts.

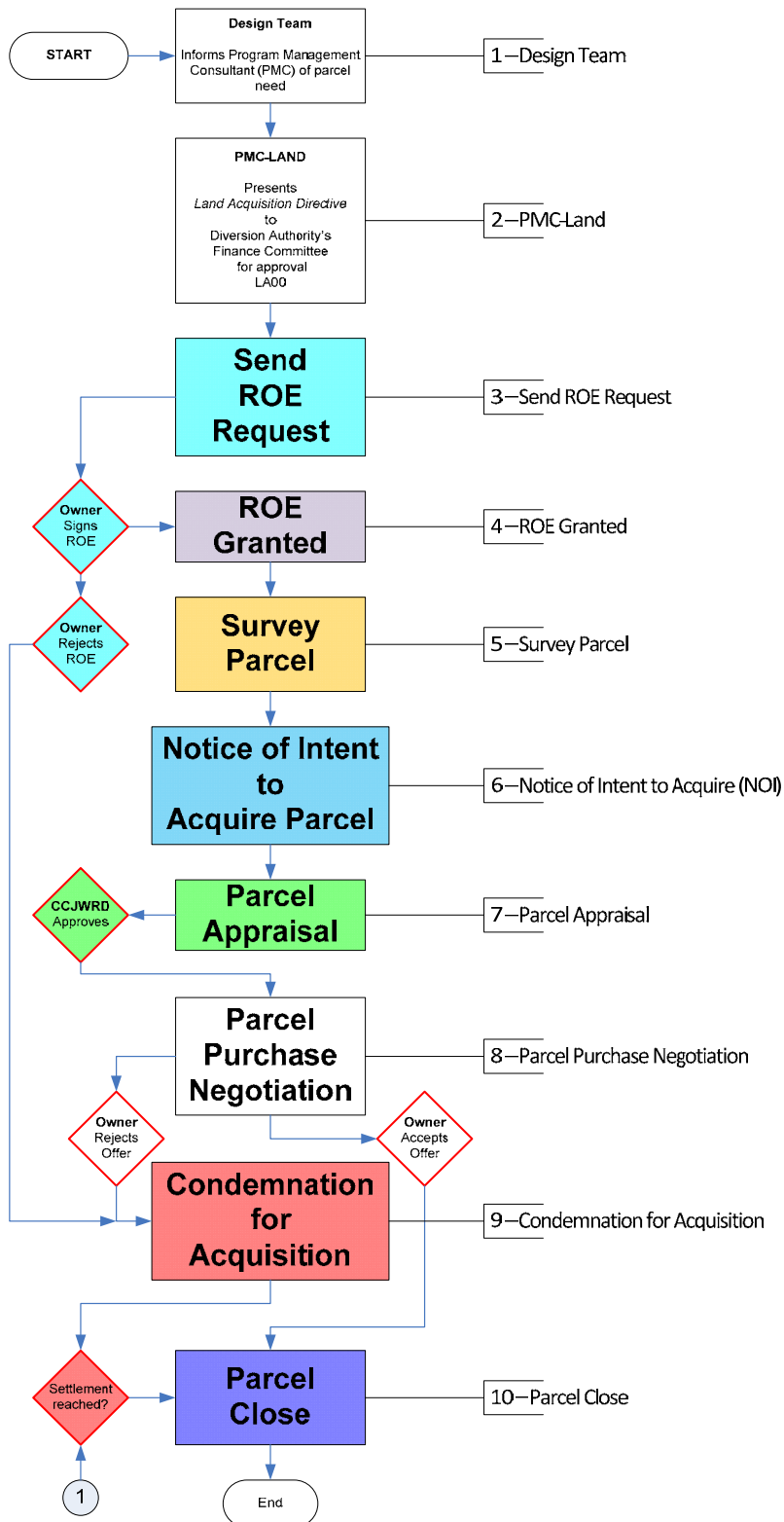
**8. Parcel Close**

- a. The Title Company prepares partial mortgage releases, closing statement, 1099, and conducts the closing with owner.

**9. Eminent Domain for Acquisition**

- a. If negotiation opportunities are exhausted and a negotiated acquisition is unlikely, designer, Land Agent, and PMC present negotiation details to MCCJPA.
- b. If negotiated acquisition of the necessary property appears unlikely, MCCJPA notifies the City of Moorhead about the necessary property and the acquisition efforts to date.
- c. If Moorhead concludes negotiated acquisition unlikely and judicial action will be necessary to acquire the property, legal team, in coordination with designer, Land Agent, and PMC, presents RESOLUTION OF NECESSITY and RESOLUTION OF OFFER TO PURCHASE for Moorhead's consideration and approval.
- d. Upon approval of RESOLUTIONS by Moorhead, Land Agent presents RESOLUTIONS, along with final written offer to property owner and notifies owner of one-week deadline for acceptance.
- e. If no acceptance, legal team starts an eminent domain action to acquire the necessary property.
- f. Notice of intent to take possession is served by certified mail.
- g. A hearing seeking title and possession will be held no less than 90 days following the notice of intent to take possession is served.
- h. Before possession and title is transferred, the amount of the appraisal will be deposited with the district court.
- i. Legal team continues negotiations with landowner or landowner's counsel throughout judicial process. Legal team engages landowner's counsel in discovery and pre-trial motions and otherwise prepares for trial.
- j. The project will not be completed until the property rights necessary for the operation of the project have been acquired. Final certificate filed and recorded in accordance with Minn. Stat. § 117.205.

Workflow diagram summary presented below. Detailed workflow diagram attached.



## Typical ND Property Acquisition Process

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The Fargo-Moorhead Metro Flood Diversion Authority (DA) and Cass County Joint Water Resources District (CCJWRD) are responsible for the acquisition of real property. The parties will utilize the following steps for acquiring properties in North Dakota:

### 1. Design Team (USACE, HMG, or P3 Developer)

- a. Advises Program Management Consultant (PMC) of Right of Way (ROW) needs when the work limits are defined.
- b. PMC establishes a budget for the acquisition needs by Phase or Work Package.

### 2. PMC-LAND

- a. Presents Land Acquisition Directive (with budget) to Diversion Authority's Finance Committee for approval.
- b. Submits the executed Land Acquisition Directive to CCJWRD.
- c. PMC assigns acquisition to a land acquisition firm.
- d. Land acquisition firm accepts assignment, prepares proposed fee for review by PMC.
- e. PMC initiates task order amendment for Land Agent, obtains CCJWRD approval, executes documents with Land Agent, and provides fully executed documents to parties.

### 3. Right of Entry

- a. PMC identifies parcels which require Right of Entry (ROE) for boundary surveying.
- b. Legal prepares ROE request for access to conduct boundary survey.
- c. CCJWRD manages ROE request and receipt forms, conducts initial follow-up calls, and notifies PMC and Land Agent when additional follow-up is required.
- d. Land Agent conducts any necessary additional follow-ups to establish singular point of contact.

### 4. Survey Parcel

- a. PMC conducts boundary survey and supplies initial certificate of survey exhibits to Land Agent (and appraiser).

### 5. Notice of Intent to Acquire (NOI)

- a. Land Agent sends property owner certified letter of NOI.
- b. Land Agent contacts property owner by phone to describe acquisition process, offers to meet.

### 6. Parcel Appraisal

- a. Appraiser, using certificate of survey exhibit, conducts appraisal following federal standards.
- b. Appraiser submits draft appraisal report for review (see Appraisal Review Plan for additional details).
- c. Upon appraisal review, Just Compensation value approved by CCJWRD (in accordance with NDCC § 32-15-06.1).

### 7. Parcel Purchase Negotiation

- a. Land Agent presents appraisal to property owner and makes initial offer of just compensation based on appraisal amount.
- b. Land Agent has 45 days (goal) to negotiate fair market value for acquisition. Land Agent has 90 days (goal) to negotiate relocation benefits, where applicable.
- c. Legal team develops Purchase Agreement based on Land Agent recommendation.
- d. Land Agent meets with property owner to present Purchase Agreement; execute Purchase Agreement.
- e. If outstanding terms, negotiate additional terms and seek CCJWRD approval regarding any additional negotiations.
- f. PMC prepares final acquisition exhibits (Certificate of Survey) and supplies to legal team for inclusion in the closing documents.

- g. Upon final approval of Purchase Agreement by landowner and CCJWRD, legal team prepares deed and additional documents required for closing.
- h. Exhaust all reasonable negotiation opportunities via personal meetings and phone contacts.

**8. Parcel Close**

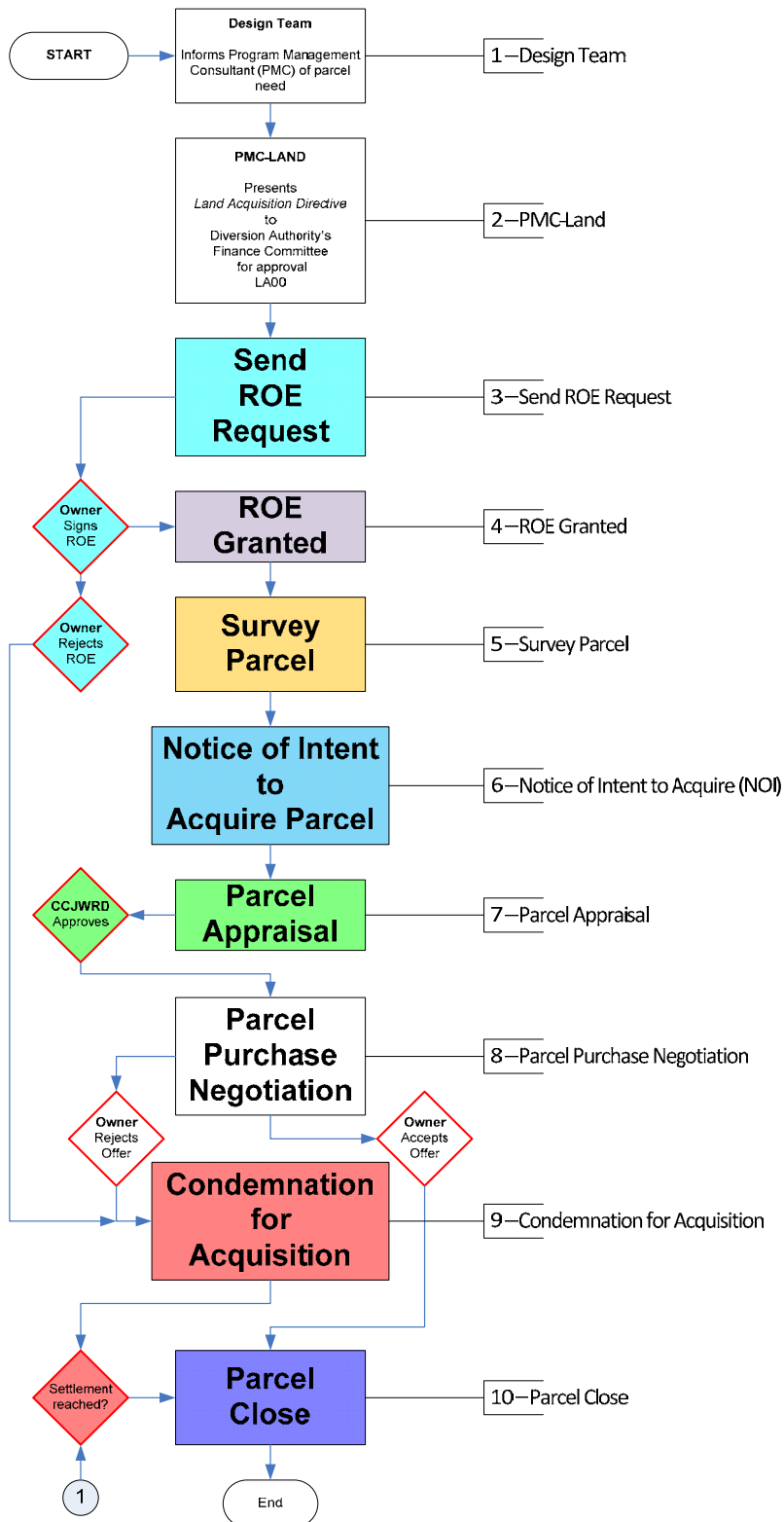
- a. The Title Company prepares partial mortgage releases, closing statement, 1099, and conducts the closing with owner.

**9. Eminent Domain for Acquisition**

- a. If negotiation opportunities are exhausted and a negotiated acquisition is unlikely, designer, Land Agent, and PMC present negotiation details to CCJWRD.
- b. If CCJWRD concludes negotiated acquisition unlikely and judicial action will be necessary to acquire the property, legal team, in coordination with designer, Land Agent, and PMC, presents RESOLUTION OF NECESSITY and RESOLUTION OF OFFER TO PURCHASE for CCJWRD's consideration and approval. CCJWRD makes a decision based on timing and type of property being acquired as to which eminent domain process will be used to acquire the necessary property.
- c. Upon approval of RESOLUTIONS by CCJWRD, Land Agent presents RESOLUTIONS, along with final offer to property owner and notifies owner of one-week deadline for acceptance.
- d. If no acceptance, legal team starts an eminent domain action to acquire the necessary property.
- e. Legal team continues negotiations with landowner or landowner's counsel throughout judicial process. Legal team engages landowner's counsel in discovery and pre-trial motions and otherwise prepares for trial.
- f. Following acquisition of the property through the judicial process, Diversion Authority, USACE, etc., may proceed with construction on parcel.



Workflow diagram summary presented below. Detailed workflow diagram attached.



## Appraisal Review Plan

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### Introduction

The Project will require acquisition of various land rights. Acquisitions will be conducted following the process defined in the Uniform Act (URA) (PL-91-646), the Code of Federal Regulations (49 CFR 24.104), along with any relevant state laws or regulations. The appraisals will be prepared in conformance with the Uniform Standards for Professional Appraisal Practice ("USPAP") and the standards of North Dakota or Minnesota (as appropriate).

### Appraisal Review Process

Appraisal reviews are an important step in the land acquisitions process. As such, the Diversion Authority has adopted a plan to conduct formal appraisal reviews for each tract appraisal. The reviews shall be completed prior to beginning negotiations with the property owner. The following approach will be used for appraisal reviews for the FM Area Diversion Project.

1. The Diversion Authority has developed an independent appraisal review team. The team has identified qualified review appraisers and developed appraisal engagement and review tools, including the attached appraisal review certification report and appraisal review checklist.
2. The independent appraisal review team members, procedures, and tools have been reviewed and approved for adequacy by USACE as the Federal Agency overseeing the expenditure of federal funds.
3. The appraisal review team, using the guidance found in [49 CFR 24.102](#), will determine if informal value estimates or appraisals are required for the acquisition of each parcel.
4. To ensure consistency of methodology, quality assurance and confirmation, a Certified General Appraiser shall conduct a formal review on tract appraisals. The review appraiser will submit a signed cover letter certifying that each appraisal has been prepared in conformance with state (North Dakota or Minnesota) standards, and with the Uniform Standards of Professional Appraisal Practice (USPAP). The review submission will include engagement documents provided to the tract appraiser, the tract appraisal report, and the review report.
5. Per the suggestion of the USACE Real Estate Division, USACE staff may review the appraisal file on 10 percent of the acquisitions. The review will include engagement documents provided to the tract appraiser, the tract appraisal report, and the review report.
6. USACE will be available to provide technical advice to the appraisal review team for those acquisitions that present unusually complex valuation issues.
7. The Diversion Authority shall attempt to use appraisers who have previously been vetted and approved by USACE Real Estate Division. When using new appraisers, the Diversion Authority appraisal review team shall determine if they are qualified to perform tract appraisals and for which property types. As a courtesy, the review team shall send the qualifications and sample appraisals of the new appraiser to USACE for awareness.
8. The Diversion Authority will track and document all appraisals and appraisal reviews (as well as acquisition documents) using a GIS-based system (ESRI Workflow Manager).

## Attachments

- Appraisal Review Certification Report (sample, 3 pages)
- Appraisal Review Checklist (3 pages)

## APPRAISAL REVIEW ANALYSIS and CERTIFICATION

**PROPERTY OWNER:** \_\_\_\_\_

**PROPERTY OIN#:** \_\_\_\_\_

Project: FM Area Diversion Project

County:

Parcel:

PID #:

Client: [Cass County Joint Water Resource District (CCJWRD) or  
Moorhead-Clay County Joint Powers Agreement (MCCJPA)]

Intended User: [CCJWRD or MCCJPA]

Use/Purpose of Review: To determine adequacy of appraisal for acquisition

Fee Owner:

Property Rights Appraised:

Property Address:

Appraisal Format Used:

Zoning:

Highest and Best Use:

Impacted Improvements:

Tract Size:

Appraisal By:

Date of Valuation:

Date of Report:

Review Appraiser:

**VALUE CONCLUSION:**

**Fee Acquisition:**

**TOTAL TAKINGS & DAMAGES:**

**REVIEW APPRAISER'S CONCLUSIONS:**

**The report is compliant with USPAP and [North Dakota or Minnesota] Statutes, and the value conclusion is recommended for use as the basis for acquisition of the property.**

**Review Comments:****Scope of Work**

The scope of this assignment includes USPAP and USFLA compliance, a review of the comparable sales data, reviewing of the appraisal for completeness, accuracy and appraisal methodology, and to develop an opinion with regard to the appropriateness of the appraisal report.

**Reviewer Assumptions and Limiting Conditions:**

- The Appraisal Review is based on information and data contained in the appraisal report which is the subject of the review. Data and information from other sources may be considered. If so, they are identified and noted as such.
- It is assumed that such data and information are factual and correct.
- The reviewer reserves the right to consider any new or additional data or information which may subsequently become available.
- Unless otherwise stated, all assumptions and limiting conditions contained in the appraisal report, which are the subject of this appraisal review, are also conditions of this review.

## REVIEW APPRAISERS CERTIFICATION:

I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF:

The facts and data reported by the review appraiser and used in the review process are true and correct.

The analyses, opinions, and conclusions in this review report are limited only by the assumptions and limiting conditions stated in this review report, and are my personal, unbiased professional analyses, opinions, and conclusions.

I have no present or prospective interest in the property that is the subject of this report and I have no personal interest or bias with respect to the parties involved.

I have performed no other services, as an appraiser or in any other capacity, regarding the property that is the subject of the work under review within the three- year period immediately preceding acceptance of this assignment.

My compensation is not contingent upon an action or event resulting from the analyses, opinions, or conclusions in, or the use of, this review report.

The appraisal review was made and the review report prepared in conformity with the Appraisal Foundation's Uniform Standards of Professional Appraisal Practice and the [INSERT STATE CODE REFERENCE].

I have completed the requirements of the continuing education program in the State of [INSERT STATE] in which I am licensed.

I do not authorize the out-of-context quoting from, or the partial reprinting of this review report. Further, neither all nor any part of this review shall be disseminated to the general public by use of media for public consumption or public communication without prior written consent of the review appraiser signing this report.

The appraisal report contains data that was obtained by appraiser from the county and other sources. I assume that this information is accurate and have not verified this information.

Date:

Review Appraiser Signature

[ND of MN] License No:

## APPRAISAL REVIEW CHECKLIST

Reviewed By:

Appraiser:

Owner and Address:

OIN#:

### GENERAL INFORMATION

		<u>N/A</u>	<u>Yes</u>	<u>No</u>
1	Has the type of appraisal development been prominently stated? Note that the use of the Departure Provision is not acceptable for Eminent Domain Purposes.	___	___	___
2	Has the purpose and reasoning for any Jurisdictional Exception been recognized in the development of the appraisal? Have the parts of USPAP that are voided by the Jurisdictional Exception been cited and has the legal authority justifying the action been disclosed?	___	___	___
3	Has the appraisal problem been identified and correctly interpreted?	___	___	___
4	Have the correct reporting format and reporting option been used and prominently stated?	___	___	___
5	Has the purpose of the appraisal been considered and identified?	___	___	___
6	Have the intended use and intended users of the appraisal been considered and identified?	___	___	___
7	Has the real property interest to be appraised been considered and identified?	___	___	___
8	Have the effective date of the appraisal and of the date of the report been considered and identified?	___	___	___
9	Have the proper definition of market value and its source been disclosed?	___	___	___
10	Has the link between the estimate of market value and specific exposure time been disregarded?	___	___	___
11	Has the scope of the appraisal been considered and adequately addressed?	___	___	___
12	Have all the extraordinary assumptions and limiting conditions been disclosed and considered?	___	___	___

13 Have all assumptions and limiting conditions that affect the analyses and conclusions been disclosed and considered? \_\_\_ \_\_\_ \_\_\_

14 Has an adequate history been provided for the subject; i.e., 10 years for the Uniform Standards, 5 years for North Dakota State standards or 3 years to meet USPAP requirements? \_\_\_ \_\_\_ \_\_\_

15 Has the owner or representative of the owner been afforded the right to accompany the appraiser on an inspection of the property? \_\_\_ \_\_\_ \_\_\_

**BEFORE THE ACQUISITION**

6 Has the larger parcel been properly and adequately described? \_\_\_ \_\_\_ \_\_\_

17 Has the highest and best use been properly and adequately analyzed? \_\_\_ \_\_\_ \_\_\_

18 Have existing land use regulations and probable modifications been properly and adequately analyzed? Identified and analyzed? \_\_\_ \_\_\_ \_\_\_

**ACQUISITION**

19 Has an adequate description of the part taken, including property rights acquired or encumbered been properly and adequately analyzed? \_\_\_ \_\_\_ \_\_\_

20 Has the impact of the acquisition / encumbrance on the remaining property been properly supported and explained? \_\_\_ \_\_\_ \_\_\_

**AFTER THE ACQUISITION**

21 Has the remaining larger parcel been properly and adequately described? \_\_\_ \_\_\_ \_\_\_

22 Has the highest and best use of the larger remaining parcel, as vacant and as improved, been properly and adequately analyzed? \_\_\_ \_\_\_ \_\_\_

**VALUATION**

23 Has all the information necessary to support the analysis, opinions and conclusions for all applicable valuation approaches, both before and after the acquisition, been properly developed and reported? \_\_\_ \_\_\_ \_\_\_

24 Has the exclusion of any of the usual valuation approaches been adequately explained and supported? \_\_\_ \_\_\_ \_\_\_



- |    |  |   |   |   |
|----|--|---|---|---|
| 25 | Have the strengths and weaknesses of all the applicable valuation approaches been reconciled into an indication of value?  | — | — | — |
| 26 | Have any nominal damages to the remaining parcels been estimated either by the cost to cure method or through reasoning which fully explains those damages, and have any off-setting special benefits been fully explained and included? | — | — | — |
| 27 | Has an adequately explained and supported conclusion of the take including damages resulting from the acquisition / encumbrance been provided?   | — | — | — |
| 28 | Does the reconciliation include consideration of any recent sale, offering, listing or option to purchase the subject property, as reported in the ten-year history?   | — | — | — |
| 29 | Does the appraisal include a parcel summary or breakdown of the value of the parcel taken and or any improvements taken and any damages or special benefits to the remainder?  | — | — | — |

**REPORTING REQUIREMENTS AND ACCEPTABILITY**

- |    |   |   |   |   |
|----|---|---|---|---|
| 30 | Has an acceptable level of competence been demonstrated in the development, analysis and reporting of the appraisal?  | — | — | — |
| 31 | Has an apparent ethical integrity been demonstrated in the development, analysis and reporting?   | — | — | — |
| 32 | Has the ability to correctly employ recognized methods and techniques in the development of the appraisal been demonstrated in compliance with USPAP and the Uniform Act been included? | — | — | — |
| 33 | Has the ability to communicate the appraisal, in a manner that is sufficiently comprehensive and not misleading, been demonstrated?   | — | — | — |
| 34 | Has the proper certification in compliance with USPAP been included?  | — | — | — |

## Offer Presentation and Negotiations Process

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### Introduction

The Project will require acquisition of various land rights to approximately 1,650 parcels. Acquisitions will be conducted in accordance with the 'Typical Property Acquisition Process dated May 2016', and following a federal process that is defined in the Uniform Act (URA) (PL-91-646) and in the Code of Federal Regulations (49 CFR 24). The process will also be in compliance with Uniform Standards for Professional Appraisal Practice ("USPAP") and the Uniform Appraisal Standards for Federal Land Acquisitions ("The Yellow Book").

### Offer Presentation & Negotiation Process

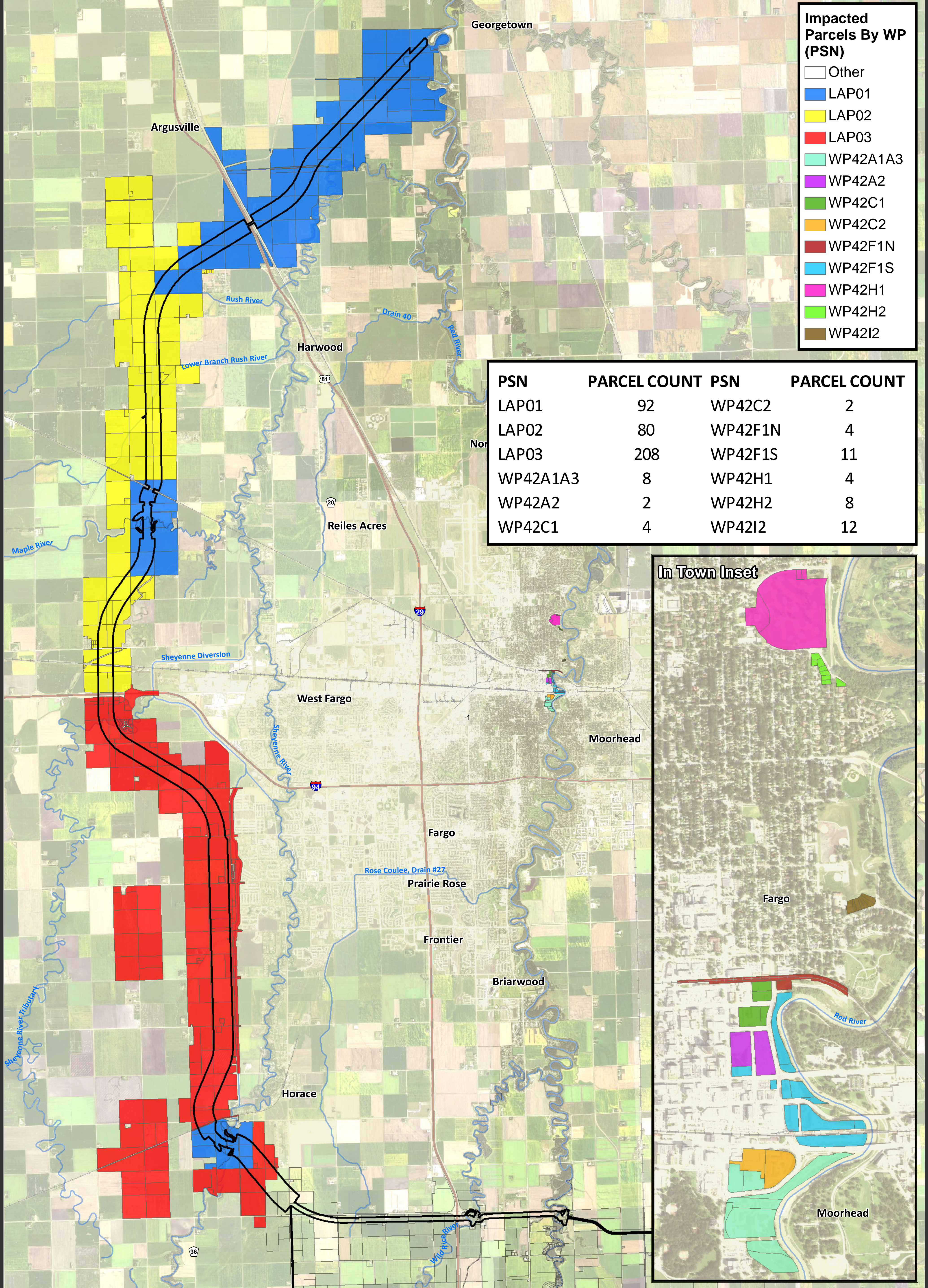
As noted in the Typical Property Acquisition Process, an initial offer will be presented to the property owner based on the appraised value, which will commence negotiations between the property owner and a Land Agent. It is essential that the Diversion Authority establish boundaries for the Land Agents to work within when negotiating with property owners. The Land Agents shall serve as the primary point of contact with property owners, and Diversion Authority representatives should make efforts to encourage property owners to work through the process and through the Land Agents. The boundaries are essential to enabling timely, efficient, and successful completion of the property acquisitions for the Project. As such, the following process will be used for presenting offers and negotiating with property owners.

1. Initial Contact
  - a. Initial Contact to the property owner will come from the acquiring entity (Cass County Joint Water Resource (CCJWRD) or Moorhead-Clay County Joint Powers Agreement (MCCJPA)). Initial Contact will introduce the Land Agent and direct all communication and negotiation to be conducted through the Land Agent.
2. Presentation of Appraisal
  - a. Upon review and approval of the Appraisal, the Land Agent shall present the Appraisal to the Property Owner for review.
  - b. Property Owner will have an opportunity to review the appraisal and point out any errors, omissions, or additional data for the Appraiser to consider in estimating value. Property Owner shall review and provide input within 14 days.
  - c. Upon review of Property Owner input, the Appraiser should make any adjustments to the appraisal, if necessary, and re-submit the appraisal for approval by the acquiring entity.
3. Presentation of Offer
  - a. Land Agent shall present the acquisition offer based on the appraisal.
  - b. Land Agent shall keep open lines of communication with Property Owner and shall commence negotiations.

#### 4. Negotiations

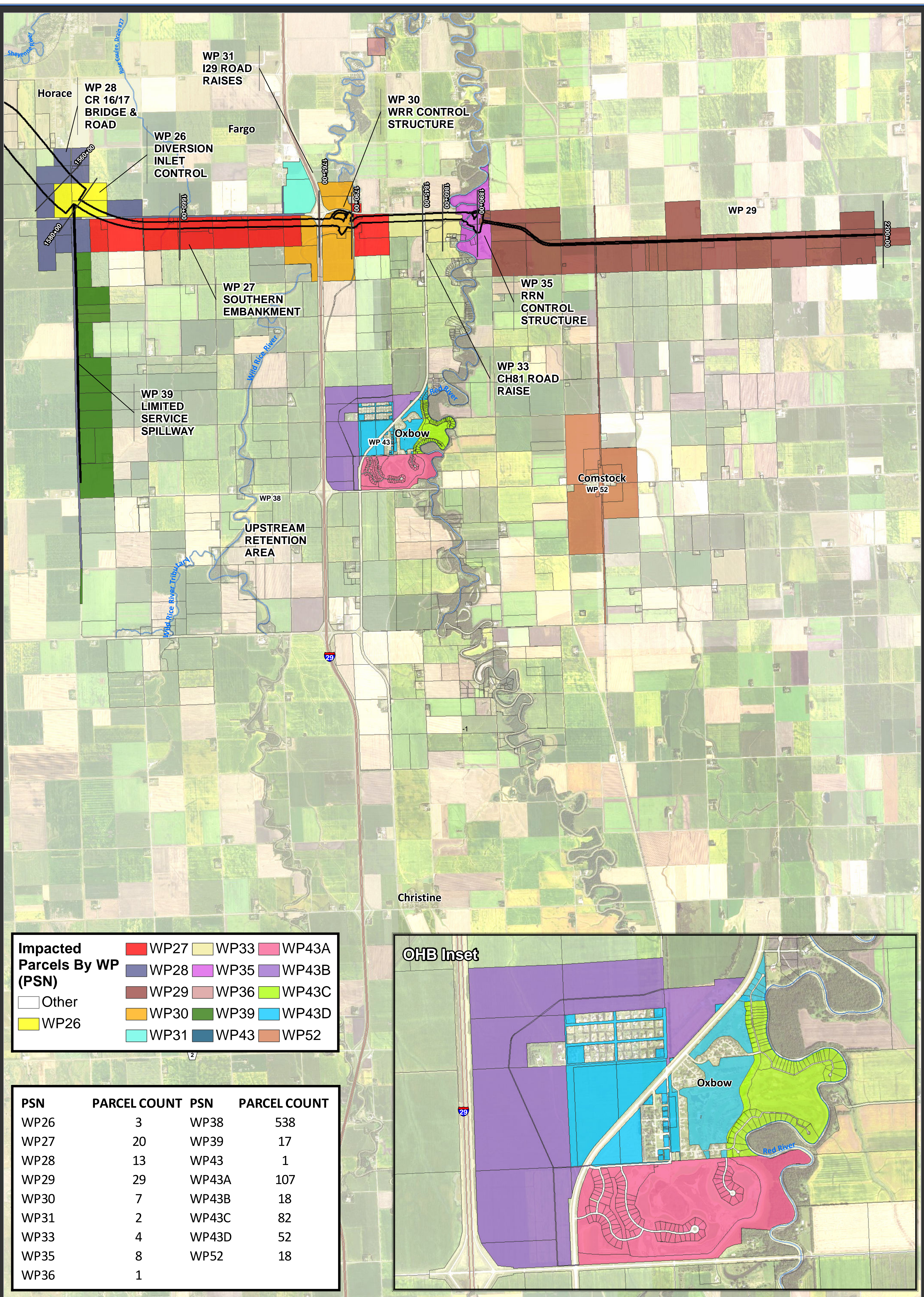
- a. Land Agents should have a goal of completing negotiations for acquisitions within 45 days. For acquisitions that involve relocation, the Land Agents should have a goal of completing negotiations within 90 days.
- b. The PMC Land Management Team and Land Agents are directed to secure the most equitable deal for the buyer.
- c. The PMC Land Management Team and Land Agents shall consider the following items when considering acquisitions and counteroffers:
  - i. Appraisal discrepancy
  - ii. Litigation avoidance
  - iii. Cost avoidance
  - iv. Precedence
  - v. Timeframe/schedule
  - vi. Good faith negotiations
- d. The PMC Land Management Team and Land Agents shall be authorized to reject counteroffers that are excessive, without basis, or otherwise outside the parameters presented above.
- e. Land Agents shall present their “most equitable” acquisition/counteroffers to the PMC Land Management Team for consideration. The PMC Land Management Team shall consider the acquisition/counteroffer and assist Land Agent in making a recommendation to CCJWRD or MCCJPA.
- f. In the event that acquisitions/counteroffers are extremely unique, the PMC Land Management Team shall coordinate a discussion on the acquisition with the acquiring entity chair and the Diversion Authority Executive Director.
- g. Acquisition offers and counteroffers shall be presented to the acquiring entity board one time.
- h. If negotiations fail to reach resolution after the timeframes noted above, acquiring entity board shall consider eminent domain action.
- i. Land Agents shall respond to all counteroffers presented Property Owners within 14 days.





PSN	PARCEL COUNT	PSN	PARCEL COUNT
LAP01	92	WP42C2	2
LAP02	80	WP42F1N	4
LAP03	208	WP42F1S	11
WP42A1A3	8	WP42H1	4
WP42A2	2	WP42H2	8
WP42C1	4	WP42I2	12

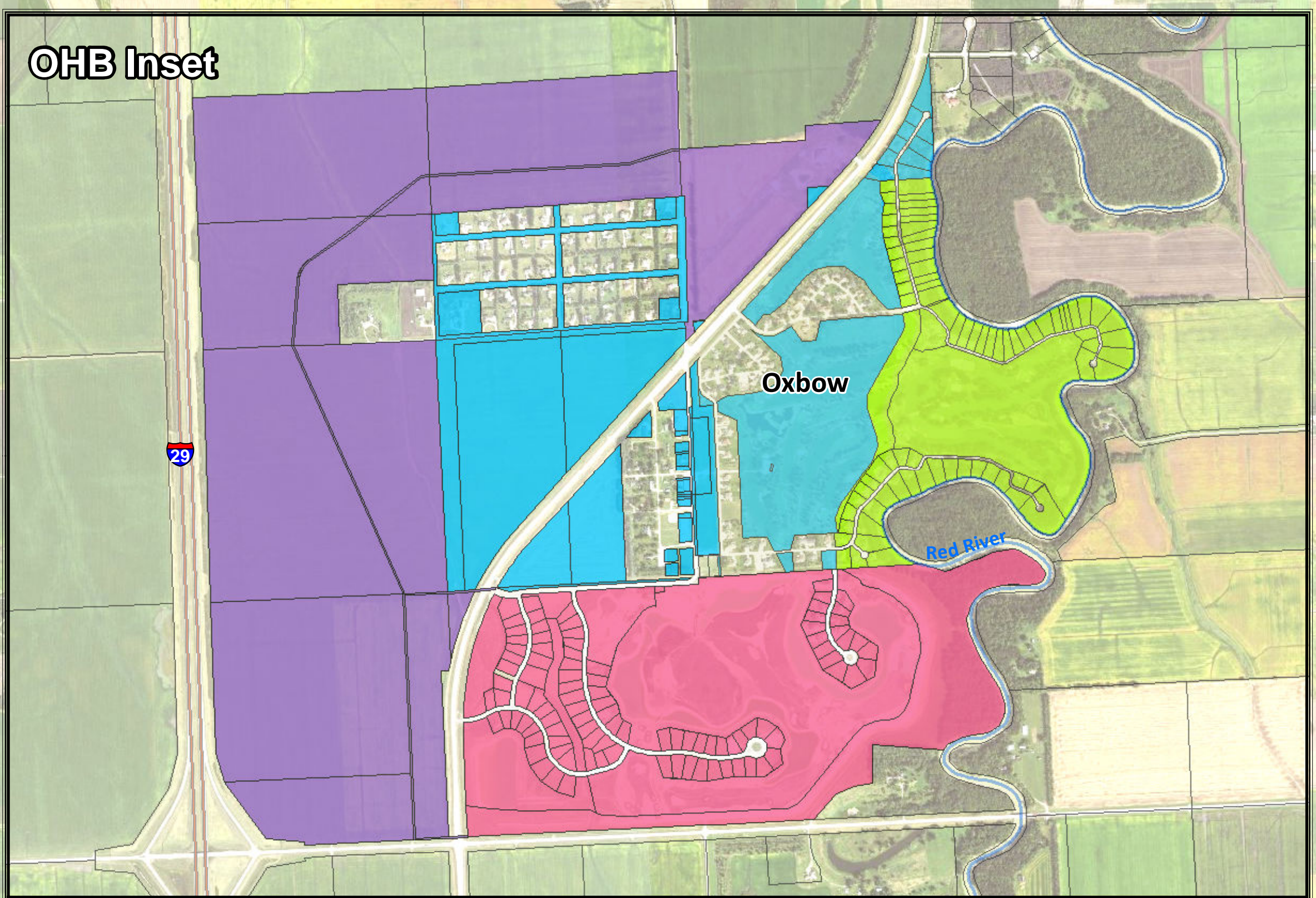




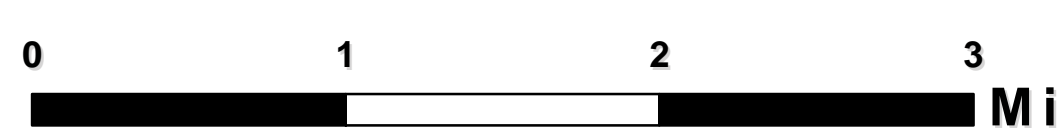
**Impacted  
Parcels By WP  
(PSN)**

WP27	WP33	WP43A
WP28	WP35	WP43B
WP29	WP36	WP43C
WP30	WP39	WP43D
WP31	WP43	WP52
Other		
WP26		

PSN	PARCEL COUNT	PSN	PARCEL COUNT
WP26	3	WP38	538
WP27	20	WP39	17
WP28	13	WP43	1
WP29	29	WP43A	107
WP30	7	WP43B	18
WP31	2	WP43C	82
WP33	4	WP43D	52
WP35	8	WP52	18
WP36	1		



METRO DIVERSION PROPERTY ACQUISITION  
PARCELS ASSIGNED TO  
WORK PACKAGES  
SOUTHERN STAGING AREA  
AND EMBANKMENTS





Property Acquisition Schedule1

Major Project Element	Work Package <sup>2</sup>	State	Work Limits Defined by Designer	Start Property Acquisition <sup>3</sup>	Notification to Property Owners <sup>4</sup>	Final Design Complete	Final Permit Application	Complete Property Acquisition	Permit Issuance (Goal)	Number of Parcels Impacted	Land Firm
Features Constructed by Diversion Authority using Public-Private-Partnership (P3)											
Diversion Channel Phase 1 <sup>5</sup>	DC1A	ND	June 2016	June 2016	July 2016	Nov 2017	Nov 2017	Nov 2017	Dec 2017	41	HMG
	DC1B	ND	June 2016	June 2016	July 2016	Nov 2017	Nov 2017	Nov 2017	Dec 2017	49	Ulteig
Diversion Channel Phase 2	DC2	ND	June 2017	June 2017	July 2017	Nov 2018	Nov 2018	Nov 2018	Dec 2018	80	
Diversion Channel Phase 3	DC3	ND	June 2017	August 2017	Aug 2017	Nov 2019	Nov 2019	Nov 2019	Dec 2019	210	
Features Constructed by Diversion Authority											
CR16/17 Bridge & Road	WP28	ND	Feb 2016	Feb 2016	Jan 2016	Aug 2016	Aug 2016	April 2017	April 2017	13	HMG
Features Constructed by USACE											
Diversion Inlet Control Structure	WP26	ND	Feb 2016	Jan 2016	Jan 2016	June 2016	May 2016	June 2016	June 2016	3	HMG
Wild Rice Control Structure	WP30	ND	Jan 2017	Jan 2017	Feb 2017	April 2018	April 2018	April 2018	May 2018	9	
I-29 Road Raise	WP31	ND	Jan 2017	Jan 2017	Feb 2017	April 2018	April 2018	April 2018	May 2018	- <sup>6</sup>	
Red River Control Structure	WP35	MIN	Jan 2018	Jan 2018	Feb 2018	April 2019	April 2019	April 2019	May 2019	8	
Southern Embankment (ND) <sup>7</sup>	WP27	ND	Jan 2018	Jan 2020	Feb 2018	April 2021	April 2021	April 2021	May 2021	20	
CR 81 Road Raise	WP33	ND	Jan 2018	Jan 2018	Feb 2018	April 2021	April 2021	April 2019	May 2021	4	
Southern Embankment (MN) <sup>8</sup>	WP29	MIN	Jan 2019	Jan 2019	Feb 2019	April 2019	April 2019	April 2020	May 2019	29 <sup>9</sup>	
BNSF Moorhead Line Raise	WP29	MIN	Jan 2019	Jan 2019	Feb 2019	April 2019	April 2019	April 2020	May 2019	-	
HWY 75 Bridge/Raise	WP29	MIN	Jan 2019	Jan 2019	Feb 2019	April 2019	April 2019	April 2020	May 2019	-	
Limited Service Spillway	WP39	ND	Jan 2020	Jan 2020	Feb 2020	April 2022	April 2022	April 2021	May 2022	17	
Comstock Ring Levee	WP52	MIN	Jan 2020	Jan 2020	Feb 2020	April 2020	April 2020	April 2021	May 2020	18	
Upstream Retention Area	WP38	ND	Jan 2018	Jan 2018	Feb 2018	-	-	April 2022	May 2022	513 <sup>10</sup>	
	WP38	MIN	Jan 2018	Jan 2018	Feb 2018	-	-	April 2022	May 2022	324	

NOTE: The property rights in the Upstream Retention Area will be acquired prior to the Project being operational, which is after the final segment of the embankment is constructed.

<sup>1</sup> Based on proposed P3 and USACE schedules from February 2016.

<sup>2</sup> See associated maps for location of work packages and impacted parcels.

<sup>3</sup> The work limits defining property acquisition needs are generally expected at the 65 percent design level.

<sup>4</sup> Initial notification shall be a letter from the acquiring entity, introducing the Land Agent, who will follow-up with separate correspondence indicating an intent to acquire, the process for acquisition, and an offer to meet.

<sup>5</sup> Diversion Channel Phase 1 includes Maple River & Sheyenne River Aqueduct Structures.

<sup>6</sup> Parcels for the I-29 Road Raise are the same as those for the Wild Rice Control Structure.

<sup>7</sup> The southern embankment in ND will likely be designed and constructed in three (3) phases.

<sup>8</sup> The southern embankment in MN will likely be designed and constructed in two (2) phases.

<sup>9</sup> Parcels for the southern embankment in MN include the properties needed for the BNSF and HWY 75 projects.

<sup>10</sup> Upstream retention area property rights will affect approximately 838 parcels in ND and MN.

## Early Residential Property Acquisition Program

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### Introduction

The FM Area Diversion Project (Project) requires acquisition of approximately 100 residential properties. The Diversion Authority aims to acquire these properties following a timeline based on design and construction schedules. That being said, and now that the Project Partnership Agreement (PPA) has been executed with the Federal Government, the Diversion Authority will entertain requests for early acquisition from impacted residences. The intention of this program is to allow residents to be acquired early if they desire.

### Early Acquisition Process

The following process will be used for early acquisition of impacted residences requiring acquisition or mitigation due to the Project.

- The Diversion Authority will approve an annual budget with a line item for 'early acquisitions'.
- The Diversion Authority will notify all impacted residences and make them aware of an opportunity for early acquisition.
- If impacted residents are interested in an early acquisition, they will be instructed to contact the acquiring entity (Cass County Joint Water Resource District (CCJWRD) or Moorhead-Clay County Joint Powers Agreement (MCCJPA)), or the Program Management Consultant (PMC).
- The PMC will confirm that the interested residence is impacted by the Project and assess the budget availability.
- If the property is impacted, and if there is budget available, the PMC will recommend proceeding with acquisition of the residence.
- The acquisition will then commence following the 'Typical Property Acquisition Process'.
- These early acquisitions may be considered voluntary because the acquiring entity may not be able to demonstrate necessity if negotiations are unsuccessful.

## Organic Farmland Acquisition Plan

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### Introduction

For typical farmland in the upstream retention area, the Project will need to obtain a flowage easement on the property, but for organic farmland, there is a chance that flooding could result in loss of organic certification, which requires three to five years to establish. As such, the Diversion Authority has developed a mitigation solution that allows for early mitigation of future impacts that may be caused by the Project.

### Organic Farmland Acquisition Plan

The Diversion Authority will offer early acquisition of organic farmlands in the upstream retention area so that the organic farmers have the opportunity to establish organic certification on new lands outside of the upstream retention area well in advance of Project operations. Upon acquisition of existing organic farmland, the Diversion Authority will enter into a rental agreement with the current organic farm operator to rent the existing organic farmland during the timeframe in which the organic certification is being established on new lands, which is typically three to five years.

It is understood that there are four organic farming operations within the vicinity of the upstream retention area of the Project. According to the MDNR EIS, the farmer-reported total organic acreage is approximately 3,625 acres, with approximately 2,900 acres within the upstream retention area.

The Diversion Authority will pay to conduct an appraisal of the organic farmland, and allow the property owner to conduct its own appraisal. Representatives from the Diversion Authority will present the appraisal and initial purchase offer to the property owner for consideration and to begin negotiations. The purchase agreement will be structured to allow a 1031 type tax exchange transaction.

The Diversion Authority will attach a flowage easement to the property upon acquisition.

The Diversion Authority will engage its farmland management firm to develop a farmland rental agreement with the organic producer.

Ultimately, after allowing sufficient time for the organic producer to establish new organic certified farmland, the Diversion Authority conduct a public sale of the property via its farmland management firm.

If the organic farmland owner declines to participate in this program, the typical mitigation approach will be used for the organic farmlands.



## Acquisition / Mitigation of Properties in the Upstream Retention Area

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### Introduction

The FM Area Diversion Project includes a diversion channel, levees through town, and retention of flood waters immediately upstream of the metro area. The retention of flood waters forms an upstream retention area (also referred to as Staging Area) that will require mitigation of its impacts. Mitigation for the upstream retention area includes acquisition or mitigation of structures and acquisition of flowage easements based on requirements established jointly by USACE and FEMA as well as the North Dakota State Water Commission (NDSWC) and the Minnesota Department of Natural Resources (MDNR).

This plan was developed with the intention to minimize to the extent possible the areas that will be encumbered by a restrictive flowage easement. This plan gives property owners in the “fringe” areas of the upstream retention area the option to consider a ‘pay for physical damages’ approach, or the flowage easement approach. The intent is to offer property owners in the “fringe” areas of the upstream retention area more certainty by proposing to pay actual, physical damages vs offering a one-time payment associated with a flowage easement, which would likely be a rather small payment, especially in the “fringe” areas where impacts are so infrequent.

This plan was prepared using an alternate southern embankment alignment between the Diversion Inlet Structure and the Wild Rice Control structure; the alignment used is located further south to avoid the I-29 intersection, to avoid a rural water well field, and preserve additional residences in this area.

### USACE / FEMA Coordination Plan

USACE and FEMA developed a Coordination Plan (April 2015, attached) that outlines floodplain management requirements for the Project, including Conditional Letter of Map Revision (CLOMR) requirements for floodplain map revisions and Project mitigation.

The Coordination Plan defines the revision reach for the CLOMR as follows:

“The extent of the revision is defined by an effective tie-in at the upstream and downstream limits for each flooding source. An effective tie-in is obtained when the revised base flood elevations from the post-project conditions model are within 0.5 feet of the pre-project conditions model at both the upstream and downstream limits.”

The Coordination Plan defines Staging Area Regulatory Mapping as follows:

“The aerial extent of flood inundation required by the Project for operation in the Staging Area will be mapped as floodway in order to ensure that the required storage volume is available for the project during the one-percent annual chance flood event. Any additional flood inundation area beyond the extents of what is required by the project during the one-percent annual chance flood event will be mapped as floodplain in order to portray the elevated flood risk outside of the required staging area.”

The Coordination Plan defines Mitigation of Project Impacts as follows:

“The extent of mitigation of impacts caused by the Project is also defined by the revision reach.” .... “The impacts caused by the Project on all insurable structures within the revision reach will be mitigated through agreed methods consistent with those specified by the National Flood Insurance Program (NFIP). For residential structures, these include elevation, relocation, buy-outs, and ring levees. For non-residential structures these include dry flood proofing, elevation, relocation, buy-outs, and ring levees.”

Additionally, as part of the permitting process for the southern embankment/dam, the NDSWC and MDNR have indicated the following requirements:

- NDSWC – Permit to Construct or Modify: “Evidence establishing a property right for all lands affected as a result of the final design elevation of the Limited Service Spillway”. The Limited Service Spillway will be constructed at elevation 924 (NAVD88).
- MDNR – Public Waters Work and Dam Safety: “Minnesota will require property rights up to the water surface elevation at the maximum capacity of the dam, which *currently* is 925 feet NAVD at the dam according to Appendix C of the Diversion Inlet Structure design.” (emphasis added)  
NOTE: Based on the most current design, the water surface elevation at the maximum capacity of the dam is actually now 924 feet (NAVD88), which reduced the areas impacted.

### Structure Mitigation in the Upstream Retention Area

Impacts to structures in the upstream retention area will be mitigated following the criteria outlined below.

- The Phase 8 hydraulic model will be used to determine the flood water depth at the structure under a one-percent annual chance (100-year) flood event with project and under existing conditions.
- The Phase 8 hydraulic model will be used to determine the Operating Pool (Floodway) in the upstream retention area.
- NOTE: Aerial photography of the upstream retention area will be taken before, during, and after flood events, and high-water marks will be surveyed to check and improve the hydraulic model for its use in the mitigation programs.
- If the flood water depth is greater than or equal to two-feet at the structure, the structure will be acquired via the typical acquisition process following an appraisal.
- If the structure is located within the floodway, it will be acquired via the typical acquisition process following an appraisal.
- If the flood water depth is less than two-feet at the structure, and if the structure is outside the floodway and within the FEMA revision reach, the Diversion Authority will consider, with the property owner, non-structural measures for the structure as well as offer to acquire the structure via the typical acquisition process following an appraisal. Non-structural measures for residential structures may include elevation, relocation, fee acquisition, and ring levees. Non-structural measures for or non-residential structures may include dry flood proofing, elevation,

relocation, fee acquisition, and ring levees. Wells and septic systems serving residences that will remain will be modified to prevent impacts from flooding. Each of these structures will be considered on a case-by-case basis, in coordination with the property owner.

- If the structure is located outside the FEMA revision reach, a takings analysis will be performed to determine appropriate remedial action.
- The owner and occupants of the acquired structures may be eligible for relocation benefits following the Uniform Act (URA).

## Land Mitigation in the Upstream Retention Area

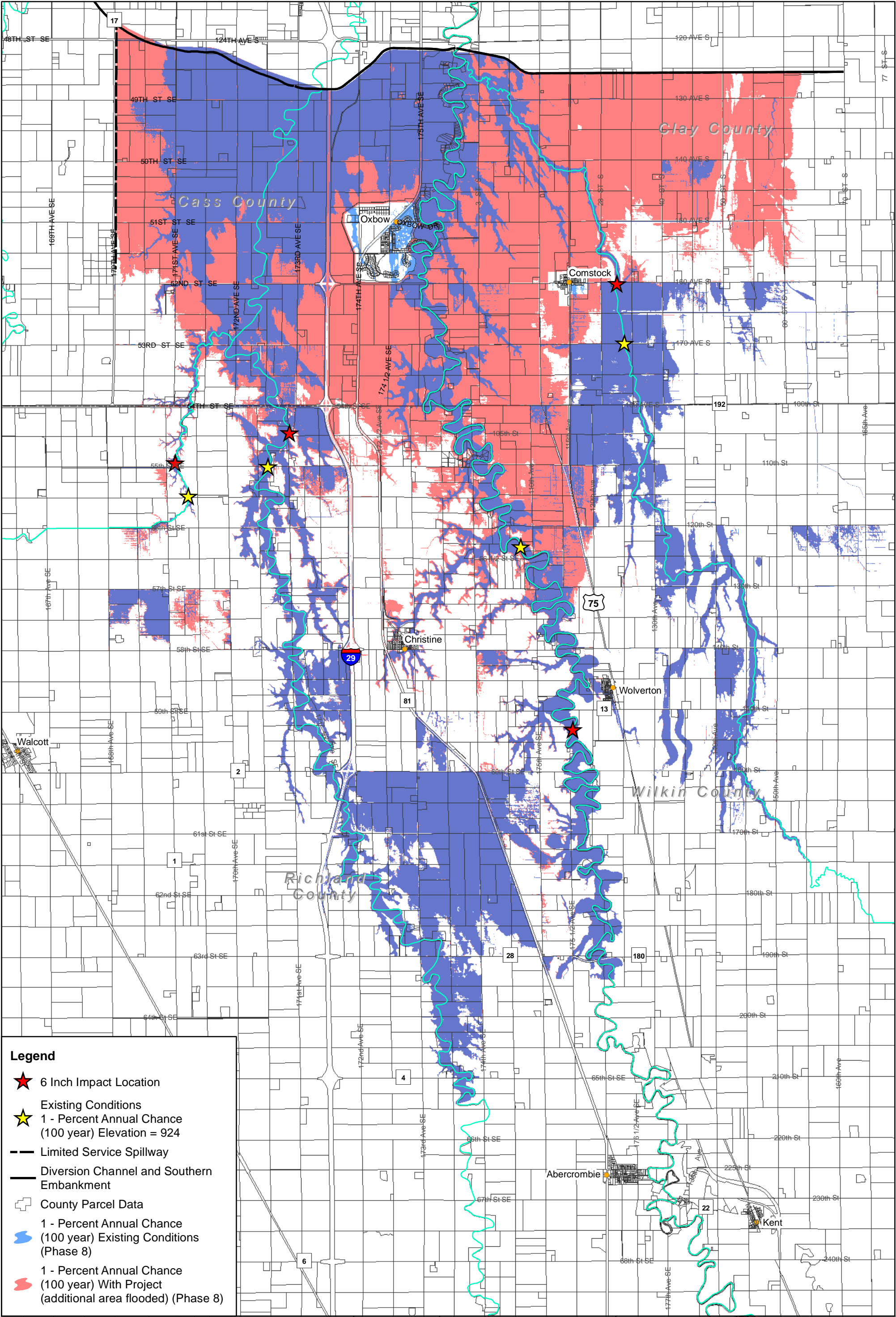
**Impacts to land in the upstream retention area will be mitigated following the criteria outlined below.**

- The Phase 8 hydraulic model will be used to define the 'existing' and 'with-project' flood water depths and durations within the upstream retention area.
- The Phase 8 hydraulic model will be used to determine the Operating Pool (Floodway) in the upstream retention area.
- The Diversion Authority (or its member entities) will obtain flowage easements on the following properties:
  - Properties within the Operating Pool (Floodway). This is a Federal requirement, and the flowage easement in this area will restrict all development. The Operating Pool (Floodway) is the area required for Project operation to mitigate downstream impacts. This area will be mapped as Floodway.
  - Properties with greater than or equal to six-inches of impact (defined as depth difference from the 'with-project' to the 'existing' flooding from the one-percent annual chance flood event) that are outside the Floodway, except along the Red River where the six-inch impact boundary extends upstream of where the existing one-percent annual chance flood elevation meets the 924-foot elevation. Flowage easements in this area will require developments to be above the one-percent annual chance flood elevation or the base flood elevation (BFE).
  - Flowage easements will not be obtained beyond where the existing one-percent annual chance flood elevation meets the 924-foot elevation because areas beyond these limits are located within the river channels.
- The Diversion Authority understands that the likely valuation of a flowage easement will be minimal relative to the concerns of the property owner. Therefore, the Diversion Authority proposes that for those properties with less than six inches of impact, if a flooding event occurs that damages a property, the Diversion Authority will pay actual, physical damages after Project operation on the following properties:
  - Areas outside of the flowage easement area (as defined above), but within the 924-foot elevation contour, extended to the next closest (upstream) property line, and limited along river channels to areas that have equal to or greater than six-inches of impact (defined as depth difference from the 'with-project' to the 'existing' flooding from the one-percent annual chance flood event).
  - Alternatively, if desired by the property owner, the Diversion Authority will offer a flat-rate flowage easement to property owners within this boundary.

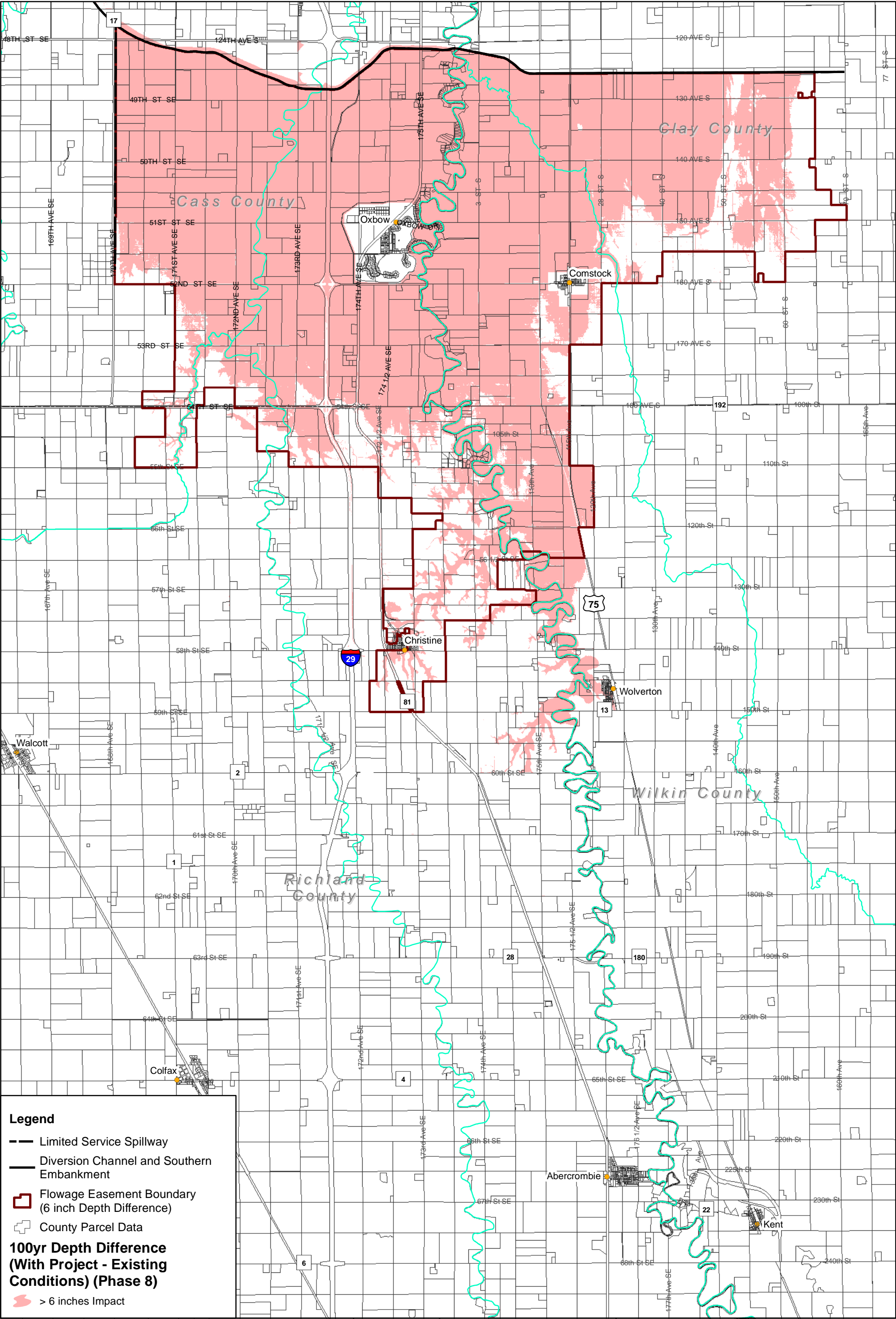
- The Diversion Authority will establish an Independent Damage Review Team to which property owners will be able to submit damage claims to. The formation of an Independent Damage Review Team is intended to provide a mechanism, other than legal action, for consideration of physical damage. However, this process is not intended to usurp any legal rights and related courses of action that property owners have with regards to damage claims. The Independent Damage Review Team will review each claim, utilize all available data, and make a determination if actual, physical damage was caused by the Project operation. The Diversion Authority will solicit members for the Independent Damage Review Team from the Diversion Authority, State of North Dakota, State of Minnesota, Richland County, and Wilkin County.
- The Diversion Authority will compensate for damages through an operating and maintenance (O&M) Funding Program that will also be used for other O&M expenses. The O&M Funding Program will utilize either sales tax revenues or a maintenance district on benefiting properties.

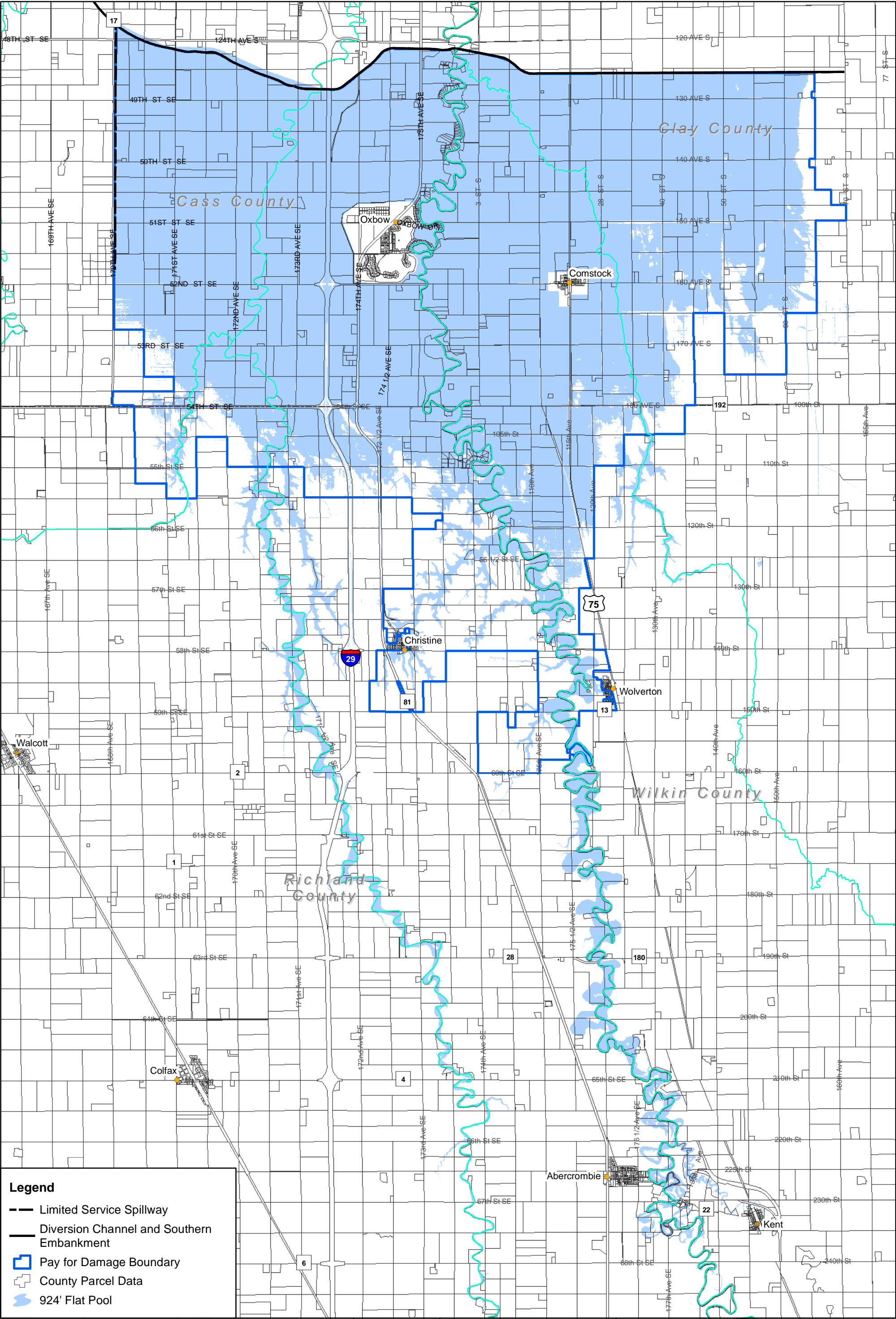
## Attachments

- Existing and With-Project One-Percent Annual Chance (100-year) Floodplain Map
- Six-Inch Impact and Flowage Easement Boundary Map
- 924-foot Elevation Contour and Pay for Damages Boundary Map
- Upstream Retention Area Mitigation Areas Map



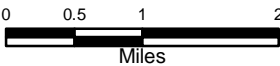


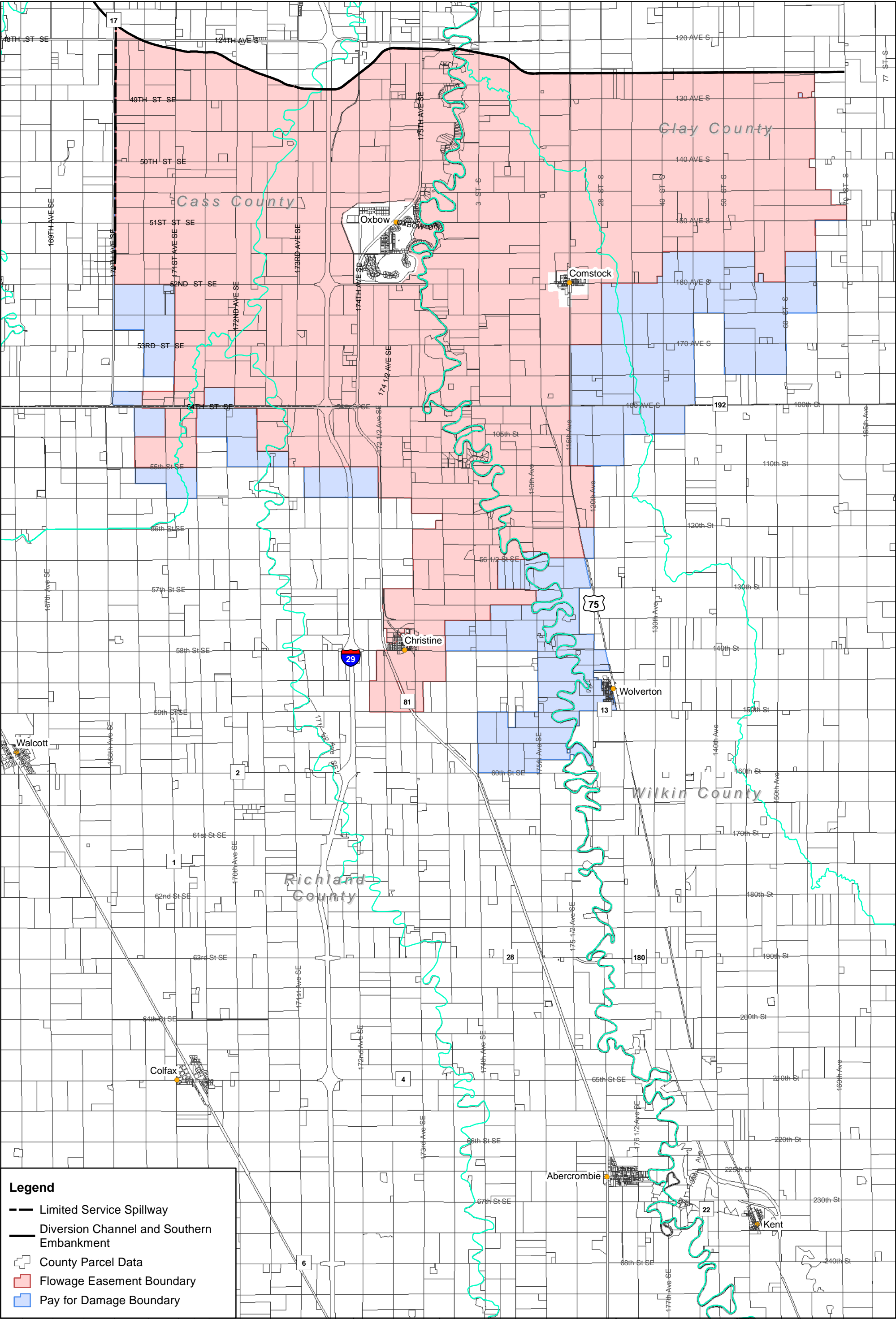




**Map 3: Upstream Retention Area Mitigation Plan  
Pay for Damage Boundary**

Created By: enelson Date Created: 8/22/2016 Date Exported: 9/8/2016 Image: 2015 County NAIP  
Elevation Data: IWI LIDAR Horizontal Datum: NAD 1983 BLM Zone 14N RUS Vertical Datum: North American 1983  
H:\Fargo\JBN\7400\7438\12\_7438\_008\Phase 18 - Phase 8 HEC-RAS Modeling\GIS\Ph8\_Mapping\_EasementBoundaries\_10\_1.mxd





- Legend**
- Limited Service Spillway
  - Diversion Channel and Southern Embankment
  - County Parcel Data
  - Flowage Easement Boundary
  - Pay for Damage Boundary

**Map 4: Upstream Retention Area Mitigation Plan  
Flowage Easement & Pay for Damages**

Created By: enelson Date Created: 8/22/2016 Date Exported: 9/8/2016 Image: 2015 County NAIP  
Elevation Data: IWI LIDAR Horizontal Datum: NAD 1983 BLM Zone 14N RUS Vertical Datum: North American 1983  
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## **FEMA/USACE Coordination Plan**

- Project:** Fargo-Moorhead Metropolitan Feasibility Study
- ND Diversion Channel with upstream staging – Federal Plan (Authorized WRRDA 2014)
- Project Design:** U.S. Army Corps of Engineers, St. Paul District
- Project Reach:** Diversion begins along the Red River of the North approximately 4 miles south of the confluences of the Red and Wild Rice Rivers and eventually re-enters the Red River north of the confluence of the Red and Sheyenne Rivers near the city of Georgetown, MN. Along the 36 mile path, it would cross the Wild Rice, Sheyenne, Maple, Lower Rush and Rush Rivers.

### **Floodplain Management Requirements – 44 CFR Sections 60.3, 65.3, 65.6, 65.8, and 65.12:**

#### **Section 60.3, Floodplain Management Criteria – requires that communities:**

- Notify adjacent communities and the state coordinating office prior to any alterations and submit copies to the Associate Administrator, Federal Insurance and Mitigation Administration (FIMA),
- Ensure the flood carrying capacity is maintained within any altered or relocated watercourse,
- Prohibit encroachments in the Special Flood Hazard Areas (SFHAs), the area subject to inundation during the base (1-percent-annual-chance) flood, with no mapped floodways that will cause increases in the base flood elevations (BFEs) of more than the allowable surcharge (1.0 in North Dakota and 0.5 in Minnesota),
- Prohibit encroachments in mapped floodways which would result in any increase in BFEs, and
- Notwithstanding any other provisions, if encroachments are allowed and will cause a rise in BFEs exceeding these limits, submit a Conditional Letter of Map Revision (CLOMR) for FEMA comment.

**Section 63.5, Requirement to Submit New Technical Data –** requires that communities submit new data when base flood elevations increase or decrease from physical changes that affect flooding conditions. This information must be submitted no later than 6 months after it becomes available.

**Section 65.6, Revision of Base Flood Elevation Determinations** – identifies data that communities must submit, under the map revision process, to support a request to revise the FIS report and FIRM including, but not necessarily limited to:

- new or revised hydrologic analysis,
- new or revised hydraulic analyses,
- new or revised delineation of floodplain boundaries, and
- new or revised floodways.

**Section 65.8, Review of Proposed Projects** – requests by communities for FEMA to provide:

- Written comments on proposed projects in the form of a Conditional Letter of Map Revision (CLOMR), and
- Comments on whether the proposed project will justify a revision to the FIRM, if the project is built as proposed.

Data required to support such requests are similar to data discussed above for a map revision.

**Section 65.12, Revisions to Reflect BFEs Caused by Encroachments** – requires that communities apply to FEMA for conditional approval (see 44 CFR Part 72 of the NFIP regulations ) of actions which will cause increases in BFEs in excess of the limits discussed above prior to permitting the encroachments to occur, and must:

- complete a request using the MT-2 application forms,
- provide an evaluation of alternatives,
- document individual legal notice to impacted property owners,
- obtain concurrence of CEOs of communities impacted by the proposed actions, and
- provide a certification that no structures are impacted by increased BFEs or a description of the proposed mitigation measures for all impacted structures, within the Revision Reach as defined below.

**FEMA Flood Insurance Study (FIS) Reports and Flood Insurance Rate Maps (FIRM):**

**Effective FIS Reports and FIRMs** - The Cass County, ND partial countywide FIS Report and FIRMs went effective on January 16, 2015. Effective FIS Reports and FIRMs for all communities impacted by the proposed project are available at the FEMA Map Service Center site at: <http://www.msc.fema.gov/>.

**Preliminary FIS Report and FIRMs** – Preliminary FIS Reports and FIRMs have been issued for Wilkin County, MN. Local project sponsors have access to the FIS and FIRMs effective and issued preliminary for their jurisdictions.

### **Red River of the North Modeling:**

**Effective FIRM Models** – The Eastern Cass Partial Countywide study went effective on January 16, 2015. The hydraulic analysis for the revised portion of the Red River of the North (South of 29<sup>th</sup> Street Southeast) was developed by Houston Engineering, Inc., and was finalized in February 2009. This analysis uses the USACE HEC-RAS steady flow model. Hydraulic analysis for the unrevised portion of the Red River of the North (North of 29<sup>th</sup> Street Southeast) was completed by the USACE in 1985. This analysis uses the USACE HEC-2 computer program.

**Preliminary FIRM Models** – Preliminary FIS Reports and FIRMs have been issued for Wilkin County, MN. The hydraulic analyses for the Red River of the North from the Clay County boundary to approximately 90 feet downstream from State Highway 210 were performed by USACE, St. Paul District and FEMA. The work was completed in January 2003. The models used for the preliminary FIS Report and FIRMs along the Red River of the North utilize the USACE HEC-RAS steady flow models.

**USACE Fargo-Moorhead Metropolitan Feasibility Study Models** – The HEC-RAS models used for this study along the Red River of the North were developed by the USACE by converting the 2003 steady flow models to unsteady flow models and also included updating overbank data with LiDAR information, updating channel bathymetry with recent surveys, and adding many storage areas and connections. The models prepared by USACE included:

- **Existing or Pre-Project Conditions Model (ECM)** – The USACE's updated HEC-RAS unsteady flow model which incorporates the updated floodplain and channel information will be used as the pre-project conditions model.
- **Revised or Post-Project Conditions (RCM) Model** – The USACE's updated HEC-RAS unsteady flow model for existing conditions was updated to include the effects of the proposed Fargo-Moorhead Metropolitan Feasibility Study project, and represents the post-project conditions model.

These models were based on the hydrology analysis for the wet period of record (1942-2009), which provides a peak discharge of 34,700 cubic feet per second (cfs), compared to the 29,300 cfs peak discharge used in the effective models for the 1-percent-chance-annual flood. FEMA has reviewed the hydrology for both the wet period 1-percent-chance-annual flood peak discharge of 34,700 cfs and the period of record (through 2009) peak discharge (33,000 cfs) and found that either discharge would be reasonable for FEMA mapping.

### **Impacts on Other Streams**

The other major streams potentially impacted by this project are:

- Wild Rice River
- Sheyenne River
- Maple River
- Lower Branch of the Rush River
- Rush River
- other minor streams shown on effected FIRMs along the proposed diversion route

### **Information Required for CLOMR Application:**

The following information would be needed for the submission of the CLOMR application:

- **MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision including:**
  - **Form 1 - Overview & Concurrence Form** provides the basic information regarding the revision request and requires the signatures of the requester, community official(s), and engineer,
  - **Form 2 -Riverine Hydrology & Hydraulics Form** provides the basic information on the scope and methodology of hydrologic and/or hydraulic analyses that are prepared in support of the revision request,
  - **Form 3 -Riverine Structures Form** provides the basic information regarding hydraulic structures constructed in the stream channel or floodplain. This form should be used for revision requests that involve new or proposed channelization, bridges/culverts, dams/basins, and/or levees/floodwalls,
  - **Payment Information Form** -Provides the basic information regarding any fees paid for a CLOMR, if required (note: federally sponsored flood-control-projects where 50 percent or more of the project's costs are federally funded are exempt from fees), and
  - **ESA Compliance Documentation** – must be submitted for CLOMRs only. Appropriate documentation includes a copy of an Incidental Take Permit, an Incidental Take Statement, a “not likely to adversely affect” determination from NMFS or USFWS, or an official letter from NMFS or USFWS concurring that the project has “No Effect” on proposed or listed species or designated critical habitat.

- **Additional supporting information which would accompany the forms listed above includes:**
  - **Revision Reach** - The extent of the revision is defined by an effective tie-in at the upstream and downstream limits for each flooding source. An effective tie-in is obtained when the revised base flood elevations from the *post-project* conditions model are within 0.5 feet of the *pre-project* conditions model at both the upstream and downstream limits. The downstream end of the revision reach is at the outlet of the diversion channel, and the upstream end of the reach will be near model station 2650000 as shown in the attached map. The upstream end of the reach on the Red River is approximately 2 miles east and 0.75 miles north of Christine, ND. Christine, ND is within the revision area. The upstream end of the reach on the Wild Rice River coincides with the northern boundary of Richland County, ND.
  - **Staging Area Regulatory Mapping** - The areal extent of flood inundation required by the Project for operation in the Staging Area will be mapped as floodway in order to ensure that the required storage volume is available for the project during the 1-percent-annual-chance event. Any additional flood inundation area beyond the extents of what is required by the project during the 1-percent-annual-chance event will be mapped as floodplain in order to portray the elevated flood risk outside of the required staging area.
  - **Mitigation of Project Impacts** - The extent of mitigation of impacts caused by the Project is also defined by the revision reach. The impacts within the designated project Staging Area will be mitigated in accordance with the Project's Feasibility Study/EIS (FEIS) dated July 2011, and authorized for construction in WRRDA 2014. Impacts caused by the Project to structures located within the revision reach that are not identified for mitigation in the FEIS will generally follow the same mitigation strategy as identified in the FEIS. The impacts caused by the Project on all insurable structures within the revision reach will be mitigated through agreed methods consistent with those specified by the National Flood Insurance Program (NFIP). For residential structures, these include elevation, relocation, buy-outs, and ring levees. For non-residential structures, these include dry flood proofing, elevation, relocation, buy-outs, and ring levees. The CLOMR will include a general plan as to how structures will be mitigated. A site-by-site analysis will not be necessary for the CLOMR.

- **Models accompanying Form 2 including:**
  - **Corrected Effective Model (CEM)** – The USACE 2003 steady flow HEC-RAS model is utilized to best represent the current effective and preliminary modeling on the Red River of the North. It uses the current effective peak discharge for the 1-percent-chance-annual flood (29,300 cfs). Therefore, this model will be the base condition model used for comparison purposes in the CLOMR submittal.
  - **Existing or Pre-Project Conditions Model (ECM)** – The USACE's updated HEC-RAS unsteady flow model which incorporates the updated floodplain and channel information will be used as the pre-project conditions model.
  - **Revised or Post-Project Conditions (RCM) Model** – The USACE's updated HEC-RAS unsteady flow model for existing conditions was updated to include the effects of the proposed Fargo-Moorhead Metropolitan Feasibility Study project, and represents the post-project conditions model.
- **Public Notices and Property Owner Notifications** - The primary purpose for notifications, whether they are public notices or property owner notifications, is to make certain that all affected parties (property owners and communities) are aware of any proposed changes to the map prior to those changes being permitted and shown on a revised FIRM.
  - **For Section 65.12 Revisions Based on Proposed Encroachments** - This requirement is met by providing individual legal notice to all impacted property owners explaining the impact of the proposed map revision on their property. The community must notify property owners of the impact to their property prior to the community issuing building and/or construction permits for the proposed project.
  - **For Section 65.6 Revisions of Base Flood Elevations** – Anytime BFEs are being revised (whether increasing or decreasing) or being established along a flooding source, notification of these BFEs must be published in the community's local newspaper twice within a 10-day period. FEMA publishes this notification, on behalf of the affected community(s). The

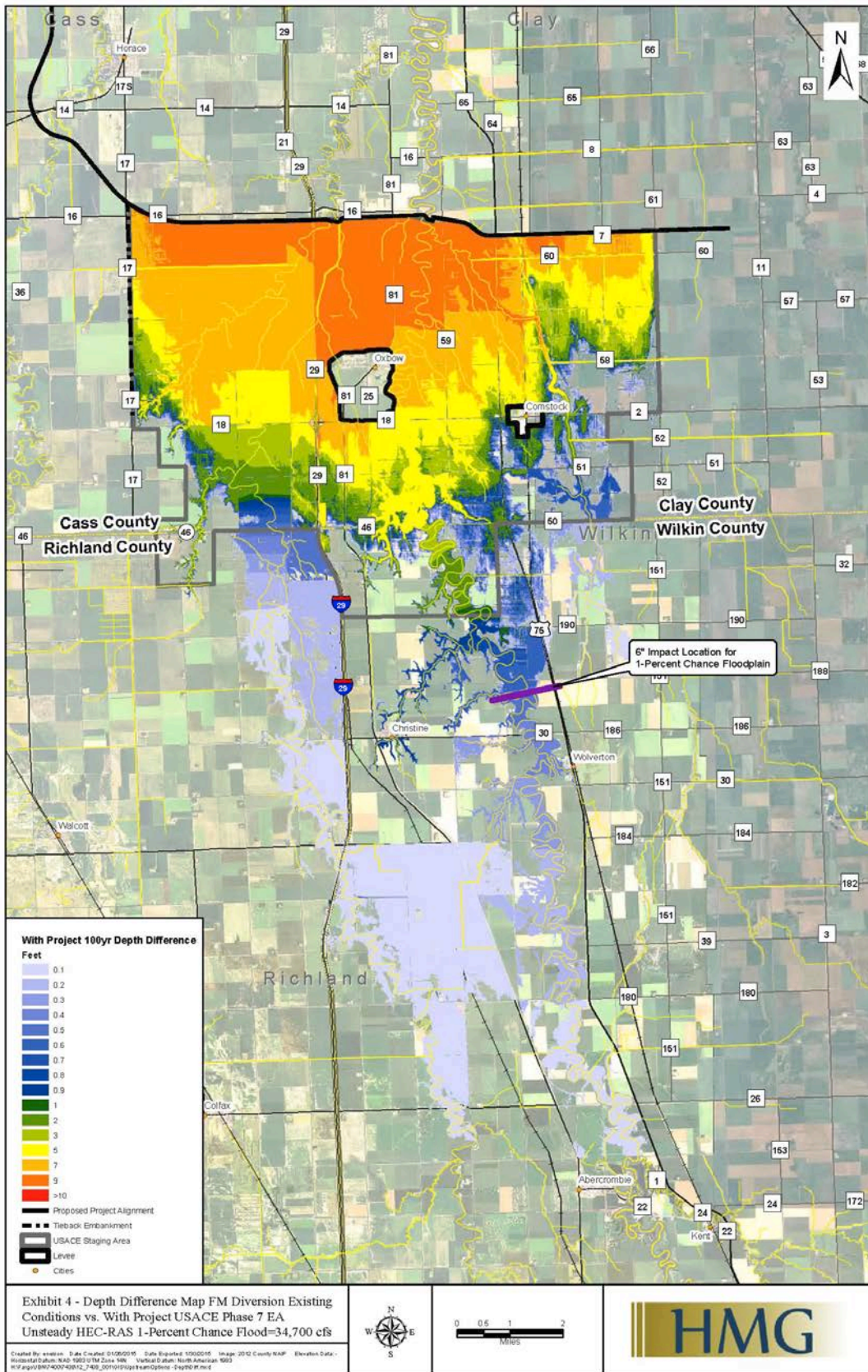
2<sup>nd</sup> publication date of this notice initiates the 90-day appeal process for the map revision. The notification is required during the actual map revision process.

- **Comparison of Models** – A comparison of the models should be made to address the impacts of the project on the corrected effective, existing or pre-project, and revised or post-project conditions BFEs, and SFHA and floodway boundaries. Discharge differences between the various models based on updated or revised hydrology conditions should also be discussed and evaluated.
- **Suggested Model Comparisons:**
  - Comparisons of the CEM BFEs to the BFEs for the current effective FIS profiles (which are both based on the same peak 1-percent-annual-chance discharges) discussing the differences in the BFEs.
  - The ECM to the CEM. For this comparison, since the ECM model uses HEC-RAS unsteady flow with updated hydrologic data and the CEM model uses HEC-RAS steady flow, the 1-percent-annual-chance peak discharges are not similar and cannot be compared directly. Therefore, the comparisons would be best estimated by comparing the ECM model elevations for the 2-percent-annual-chance flood (peak discharge comparable to the CEM 1-percent-chance-annual discharge) to the CEM 1-percent-annual-chance elevations. Discuss and explain the differences related to hydrologic and hydraulic conditions in the models.
  - The RCM to the ECM, which represents the comparison of the post-project conditions to the pre-project conditions. For this comparison, discuss the differences in BFEs and boundaries of the SFHAs and floodways. In addition to the Red River of the North, comparisons for all other flooding sources shown on the effective FIRMs, where applicable, will be necessary.
  - The RCM to CEM, which represents the comparison of the post-project conditions to the base conditions model and identifies the area impacted by this revision request.



**Information Required for Map Revision Application:**

It is anticipated that a request for a map revision will be submitted upon completion the project. The ECM and the RCM will be updated to reflect post-project conditions and used in the submittal for the map revision for the project. Information will need to follow the requirements of 44 CFR Part Section 65.6 and the MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision. Remapping will be initiated upon request by the local communities, following project completion.



## **CLOMR Listed Properties**

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A preliminary list of residential and non-residential structures is attached. The list includes 75 residential structures and 562 non-residential structures.

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	999-9999	All
Residential	57080000020000	Cass
Non-Residential	57040000120000	Cass
Residential	57040000100000	Cass
Non-Residential	57000010309030	Cass
Non-Residential	57000010309030	Cass
Residential	57000010309030	Cass
Residential	57000010309030	Cass
Residential	57000010314010	Cass
Non-Residential	57000010314010	Cass
Non-Residential	57000010217030	Cass
Non-Residential	57000010217030	Cass
Non-Residential	57000010217030	Cass
Non-Residential	57000010217030	Cass
Non-Residential	57000010217030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Non-Residential	57000010286030	Cass
Residential	57050000070000	Cass
Non-Residential	57000010211060	Cass
Non-Residential	57000010211060	Cass
Structure Removed	57000010211060	Cass
Residential	57000010211080	Cass
Non-Residential	57000010211080	Cass
Residential	57000010206030	Cass
Non-Residential	57040000220000	Cass
Non-Residential	57040000210000	Cass
Non-Residential	57000010320030	Cass
Non-Residential	57000010320030	Cass
Residential	57000010320030	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Residential	57000010246020	Cass
Non-Residential	57000010246020	Cass
Residential	57034000010000	Cass
Residential	57000010266000	Cass
Non-Residential	57000010266000	Cass
Non-Residential	57000010266000	Cass
Non-Residential	57000010369010	Cass
Non-Residential	57000010369010	Cass
Non-Residential	57000010369010	Cass
Non-Residential	57000010369010	Cass
Non-Residential	57000010369010	Cass
Residential	57000010369010	Cass
Non-Residential	57000010360020	Cass
Non-Residential	57000010360020	Cass
Non-Residential	57000010360020	Cass
Non-Residential	57000010360020	Cass
Residential	57075000010000	Cass
Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass
Non-Residential	57000010274020	Cass

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	57000010274020	Cass
Non-Residential	57000010320050	Cass
Non-Residential	57000010320050	Cass
Non-Residential	57000010320050	Cass
Non-Residential	57000010314000	Cass
Non-Residential	57000010314000	Cass
Residential	57000010314000	Cass
Non-Residential	57000010314000	Cass
Structure Removed	57000010280030	Cass
Non-Residential	57000010280030	Cass
Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Structure Removed	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010280030	Cass
Non-Residential	57000010218020	Cass
Non-Residential	57000010218020	Cass
Non-Residential	57000010218020	Cass
Non-Residential	57000010218020	Cass
Non-Residential	57000010218020	Cass
Non-Residential	57000010218020	Cass
Residential	57000010218020	Cass
Non-Residential	57000010271000	Cass
Non-Residential	57000010271000	Cass
Non-Residential	57000010271000	Cass
Non-Residential	57000010271000	Cass
Non-Residential	57000010271000	Cass
Residential	57000010271000	Cass
Non-Residential	57000010212011	Cass
Non-Residential	57000010212011	Cass
Non-Residential	57000010212011	Cass
Non-Residential	57000010212011	Cass
Residential	57000010213000	Cass
Non-Residential	57000010201040	Cass
Residential	57050000030000	Cass
Non-Residential	57000010201117	Cass
Non-Residential	57000010201117	Cass
Residential	57000010201117	Cass
Non-Residential	57000010201117	Cass

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Residential	57080000010000	Cass
Non-Residential	57000010420070	Cass
Non-Residential	57080000010000	Cass
Non-Residential	57050000020000	Cass
Residential	57050000020000	Cass
Non-Residential	57034000040000	Cass
Non-Residential	57000010266010	Cass
Non-Residential	57000010266010	Cass
Non-Residential	57000010266010	Cass
Non-Residential	57000010266010	Cass
Residential	57059000010000	Cass
Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Structure Removed	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Structure Removed	57000010275010	Cass
Non-Residential	57000010275010	Cass
Non-Residential	57000010275010	Cass
Residential	57000010350017	Cass
Non-Residential	57000010350017	Cass
Non-Residential	57000010350017	Cass
Non-Residential	57000010350017	Cass
Non-Residential	57000010350017	Cass
Structure Removed	57000010350017	Cass
Non-Residential	57000010219020	Cass
Non-Residential	57000010219020	Cass
Residential	57000010219020	Cass
Non-Residential	57000010219020	Cass
Non-Residential	57000010219020	Cass
Non-Residential	57000010206010	Cass
Residential	57000010206010	Cass
Non-Residential	57000010280010	Cass
Non-Residential	57000010290010	Cass
Non-Residential	57000010290010	Cass
Non-Residential	57000010290010	Cass
Residential	57000010201120	Cass
Non-Residential	57000010201120	Cass
Non-Residential	57000010417010	Cass

## CLOMR List of Properties (Preliminary)

[illegible]



## CLOMR List of Properties (Preliminary)

Struc_typ	GISPIN	County
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010349000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Structure Removed	57000010349000	Cass
Non-Residential	57000010346000	Cass
Non-Residential	57000010346000	Cass
Structure Removed	57000010276000	Cass
Non-Residential	57000010276000	Cass
Residential	57000010276000	Cass
Residential	57000010276000	Cass
Non-Residential	57000010276000	Cass
Non-Residential	57000010276000	Cass
Residential	57000010244000	Cass
Non-Residential	57000010244000	Cass
Non-Residential	57000010244000	Cass
Structure Removed	57000010335070	Cass
Structure Removed	57000010335070	Cass
Structure Removed	57000010335070	Cass
Non-Residential	57000010335070	Cass
Non-Residential	57000010420040	Cass
Residential	57000010320040	Cass
Non-Residential	57000010320040	Cass
Non-Residential	57000010320040	Cass
Non-Residential	57000010320040	Cass

## CLOMR List of Properties (Preliminary)

[illegible]

## CLOMR List of Properties (Preliminary)

Struc_typ	GISPIN	County
Structure Removed	78001000640020	Cass
Residential	57060000040000	Cass
Non-Residential	57060000040000	Cass
Non-Residential	57060000040000	Cass
Non-Residential	57060000040000	Cass
Non-Residential	57000010368020	Cass
Non-Residential	57000010368030	Cass
Non-Residential	57000010368030	Cass
Non-Residential	57000010368030	Cass
Non-Residential	57000010368030	Cass
Non-Residential	57037500010000	Cass
Structure Removed	57037500010000	Cass
Non-Residential	15.022.4002	Clay
Non-Residential	15.029.3001	Clay
Non-Residential	15.029.3001	Clay
Non-Residential	15.009.3700	Clay
Non-Residential	15.009.3700	Clay
Non-Residential	15.009.3700	Clay
Residential	15.009.3700	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.2000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.015.3000	Clay
Non-Residential	15.004.3000	Clay
Structure Removed	15.007.1251	Clay
Structure Removed	15.007.1251	Clay

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Structure Removed	15.007.1251	Clay
Structure Removed	15.007.1251	Clay
Structure Removed	15.007.1251	Clay
Residential	15.007.1251	Clay
Non-Residential	15.007.1251	Clay
Non-Residential	15.007.1251	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.007.1250	Clay
Non-Residential	15.009.1000	Clay
Non-Residential	15.009.1000	Clay
Non-Residential	15.009.1000	Clay
Non-Residential	15.009.1000	Clay
Non-Residential	15.009.1000	Clay
Non-Residential	15.031.1801	Clay
Non-Residential	15.031.1801	Clay
Non-Residential	15.006.4701	Clay
Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.006.4701	Clay
Non-Residential	15.019.1001	Clay
Residential	15.019.1001	Clay
Non-Residential	15.019.1001	Clay
Non-Residential	15.019.1001	Clay
Non-Residential	15.019.1001	Clay
Non-Residential	15.019.1001	Clay
Non-Residential	15.019.1001	Clay
Non-Residential	15.020.4400	Clay
Non-Residential	15.020.4400	Clay
Non-Residential	15.020.4400	Clay
Non-Residential	15.020.4400	Clay
Non-Residential	15.020.4400	Clay
Non-Residential	15.020.4400	Clay

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	15.007.1100	Clay
Non-Residential	15.006.1102	Clay
Non-Residential	15.006.1102	Clay
Non-Residential	15.006.1102	Clay
Structure Removed	15.018.1800	Clay
Structure Removed	15.018.1800	Clay
Structure Removed	15.018.1800	Clay
Non-Residential	15.004.3301	Clay
Non-Residential	15.004.3301	Clay
Residential	15.004.3301	Clay
Structure Removed	15.017.2101	Clay
Structure Removed	15.017.2101	Clay
Structure Removed	15.017.2101	Clay
Non-Residential	15.017.2101	Clay
Non-Residential	15.017.2101	Clay
Non-Residential	15.017.2101	Clay
Residential	15.017.2101	Clay
Non-Residential	15.003.3601	Clay
Residential	15.003.3601	Clay
Non-Residential	15.003.3601	Clay
Non-Residential	15.003.3601	Clay
Non-Residential	15.003.3601	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Non-Residential	15.002.3200	Clay
Structure Removed	15.006.4100	Clay
Non-Residential	15.006.4100	Clay

## CLOMR List of Properties (Preliminary)

[illegible]

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	15.029.3003	Clay
Non-Residential	15.029.3003	Clay
Non-Residential	15.029.3003	Clay
Non-Residential	15.029.3003	Clay
Non-Residential	15.029.3003	Clay
Non-Residential	15.014.3801	Clay
Non-Residential	15.014.3801	Clay
Non-Residential	15.019.4500	Clay
Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.019.4500	Clay
Non-Residential	15.031.4401	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4002	Clay
Non-Residential	15.031.4000	Clay
Non-Residential	15.009.1001	Clay
Non-Residential	15.009.1001	Clay
Non-Residential	15.009.1001	Clay
Non-Residential	15.009.1001	Clay
Residential	15.009.1001	Clay
Non-Residential	15.009.1001	Clay
Non-Residential	15.009.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay



**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.015.1001	Clay
Non-Residential	15.016.3001	Clay
Non-Residential	15.016.3001	Clay
Non-Residential	15.016.3001	Clay
Residential	15.016.3001	Clay
Non-Residential	15.016.3001	Clay
Non-Residential	15.016.3001	Clay
Non-Residential	15.016.3001	Clay
Residential	15.029.3002	Clay
Residential	15.009.3201	Clay
Non-Residential	15.030.4710	Clay
Residential	15.030.4710	Clay
Non-Residential	15.030.4710	Clay
Non-Residential	15.019.3400	Clay
Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Structure Removed	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Non-Residential	15.019.3400	Clay
Structure Removed	15.019.3400	Clay
Non-Residential	15.008.2301	Clay
Residential	15.008.2301	Clay
Non-Residential	15.008.2301	Clay
Non-Residential	15.008.2301	Clay
Non-Residential	15.005.4000	Clay
Non-Residential	15.005.4000	Clay
Non-Residential	15.005.4000	Clay

## CLOMR List of Properties (Preliminary)

Struc_typ	GISPIN	County
Non-Residential	15.005.4000	Clay
Non-Residential	15.005.4000	Clay
Residential	15.005.4000	Clay
Non-Residential	15.005.4000	Clay
Non-Residential	15.005.4000	Clay
Residential	15.030.4100	Clay
Structure Removed	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Non-Residential	15.030.4100	Clay
Residential	15.030.4101	Clay
Non-Residential	01-0000-00032.000	Richland
Non-Residential	01-0000-00001.130	Richland
Non-Residential	01-0000-00001.130	Richland
Residential	01-0000-00001.190	Richland
Non-Residential	01-0000-00001.180	Richland
Non-Residential	02-0000-00319.100	Richland
Non-Residential	49-0001-04994.000	Richland
Non-Residential	01-0000-00088.100	Richland
Non-Residential	01-0000-00088.100	Richland
Non-Residential	01-0000-00088.100	Richland
Non-Residential	01-0000-00114.000	Richland
Non-Residential	01-0000-00114.000	Richland
Non-Residential	01-0000-00028.000	Richland
Non-Residential	01-0000-00028.000	Richland
Non-Residential	01-0000-00068.100	Richland
Non-Residential	01-0000-00068.100	Richland
Non-Residential	01-0000-00068.100	Richland
Non-Residential	01-0000-00068.100	Richland
Non-Residential	49-0001-04849.000	Richland
Non-Residential	49-1410-05030.000	Richland
Non-Residential	01-0000-00004.201	Richland
Non-Residential	01-0000-00072.000	Richland
Non-Residential	01-0000-00074.000	Richland
Non-Residential	01-0000-00074.000	Richland
Non-Residential	02-0000-00314.000	Richland
Non-Residential	49-0500-05032.030	Richland

## CLOMR List of Properties (Preliminary)

Struc_typ	GISPIN	County
Non-Residential	49-0001-04846.000	Richland
Non-Residential	01-0100-00004.010	Richland
Non-Residential	01-0100-00004.000	Richland
Non-Residential	49-0001-05004.000	Richland
Non-Residential	01-0000-00121.100	Richland
Residential	01-0000-00121.100	Richland
Non-Residential	02-0000-00318.100	Richland
Non-Residential	02-0000-00318.100	Richland
Non-Residential	02-0000-00318.100	Richland
Non-Residential	01-0000-00008.000	Richland
Non-Residential	01-0000-00008.000	Richland
Non-Residential	01-0000-00094.000	Richland
Non-Residential	01-0000-00094.000	Richland
Non-Residential	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Non-Residential	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Residential	02-0000-00321.000	Richland
Structure Removed	02-0000-00321.000	Richland
Non-Residential	DEDICATEDROW	Wilkin
Non-Residential	22-005-0300	Wilkin
Non-Residential	22-005-0300	Wilkin
Residential	22-007-0610	Wilkin
Residential	22-007-0610	Wilkin
Non-Residential	22-007-0610	Wilkin
Non-Residential	22-008-0700	Wilkin
Non-Residential	31-050-0250	Wilkin
Non-Residential	22-020-0100	Wilkin
Non-Residential	22-029-0110	Wilkin

**CLOMR List of Properties (Preliminary)**

<b>Struc_typ</b>	<b>GISPIN</b>	<b>County</b>
Structure Removed	22-007-0510	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-007-0400	Wilkin
Non-Residential	22-008-0110	Wilkin
Non-Residential	22-008-0110	Wilkin
Non-Residential	22-101-0305	Wilkin
Non-Residential	22-101-0305	Wilkin
Non-Residential	31-724-0330	Wilkin
Residential	31-028-0240	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-029-0200	Wilkin
Non-Residential	22-017-0700	Wilkin
Non-Residential	22-017-0700	Wilkin
Non-Residential	22-007-0100	Wilkin
Residential	31-028-0230	Wilkin
Non-Residential	31-028-0230	Wilkin
Non-Residential	31-028-0230	Wilkin
Structure Removed	22-018-0120	Wilkin
Non-Residential	22-018-0120	Wilkin
Non-Residential	22-018-0120	Wilkin
Non-Residential	31-724-0320	Wilkin
Residential	31-724-0320	Wilkin
Structure Removed	22-017-0510	Wilkin
Residential	31-028-0220	Wilkin
Non-Residential	22-101-0400	Wilkin
Non-Residential	22-101-0400	Wilkin
Non-Residential	31-028-0340	Wilkin

## Flowage Easement Plan

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### Why is a Flowage Easement needed?

- The FM Area Diversion Project includes a retention area upstream of the Project. The retention area is a necessary component of the Project, and it will periodically and temporarily store flood waters.
- The Diversion Authority needs to obtain flowage easements to provide the legal right to inundate properties in the upstream retention area.
- The North Dakota State Water Commission and the Minnesota Department of Natural Resources have indicated that the Project will need to obtain property rights for lands below the top of Limited Service Spillway elevation of the southern embankment, and within the maximum pool elevation. The elevation of the Limited Service Spillway and maximum pool elevation area both expected to be 924 feet (NAVD88). This area is approximately 53,000 acres.
- A floodway and a floodplain will be defined within the upstream retention area in accordance with the FEMA/USACE Coordination Plan. The floodway, or operating pool are required for operation of the Project to offset downstream impacts that would exist without the upstream retention. No development will be allowed in the floodway. Development in the floodplain may be allowed in accordance with floodplain development ordinances, rules, regulations, and the terms and conditions of the flowage easement.

### What is a Flowage Easement?

- The easement provides the legal right to inundate property as part of the operation of the Project.
- USACE policy defines the compensation for a flowage easement as a one-time payment made at the time that the easement is acquired.
- The flowage easement will compensate for all impacts caused by the Project, such as potential loss of development rights, agricultural production impacts, and periodic and temporary flooding impacts (debris).
- Flowage easements will allow for farming to continue on properties, however development will be regulated.

### How will the value of the Flowage Easement be determined?

- The value of a flowage easement on an individual property will follow Federal/USACE process.
- Factors that will be considered are depth, duration, and frequency of additional flooding, and the highest and best use of the property.
- It is expected that an appraiser will conduct a “before and after” appraisal in which the market value of the property before the flowage easement are applied, and the market value after the flowage easement conditions are applied. The market value of the flowage easement will be a result of those two valuations.
- The appraiser of the property may consider future impacts including delayed planting, yield loss, debris, and limitations to future land use, resulting from operation of the Project. The appraiser may also consider the summer operation supplemental farm income program.

- Values of flowage easements will vary depending on the location of the property, magnitude of impacts, and future risks to the property.
- The flowage easement payment will be a one-time payment to the property owner. The payment will be made when the easement is acquired.

### **What are the terms and conditions of the Flowage Easement?**

- Description of the “Easement Property” upon which the easement applies.
- Right to occasionally overflow, flood and submerge the Easement Property in connection with the operation, maintenance, repair, replacement and rehabilitation of the Project.
- Definition of development potential in compliance with FEMA and local floodplain development rules.
- Access rights related to the Project for conducting observations, surveys, reviews, and data collection for environmental assessments; conducting topographic field and parcel surveys, soil analysis, soil borings, and other investigations; conducting water level, erosion, water quality, habitat, environmental, and other relevant monitoring; performing any other testing, surveys, and analysis; and necessary and reasonable rights of ingress and egress to and from an “Access Area” of the Easement Property.
- Removal of all structures in the floodway, and those not allowed in the floodplain.
- Use of the property by Grantor (property owner) and Grantee (Diversion Authority).
- Payment for damages caused by the exercise of the above described access rights.
- Landowners are allowed to mortgage the property as long as the mortgage is subordinate to the flowage easement.
- Other legal terms including governing law, severability, etc.

### **When will the Flowage Easements be obtained?**

- Flowage easements need to be acquired prior to operation of the Project. The current schedule and estimate indicates that flowage easements will need to be acquired by 2024.
- It is anticipated that several years will be required to acquire all of the flowage easements necessary for the Project.
- The Diversion Authority may start early in approaching property owners in the upstream retention area with flowage easement needs.

### **Who will obtain the Flowage Easements?**

- The Diversion Authority has assigned the property acquisition role in North Dakota to the Cass County Joint Water Resource District (CCJWRD).
- The Diversion Authority intends to assign the property acquisition role in Minnesota to a newly formed organization referred to as the Moorhead-Clay County Joint Powers Agreement (MCCJPA). That entity is not fully established yet.

## Sample Flowage Easement

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### FLOWAGE EASEMENT

THIS EASEMENT is made this \_\_\_\_ day of \_\_\_\_\_, 201X, by **[Insert Name(s)]**, **[Insert Marital Status]**, whose post office address is **[Insert Address]** ("Grantor"); and the **[Insert Acquiring Entity Name]**, a [ pick one: Minnesota / North Dakota ] political subdivision, whose post office address is **[Insert Address]**, and its successors and assigns ("Grantee").

### RECITALS

A. The Grantee is a member of the METRO FLOOD DIVERSION BOARD OF AUTHORITY, a joint powers entity consisting of Clay County, Minnesota; City of Moorhead, Minnesota; Cass County, North Dakota; City of Fargo, North Dakota; and the Cass County Joint Water Resource District (the "Diversion Authority").

B. The Fargo-Moorhead Metro Flood Risk Management Project is a flood risk management project, sponsored by the United States Army Corps of Engineers (the "Corps") and the Diversion Authority, which includes a diversion channel and appurtenant staging and storage areas to reduce flood damages and risks in the region; the parties refer to the project as the FARGO-MOORHEAD METROPOLITAN AREA FLOOD RISK MANAGEMENT PROJECT, which is a federally authorized project pursuant to Section 7002(2) of the Water Resources Reform and Development Act of 2014 (the "Project").

C. Grantor owns certain real property in the vicinity of the Project, more specifically described below, in an area that may be subject to temporary and periodic flooding as a result of the Project.

D. Grantor has agreed to convey to Grantee a permanent easement, as more specifically described below, to permit Grantee to periodically flood portions of Grantor's property as well as granting certain access, survey, and exploration rights to Grantee.

E. Grantor agrees to grant and convey to Grantee an easement over the property described below, subject to the terms and conditions contained in this Easement.

In consideration of \$XXX.XX, the mutual covenants contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which the parties acknowledge, the parties agree as follows:

## AGREEMENT

1. **The Easement Property.** Grantor grants and conveys to Grantee a permanent easement in, on, over, through, and across the following real property in [ **Insert County and State** ]:

**[Insert Description]**

The above described tract contains \_\_\_\_\_ acres, more or less.

(Collectively, the "Easement Property.")

A. Under this Easement, Grantor grants to Grantee, its officers, employees, agents, representatives, contractors, and subcontractors the following perpetual right, power, privilege and easement occasionally to overflow, flood and submerge the Easement Property in connection with the operation, maintenance, repair, replacement and rehabilitation of the Project as authorized by Section 7002(2) of the Water Resources Reform and Development Act of 2014, approved June 10, 2014, together with all right, title and interest in and to the structures and improvements now situated on the Easement Property, excepting fencing, and excepting any existing structures outside the Federal Emergency Management Agency (FEMA) floodway (based on the conditional letter of map revision (CLOMR)) that are in compliance, or Grantor may improve to be in compliance with floodplain development ordinances enforced by the local government agency and in compliance with FEMA floodplain development rules, and also excepting any newly constructed structures outside the established FEMA floodway on the Easement Property in accordance with floodplain development ordinances enforced by the local government agency and in accordance with FEMA floodplain development rules, and that no excavation shall be conducted and no fill placed on land within the established FEMA floodway without such approval as to the location and method of excavation and/or placement of fill and verification that the fill will not impact Project operation; the above estate is taken subject to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used and enjoyed without interfering with the use of the Project for the purposes authorized by Congress or abridging the rights and easement hereby acquired; provided further that any use of the land shall be subject to Federal and State laws with respect to pollution.

B. Additionally under this Easement, Grantor grants to Grantee, its officers, employees, agents, representatives, contractors, and subcontractors, and the United States, the following access rights related to the Project regarding the Easement Property: ingress and egress in, on, over, across, and through the Access Area of the Easement Property as defined in the attached Exhibit X; removing structures, obstructions, and any other obstacles from the Access Area of the Easement Property; conducting observations, surveys, reviews, and data collection for environmental assessments; conducting topographic field and parcel surveys, soil analysis, soil borings, and other investigations; conducting water level, erosion, water quality,



habitat, environmental, and other relevant monitoring; performing any other testing, surveys, and analysis; and necessary and reasonable rights of ingress and egress to and from the Access Area of the Easement Property subject to the provisions regard crop damages below. Grantee shall notify Grantor prior to exercising the access provisions associated with this Agreement.

2. **Easement Runs With the Easement Property.** This Easement, and all covenants, terms, conditions, provisions, and undertakings created under this Easement, are perpetual and will run with the Easement Property, and will be binding upon Grantor's heirs, successors, and assigns.

3. **Removal of Unapproved Structures.** Grantor must remove all unapproved structures on the Easement Property on or before [Insert Date]. Any unapproved structures remaining on the Easement Property after [Insert Date], will automatically become Grantee's property, without the need for any bill of sale or any other written instrument or agreement; Grantee may then remove any unapproved structures from the Easement Property, at its sole discretion and at its sole cost.

4. **Grantor Covenants.** Grantor warrants that Grantor is the fee simple owner of the Easement Property; that Grantor has the right to execute this Easement and to make the promises, covenants, and representations contained in this Easement; that this Easement does not violate any mortgage or other interest held by any third party regarding the Easement Property, or any portion of the Easement Property; that there are no outstanding unpaid bills incurred for labor, materials, or services regarding the Easement Property, or any portion of the Easement Property; and that there are no recorded or unrecorded liens, security interests, or any outstanding, pending, or threatened suits, judgments, executions, bankruptcies, or other proceedings pending or of record that would in any manner impact title to the Easement Property, or any portion of the Easement Property. Grantor will release, hold harmless, defend, and indemnify Grantee and its officers, agents, representatives, employees, and contractors from and against any and all claims, damages, injuries, or costs arising out of or in any way related to any title defects regarding the Easement Property.

5. **Taxes.** Grantor is solely responsible for all taxes and special assessments or assessments for special improvements due, levied, or assessed regarding the Easement Property for all past, present, and future years. Grantee will not be responsible for payment of any real estate taxes or special assessments regarding the Easement Property.

6. **Use of the Easement Property.**

**A. Grantor's Use.** Subject to the provisions of Sections 1 and 3, Grantor has the right and privilege to use the Easement Property at any time, in any manner, and for production of crops, pasture, and other farm-related activities and hunting, including the right to post the Easement Property at Grantor's sole discretion to restrict public hunting rights. Grantor will promptly cease any activities and remove any structures or obstructions that interfere with Grantee's use of the Easement Property, Grantee's rights and privileges under this Easement, or with the Project, when directed by Grantee. Grantor understands and recognizes any use of the Easement Property is at Grantor's sole risk, and that Grantee is not responsible for any damages to crops or for interference with any other of Grantor's uses

of the Easement Property as a result of any inundation or any of Grantee's other rights and privileges regarding the Easement Property.

**B. Grantee's Entry.** If Grantee enters upon the Easement Property for purposes of conducting any of the surveys or testing permitted under this Agreement, following the conclusion of any surveys or testing, Grantee will return the Easement Property as nearly as practicable to its previous condition, taking into consideration the nature of the work being performed; for example, Grantee will remove any dirt piles or equipment from the Easement Property that might unreasonably interfere with Grantor's permitted uses of the Easement Property. Grantee's ingress and egress rights to the Easement Property will be by the least intrusive means reasonable. Additionally, Grantee will reimburse Grantor for reasonable crop damages resulting from the Grantee's physical entrance upon the Easement Property for purposes of conducting such surveys or testing. Such reasonable crop damages shall be calculated based on the area disturbed, actual production history, Grantor's yields the year of the damages, and current crop prices at the time of the crop damages.

7. **Encumbrances.** Subject to the provisions below regarding the leasing or mortgaging of the Easement Property, Grantor will not encumber the Easement Property or any portion of the Easement Property or enroll the Easement Property or any portion of the Easement Property in any farm or other federal program that would be contrary to, or would in any way disrupt or interfere with, Grantee's use of the Easement Property, Grantee's rights and privileges under this Easement, or with the Project without first obtaining Grantee's consent. However, Grantor may rent or lease the Easement Property, at Grantor's sole discretion without first obtaining Grantee's consent. If Grantor rents or leases the Easement Property, any lessee's rights and uses are subject to this Easement, including the use restrictions described above; Grantor will be fully responsible to Grantee for Grantor's obligations under this Easement, including for any violations by any lessee. Additionally, Grantor may mortgage the Easement Property, at Grantor's sole discretion without first obtaining Grantee's consent so long as any mortgage is subordinate to this Easement.

8. **Waiver of Warranties.** The parties specifically agree neither Grantee nor any of its agents or representatives have made any representations or warranties in any way regarding the Project; Grantor's ability to use the Easement Property following construction of Project; the potential frequency of inundation of the Easement Property; Grantor's ability to enroll the Easement Property in any federal program; or Grantor's ability to obtain any farm insurance regarding the Easement Property.

9. **Maintenance.** Grantee's easement rights include the right, at its discretion and if necessary for purposes of proper operation and maintenance of the Project, to remove trees, underbrush, obstructions, and any other vegetation, structures, or obstacles from the Easement Property. However, Grantor is solely responsible, at Grantor's sole expense and discretion, for maintaining the Easement Property, including grass cutting and weed control, and debris removal following any inundation. Neither Grantor nor Grantee will store, cause, or permit any spillage, leakage, or discharge of fertilizers, herbicides, fungicides, and pesticides on the Easement Property (in excess of normal applications for farming purposes). Further, in no event will either party cause or permit any spillage, leakage, or discharge of any hazardous substance onto the Easement Property including, but

not limited to, spillage of petroleum products or vehicle fuels, gasoline, kerosene, or other products used for the purpose of generating power, lubrication, illumination, heating, or cleaning. If either party causes or permits any spillage, leakage, or discharge of any such hazardous substance onto the Easement Property, that party shall be solely responsible for any damages arising out of such spillage, leakage, or discharge of any such hazardous substance onto the Easement Property to the extent required by law.

10. **Forbearance or Waiver.** The failure or delay of Grantee to insist on the timely performance of any of the terms of this Easement, or the waiver of any particular breach of any of the terms of this Easement, at any time, will not be construed as a continuing waiver of those terms or any subsequent breach, and all terms will continue and remain in full force and effect as if no forbearance or waiver had occurred.

11. **Governing Law.** This Agreement will be construed and enforced in accordance with [Insert STATE] law. The parties agree any litigation arising out of this Agreement will be venued in State District Court in [Insert County, State], and the parties waive any objection to venue or personal jurisdiction.

12. **Severability.** If any court of competent jurisdiction finds any provision or part of this Easement is invalid, illegal, or unenforceable, that portion will be deemed severed from this Easement, and all remaining terms and provisions of this Easement will remain binding and enforceable.

13. **Entire Agreement.** This Easement constitutes the entire agreement between the parties regarding the matters described in this Easement, and this Easement supersedes all other previous oral or written agreements between the parties.

14. **Modifications.** Any modifications or amendments of this Easement must be in writing and signed by Grantor and Grantee and must be recorded with the [INSERT] County Recorder's office.

15. **Representation.** The parties, having been represented by counsel or having waived the right to counsel, have carefully read and understand the contents of this Easement, and agree they have not been influenced by any representations or statements made by any other parties.

16. **Headings.** Headings in this Easement are for convenience only and will not be used to interpret or construe its provisions.

(Signatures appear on the following pages.)





## Disposal of Excess Property

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### Introduction

From time to time, there may be a variety of reasons for the Project to acquire more property than the minimum amount of property needed to construct the Project. For example, the property owner may request that the Project acquire a full parcel rather than just a portion of the parcel. Under the philosophy of being flexible and working with property owners, the Project should consider acquiring these properties, but the Project also needs a method to dispose of excess property. The disposal method must be fair, straightforward, and easy to exercise.

### Disposal Process

In the event that the Diversion Project acquires more property than is necessary to construct and own the Project, it will follow the following process for disposal of the excess property.

- Identify the potential excess property and confirm that the property will not be required for construction, operation, or ownership of the Project.
- Once confirmed that the property is truly excess and unnecessary, the owner of the property (Diversion Authority, Cass County Joint Water Resource District (CCJWRD), or Moorhead-Clay County Joint Powers Agreement (MCCJPA)) shall notify its farmland management firm to commence a public sale of the property.
- The farmland management firm will arrange a public sale of excess properties.
- Public sales will be conducted regularly, perhaps as frequent as every six months, depending on needs.
- Public sales will be well advertised so that any interested party has sufficient opportunity to purchase the excess property.
- Any proceeds from sale of excess property will be deposited in the Diversion Authority accounts.

## Cemetery Mitigation Plan

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### Introduction

There are 11 cemeteries upstream of the Diversion Project that may potentially be impacted by varying levels (ranging from 0.1 feet to 8.3 feet) of additional water during major floods due to operation of the Project in a 100-year (one-percent annual chance) flood. Analysis was also completed on these cemeteries for the 500-year event and those impacts are detailed on the enclosed individual cemetery maps.

Additionally, there are 19 cemeteries that currently would flood within the protected area that will now have permanent flood protection due to construction of the Project.

During an information gathering stage, 54 cemeteries were visited to gain information and identify impacts that flooding has had on these sites, and what efforts have been utilized in the past to prevent and/or mitigate any such impacts. Following this effort, USACE released a "Cemetery Study" in 2014 that identifies the potential impacts of each site and several potential mitigation options.

Following the release of this initial USACE Cemetery Study, individual site visits and meetings with representatives from the 11 impacted cemeteries were conducted. Cultural surveys were performed on eight of the eleven sites, three of which qualified for the National Register of Historic Places.

### Local Cemetery Mitigation Plan

The Diversion Authority has formed a Local Cemetery Mitigation Team with representatives from entities in North Dakota and Minnesota. With completion of the Federal Cemetery Mitigation Plan, and an understanding of the minimum federal requirements, the Team will be responsible for building upon USACE's efforts and the creation of a local Cemetery Mitigation Plan.

#### Local Cemetery Mitigation Team Members

Mary Scherling (Cass)

Keith Berndt (Cass)

Nathan Boerboom (Fargo)

Mark Bittner (Fargo)

Steve Gehrtz (Moorhead)

Chuck Hendrickson (Moorhead)

Jenny Mongeau (Clay)

Mark Anderson (BRRWD)

Rodger Olson (CCJWRD)

Darrell Vanyo (Diversion Authority)

### Minimum Federal Mitigation Plan and Requirements

In 2015, a Federal Cemetery Mitigation Plan was released by USACE. This plan identifies specific mitigation options for each of the 11 locations; including, protective berms, access changes, debris fencing, anchoring headstones, and/or raising the site. The previously completed cemetery studies can be found at [www.fmdiversion.com/studies-technical-documents/](http://www.fmdiversion.com/studies-technical-documents/).

Federal requirements are that flowage easements be obtained on the seven cemeteries within the upstream retention area, as is required for operation of the Project. There are no federal mitigation requirements for the four potentially-impacted cemeteries located outside the upstream retention area.

The plan found:

- None of the Project induced flooding would be more frequent than once every 10 years; nine of the eleven cemeteries would not have induced flooding until greater than a 10-year event.
- Past flooding has caused minimal damage to cemeteries in the area, and the Project induced flooding is also anticipated to only cause minor damage.
- For less-frequent events (50-yr, 100-yr), impacts are of limited duration, infrequent, and are anticipated to cause minimal physical damage.

### **Clean-Up Assistance**

In addition to obtaining a flowage easement, the Diversion Authority will adopt a post-operation repair and debris clean-up program and make sure the impacted cemeteries are eligible to take part in the repair and clean-up assistance program. The program will not only accommodate collection of debris that may accumulate on the cemetery sites, but also provide for reimbursement of repair costs that may be necessary to correct physical damage to the cemetery caused by operation of the Project. Any repairs or other clean-up efforts will need to comply with procedures in accordance with standards of both the USACE and each State's SHPO. Please see the public lands repair and debris clean-up plans detail elsewhere in the Mitigation Plan.

### **National Register of Historic Places**

For the three cemeteries that are eligible to be listed on the National Register of Historic Places (Hemnes Cemetery, Clara Cemetery, and Lower Wild Rice Cemetery), and any additional cemetery that may be identified on the NRHP, USACE and the Diversion Authority will work with each respective State Historic Preservation Office (SHPO) to assure compliance with Section 106 and 36 C.F.R. 900 prior to operation of the Project.

### **Cemetery Mitigation Alternatives**

In addition to the federally-required flowage easements, the Federal Cemetery Mitigation Plan included a table of mitigation alternatives for each of the impacted sites (see table below). The mitigation alternatives table includes estimated costs for a variety of options, including: berms, offsite access, fencing and the anchoring of headstones, and raising the elevation of the land itself.

In addition to the estimated costs, it should be noted that the federal study identified a number of technical aspects and the potential for adverse effects on historic integrity that may make one or more of the mitigation alternatives infeasible to be utilized on some sites. It is also recognized that some of the alternative mitigation measures could adversely impact properties adjacent to the cemeteries.



No.		ESTIMATED COSTS PER SITE (\$1,000)											
Item		North Pleasant 1	South Pleasant 2	South Pleasant Church 3	Lower Wild Rice and Red River 4	Clara 5	Roen 6	Hemnes* 7	Eagle 8	Wolverton 9	Hoff** 10	Comstock 11	
MITIGATION ALTERNATIVES													
1A	BERM	291	408	367	4,147	974	0	432	510	1,025	2,682	84	10,920
1B	OFFSITE ACCESS	744	290	0	0	1,093	0	640	364	0	0	0	3,131
1. A+B	BERM WITH OFFSITE ACCESS	1,035	698	367	4,147	2,067	0	1,072	874	1,025	2,682	84	14,051
2 Op 1	DEBRIS FENCE & ANCHORING	679	413	574	587	552	74	555	700	592	528	383	5,637
2 Op 2	DEBRIS FENCE & ANCHORING	490	261	356	1,422	620	74	508	438	411	548	346	5,474
3.	LOW AREA RAISE	0	0	187	0	0	0	0	424	399	0	386	1,396

\* Hemnes costs assume reclaimed and stabilization of Red River bank are successful. Cost of berm/floodwall option with stabilization was estimated to be \$2,848,000.

\*\*Berm alternative for Hoff 140th Ave S crossing includes the crossing improvement across Wolverton Creek. Cost of floodwall option is estimated to be \$6,280,000.

In conjunction with the Local Cemetery Mitigation Team, the Diversion Authority will work to meet with each cemetery representative to discuss the technically feasible options for each specific location. The Diversion Authority understands that there will not be a one-size-fits-all approach to cemetery mitigation as each site location provides a unique situation that varies across the area. In addition, the information and feasible options for each site may also vary, and the Diversion Authority will respect each when formulating what works best for each cemetery. Consideration for larger-than the 100-year flood event will be made when developing final mitigation decisions. Those considerations should include adequate design, technical feasibility, and cost.

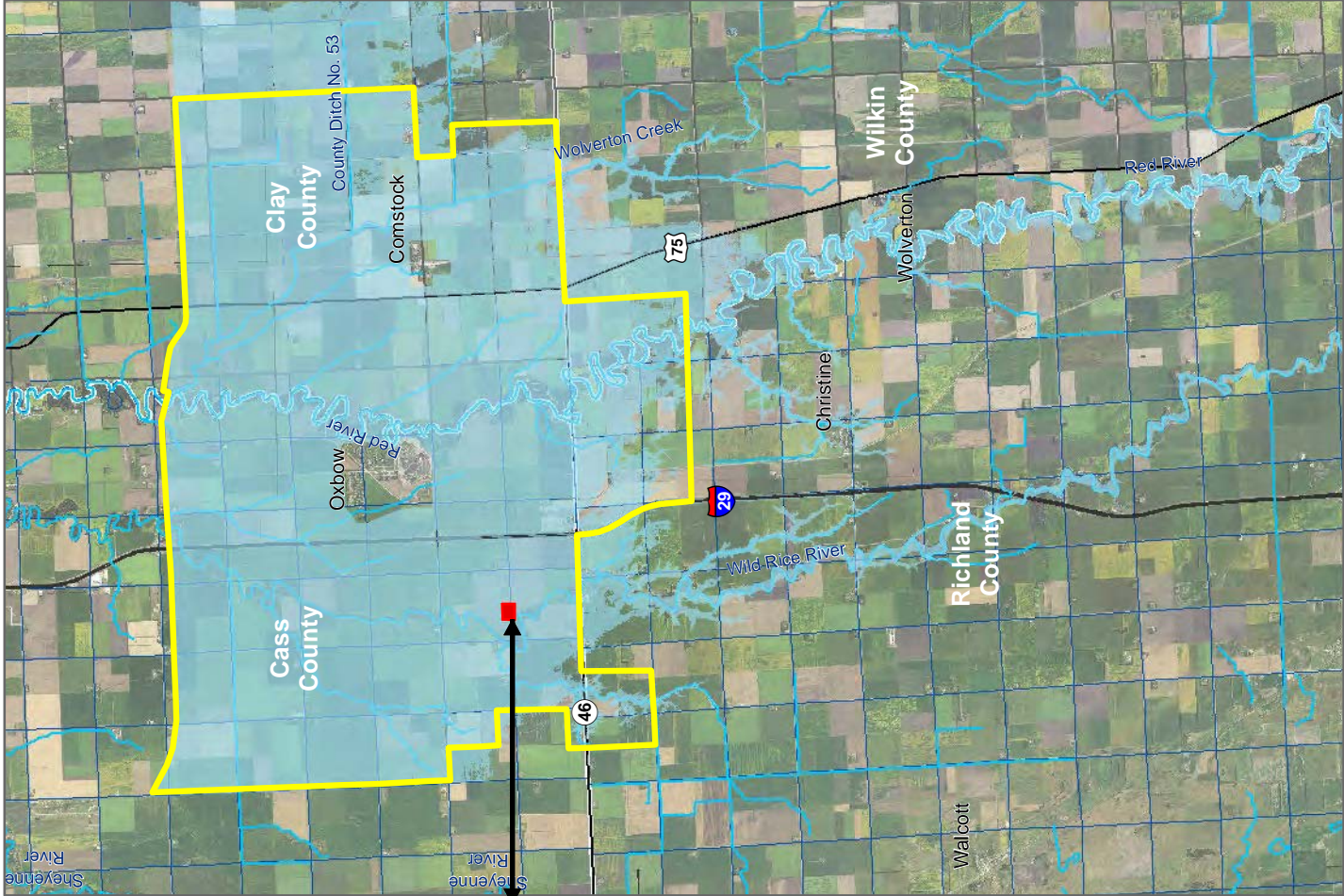
## Attachments

- Impacted Cemetery Maps (11 pages)



# Cemetery Map

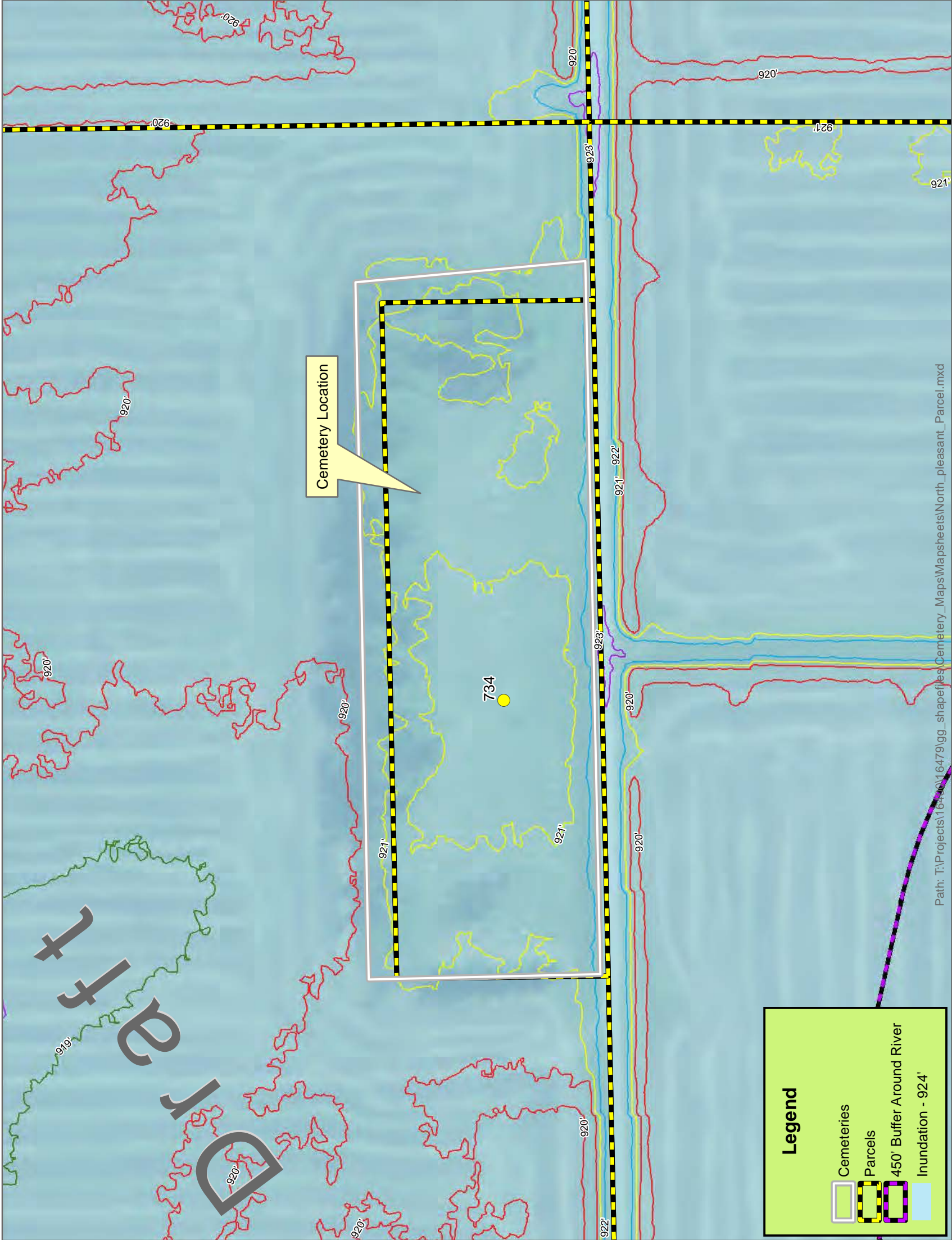
## NORTH PLEASANT CEMETERY



**Owner:** NORTH PLEASANT CEMETERY ASSOCIATION

**Pin:** 57000010375020

**County:** Cass County, ND



Path: T:\Projects\16479\gg\_shapefiles\Cemetery\_Maps\Mapsheets\North\_pleasant\_Parcel.mxd

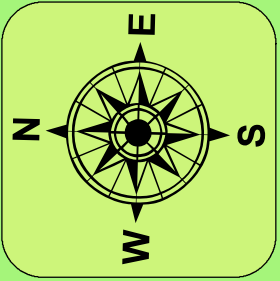
Legend

Cemeteries

Parcels

450' Buffer Around River

Inundation - 924'

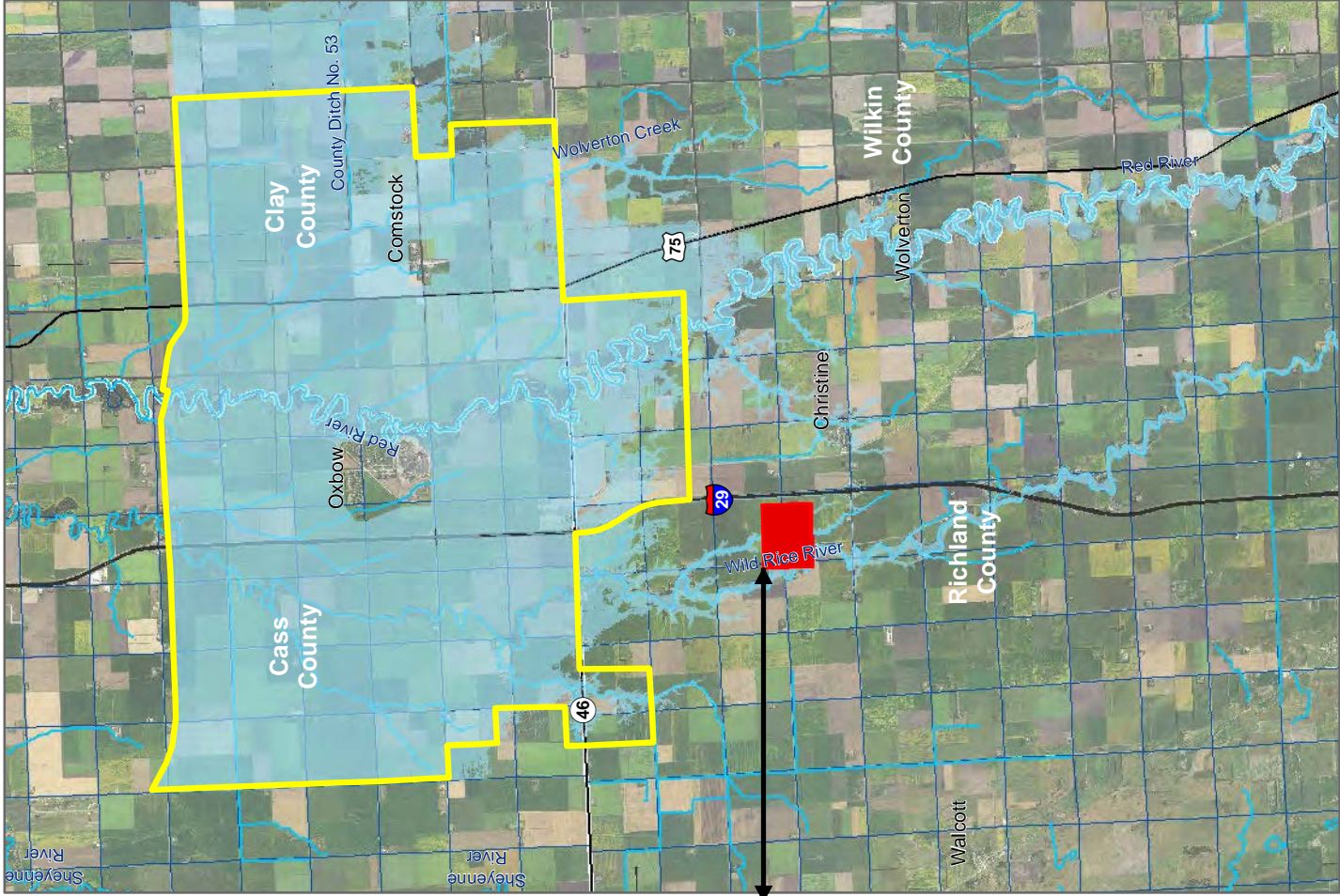


Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	920.1	0	921.6	3
50-Year	920.7	0	922.4	5
100-Year	921.6	3.5	922.6	6
500-Year				
Note: 921.0 is the approximate lowest site elevation				
All Hydraulic Data Taken from Phase 7 HEC-RAS Models				



# Cemetery Map

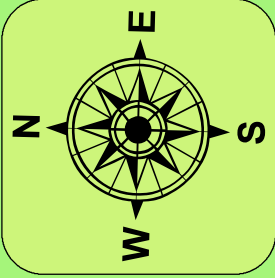
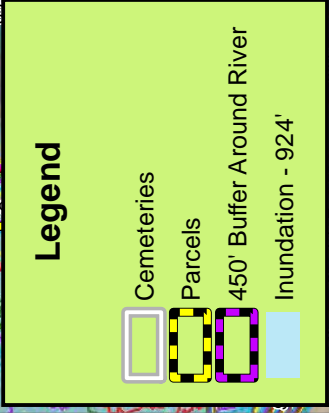
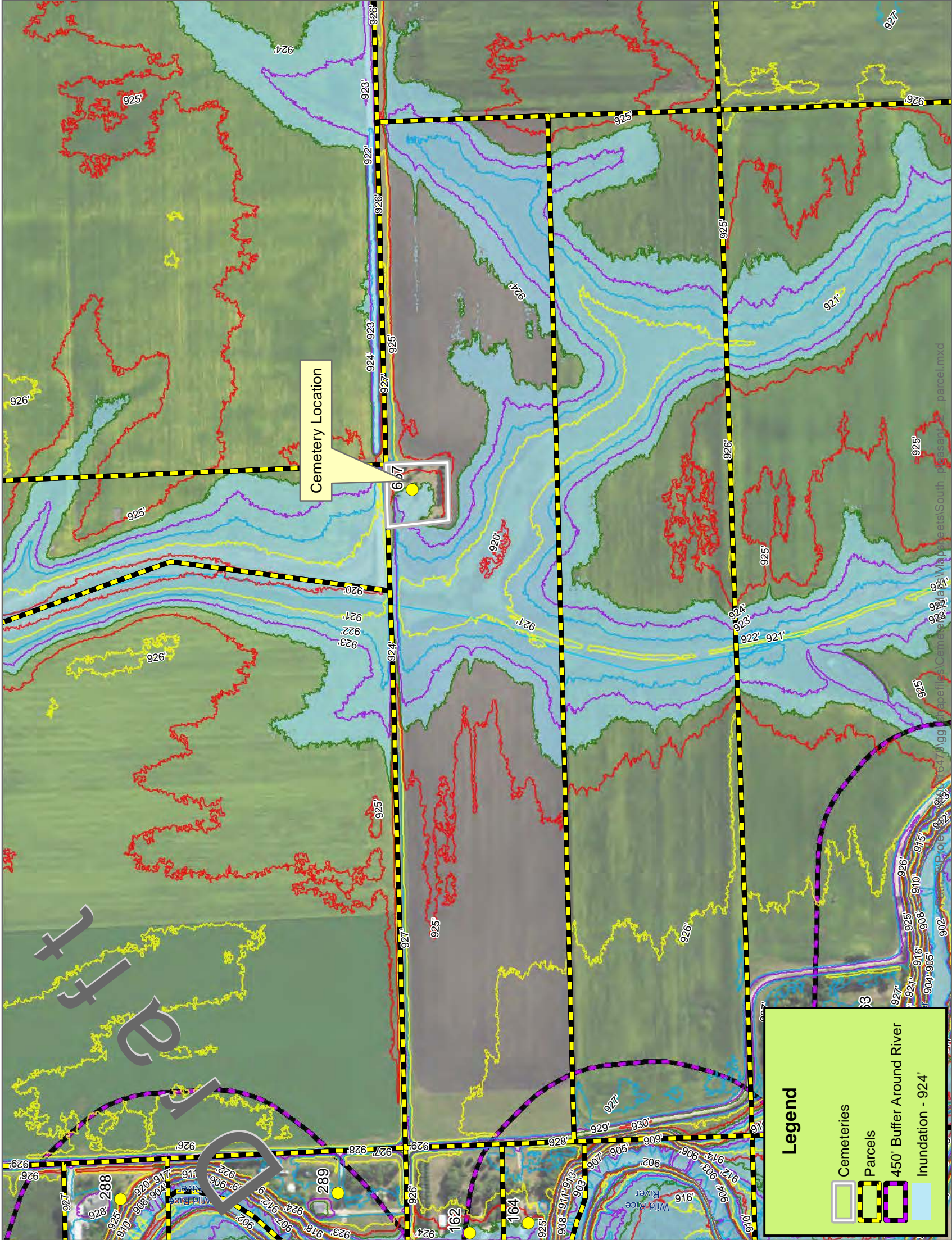
## SOUTH PLEASANT CEMETERY



**Pin:** LINDGREN, JANICE

**Pin:** 2000000399000

**County:** Richland County, ND



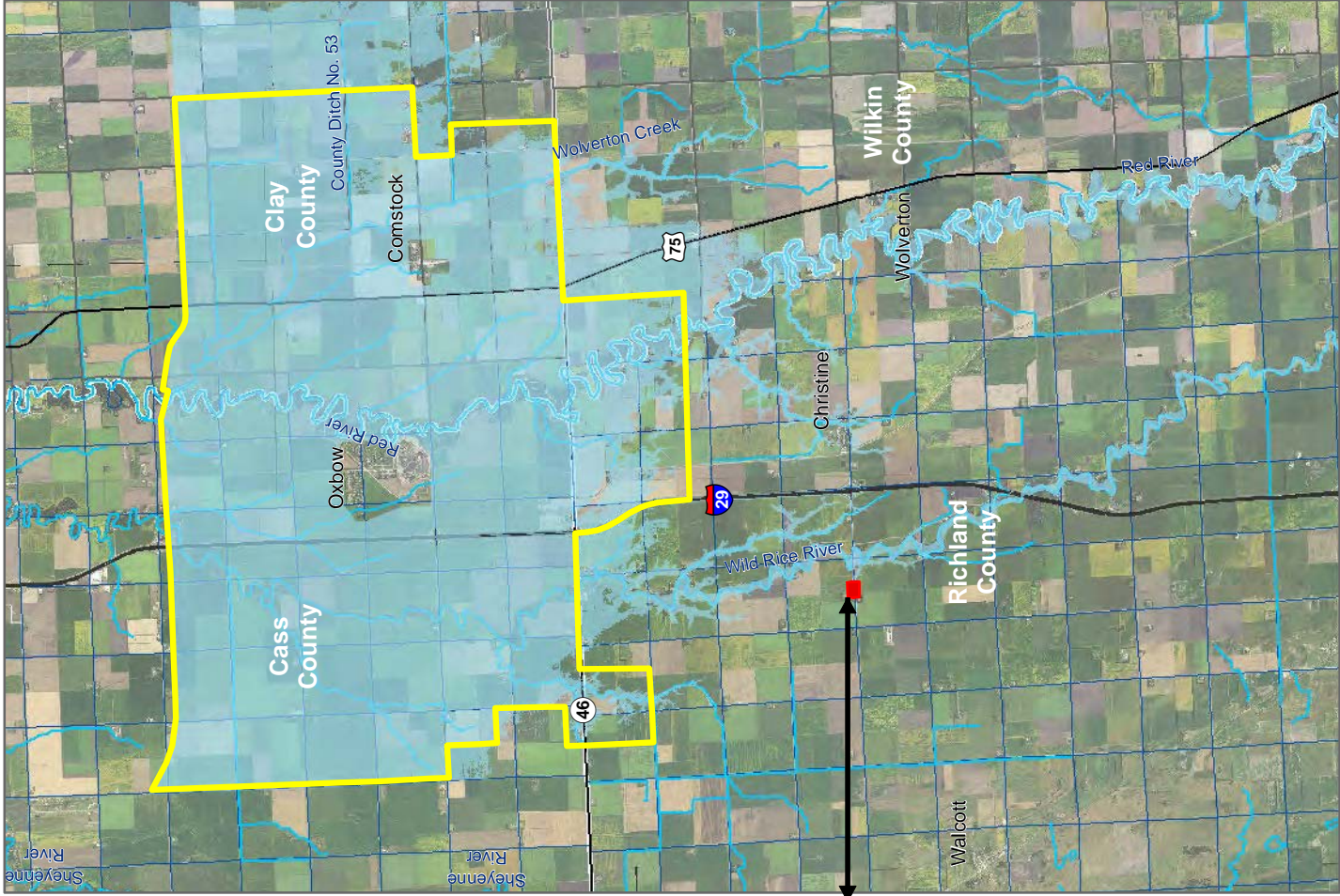
Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	921.5	0	921.5	0
50-Year	925.6	5.5	925.7	6.5
100-Year	927.0	7.5	927.0	8
500-Year	928.0	10	928.0	10.5

Note: 923.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models

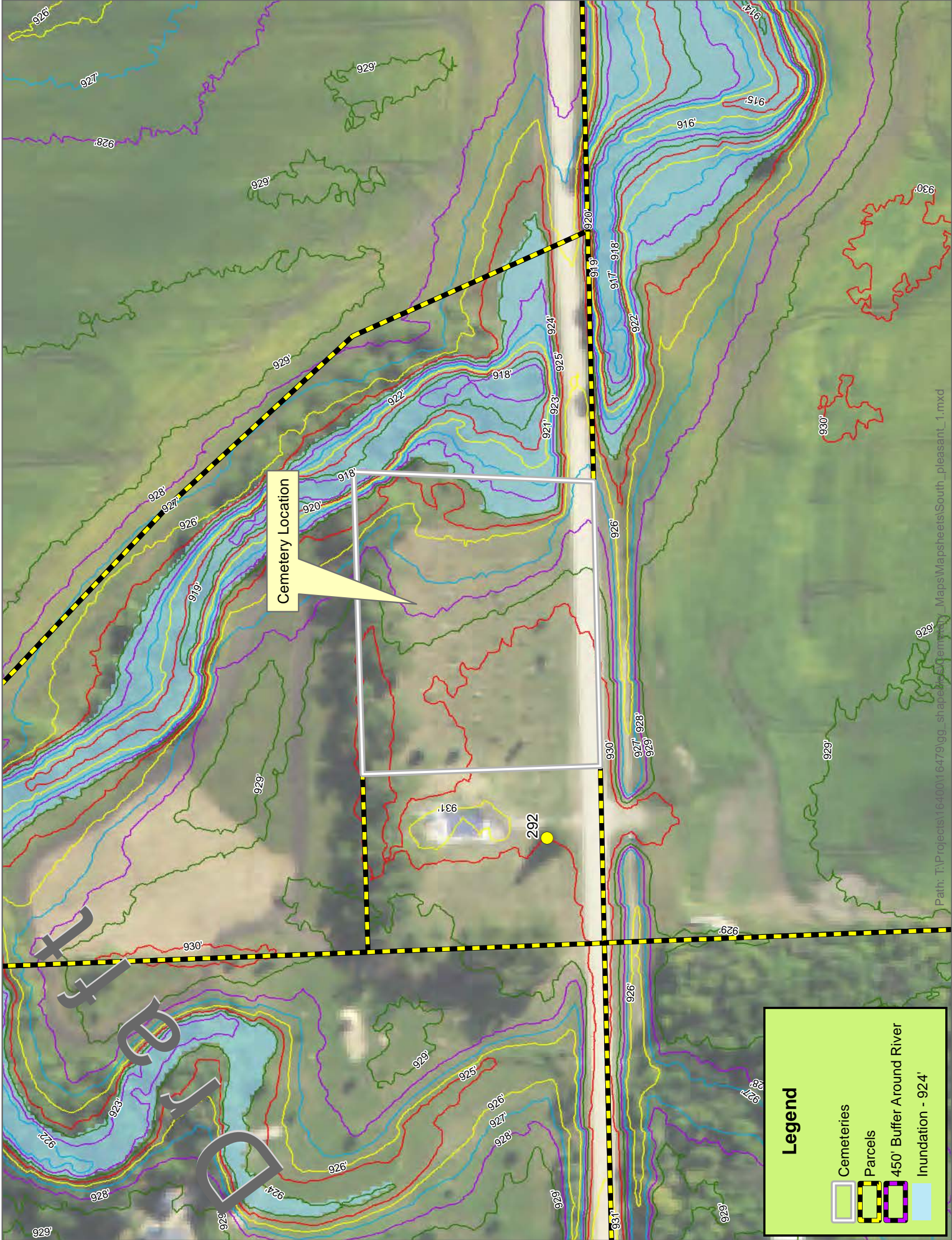


# Cemetery Map

## SOUTH PLEASANT CHURCH CEMETERY



**Owner:** SOUTH PLEASANT CEMETERY ASSN  
**Pin:** 2000000391100  
**County:** Richland County, ND



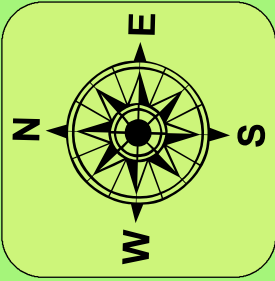
Legend

Cemeteries

Parcels

450' Buffer Around River

Inundation - 924'



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	922.4	0	922.4	0
50-Year	926.9	0	926.9	0
100-Year	928.2	4	928.3	4
500-Year	929.3	7	929.3	7.5

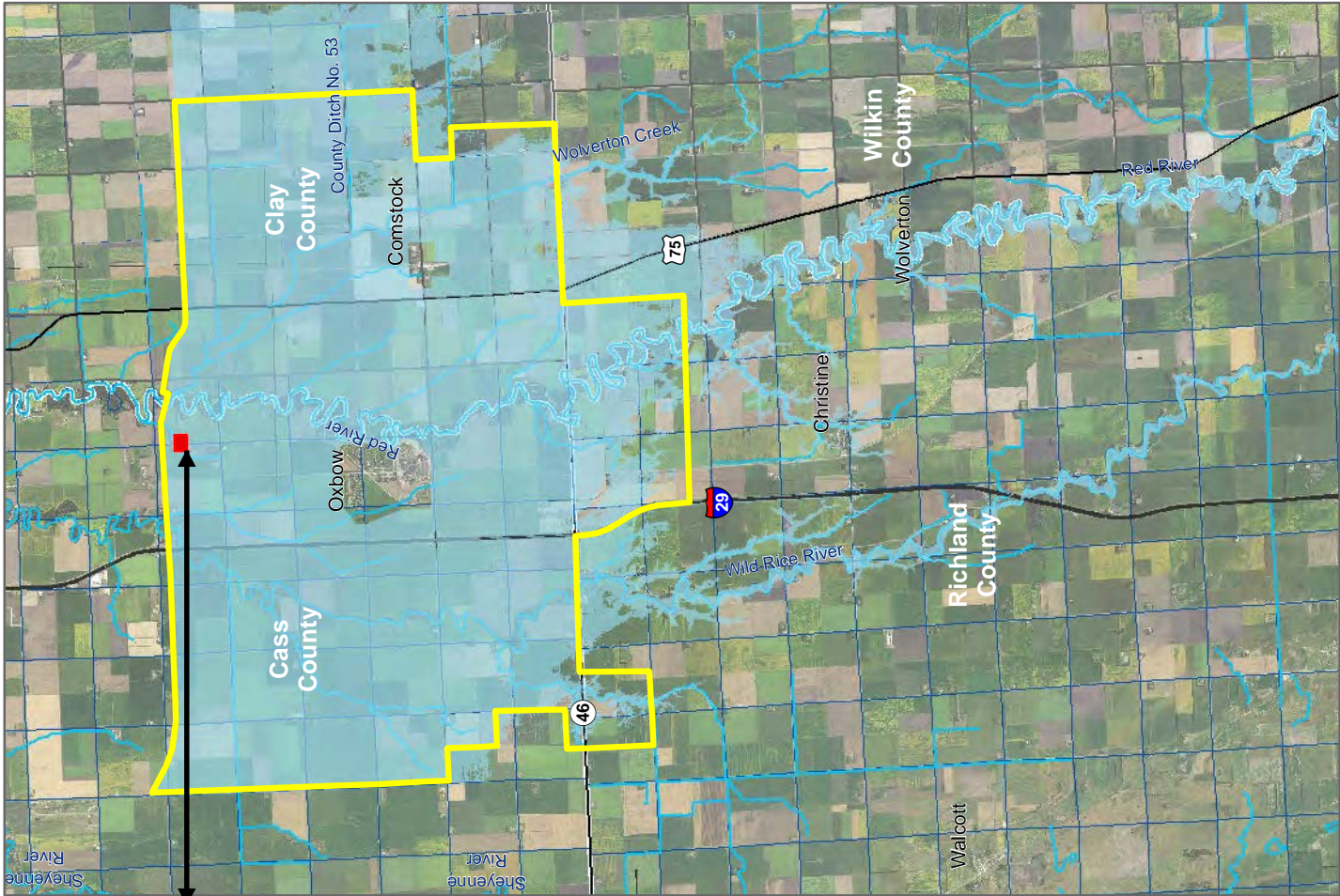
Note: 927.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models





# Cemetery Map

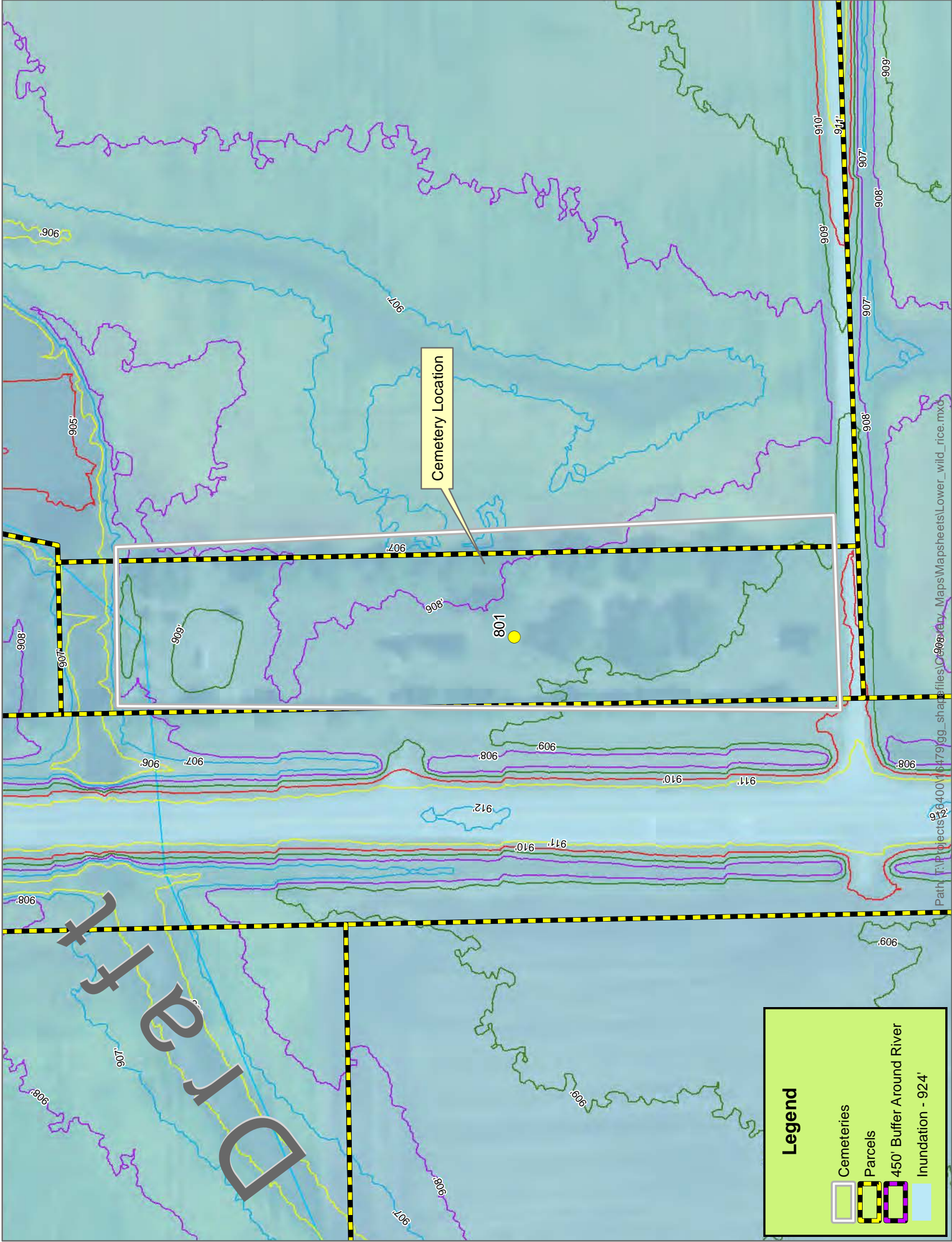
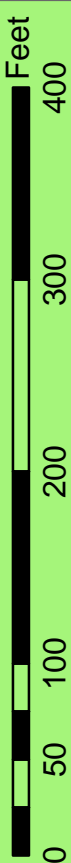
LOWER WILD RICE AND  
RED RIVER CEMETERY



**Owner:** NORWEGIAN EVANGELICAL LUTHERAN CHURCH

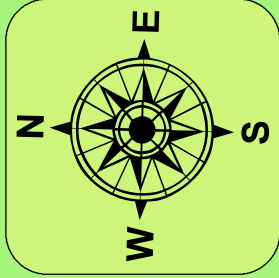
**Pin:** 57000010201126

**County:** Cass County, ND



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	908.1	0.5	908.3	1
50-Year	913.3	9	921.5	11
100-Year	913.9	10	922.2	12
500-Year	915.0	14.5	922.2	14

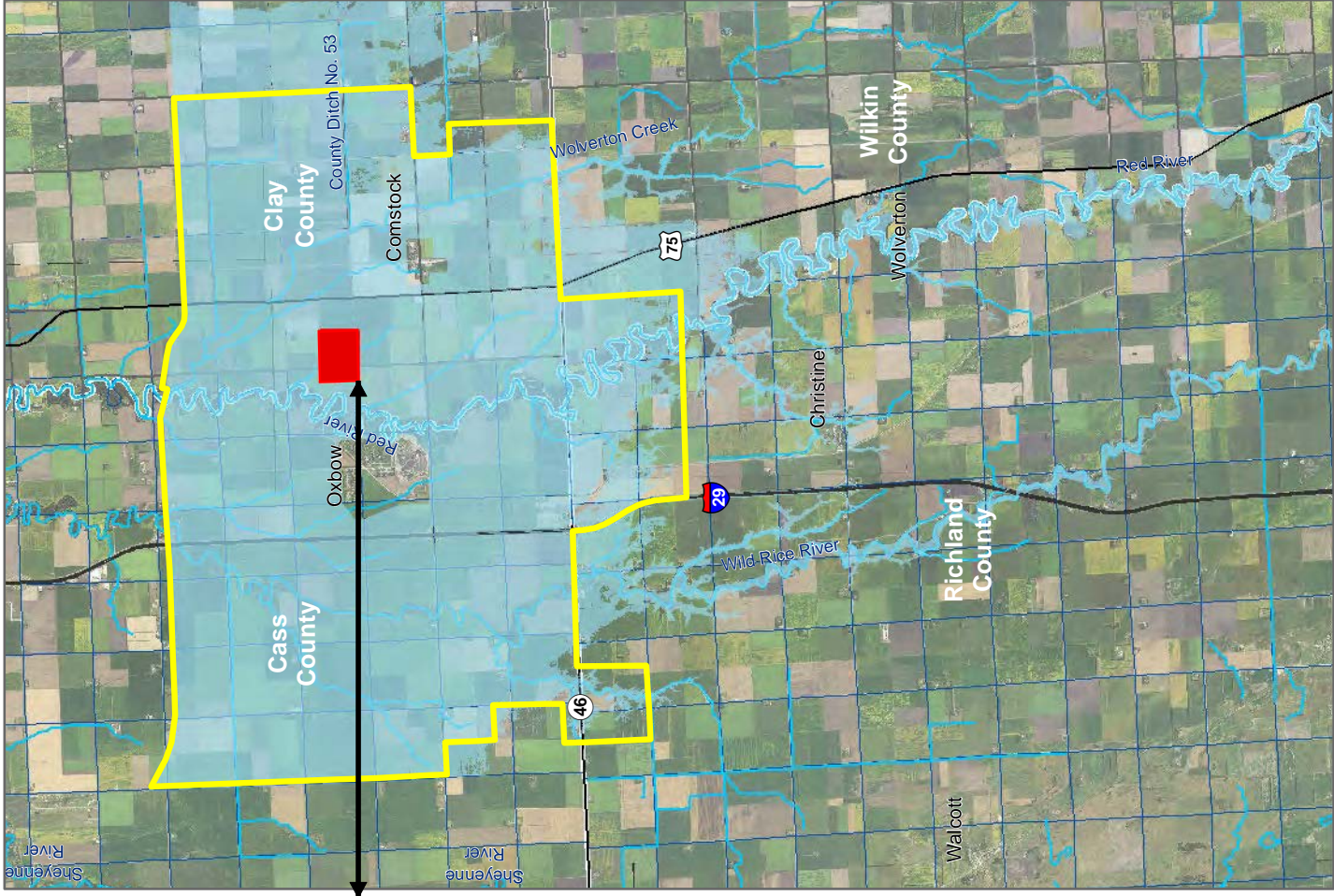
Note: 908.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models





# Cemetery Map

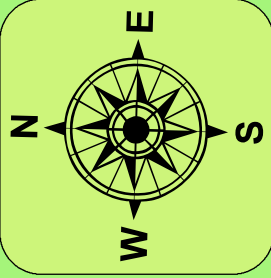
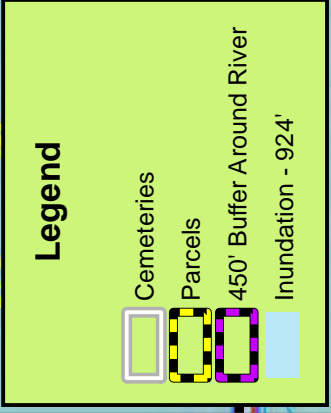
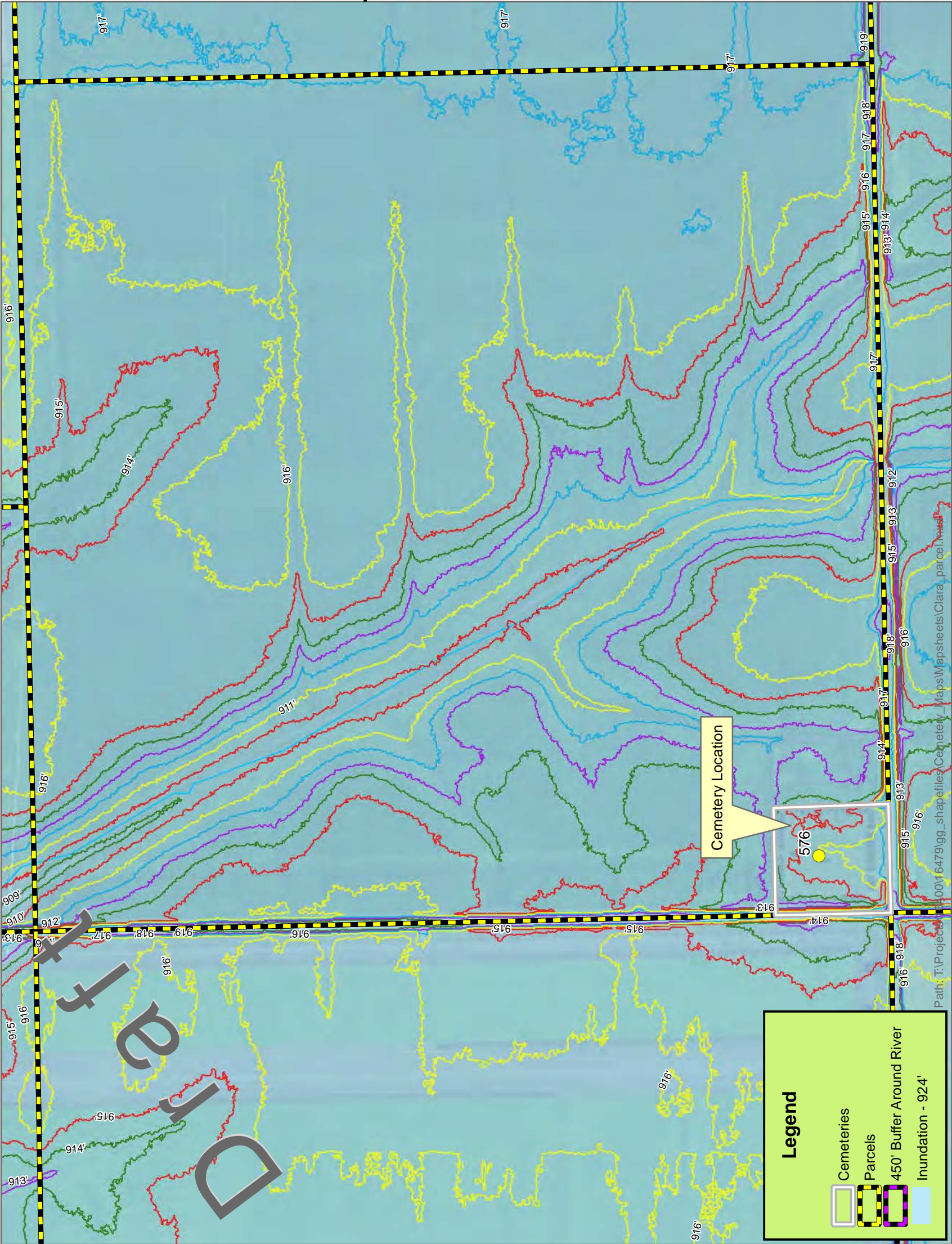
## CLARA CEMETERY



**Owner:** KLEIN, ROBERT H

**Pin:** 150173000

**County:** Clay County, MN



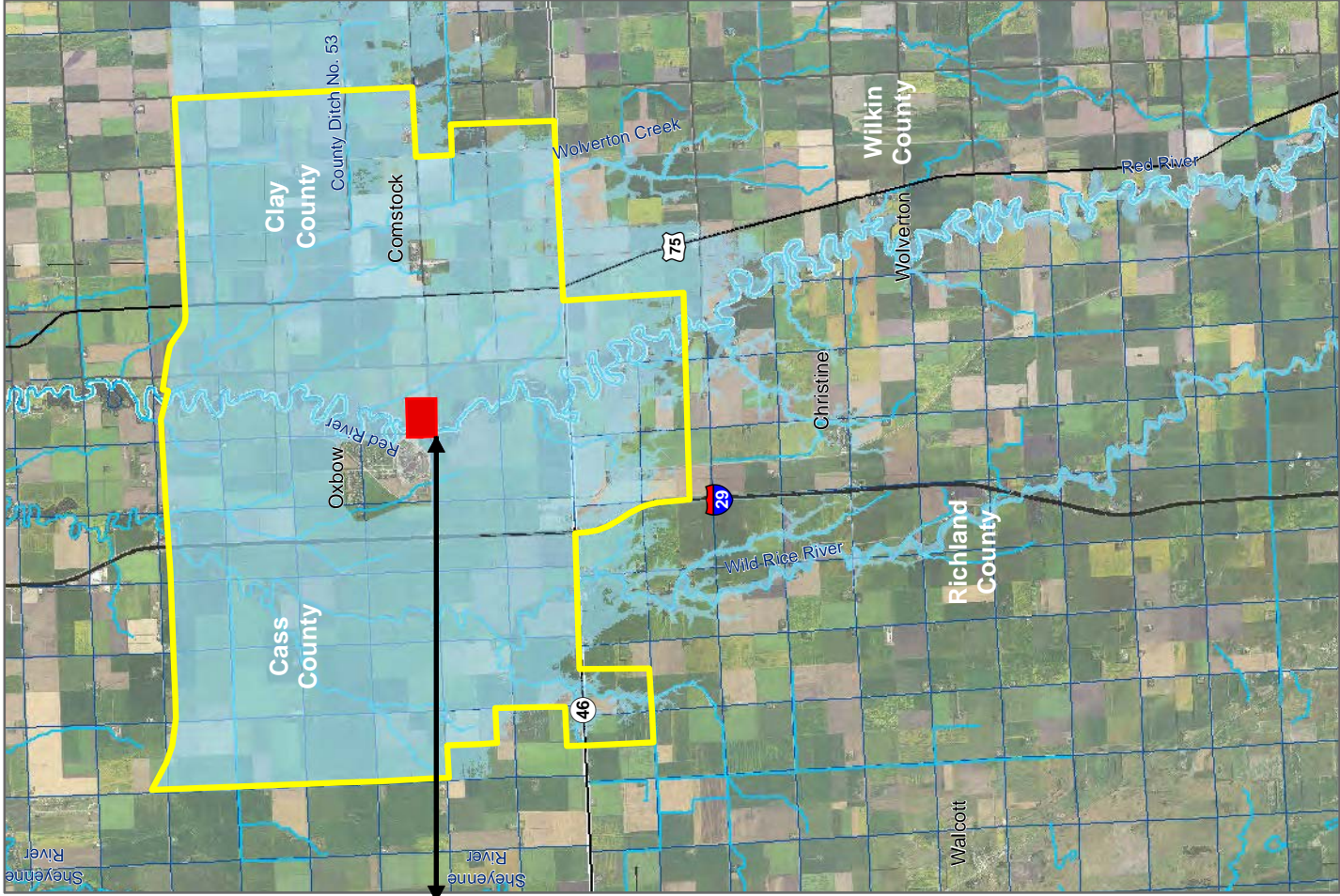
Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	913.5	0	913.5	0
50-Year	914.6	0	921.6	8
100-Year	915.4	2	922.3	9.5
500-Year	916.8	6.5	922.3	9.5

Note: 915.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models



# Cemetery Map

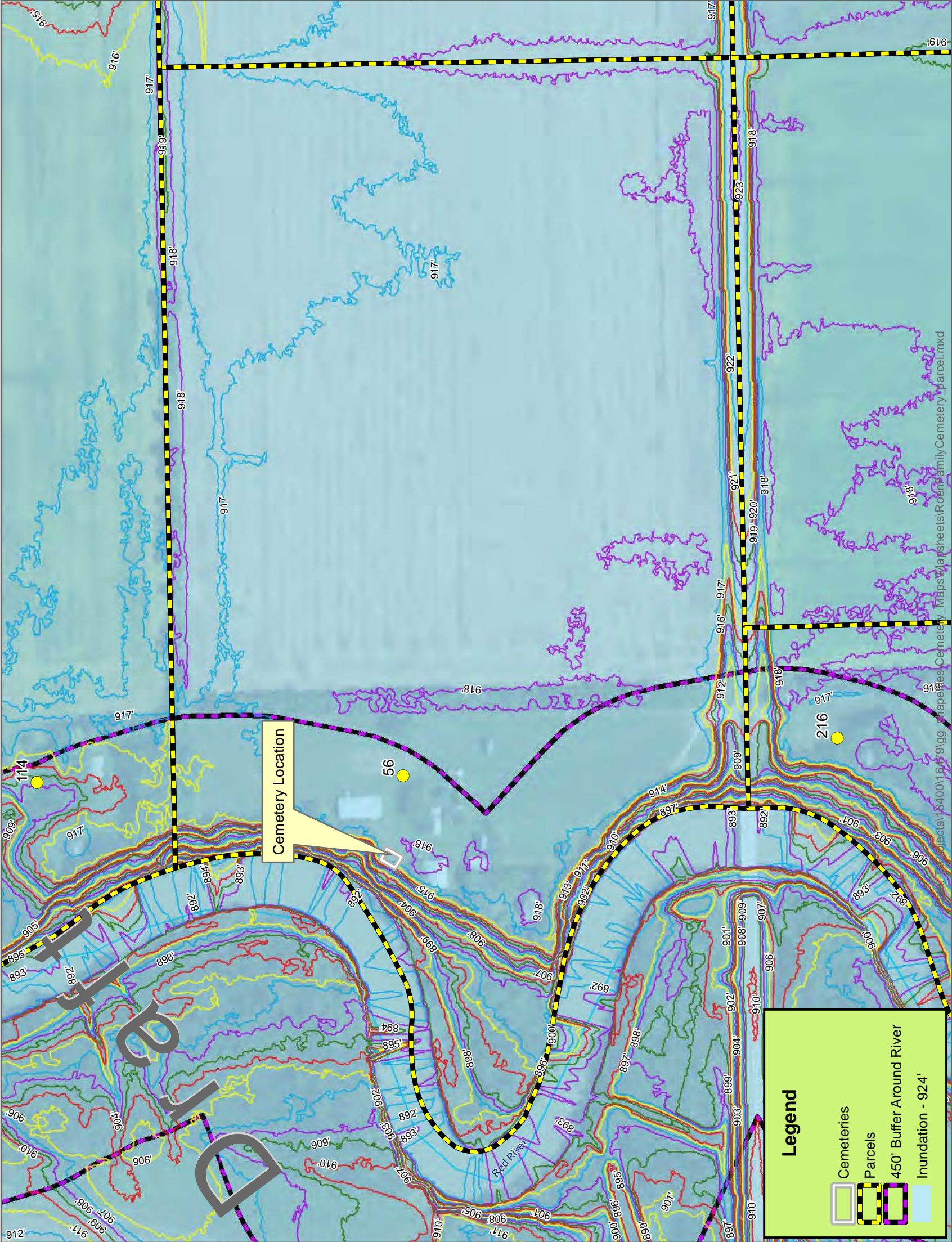
## ROEN FAMILY CEMETERY



**Owner:** UELAND, RHODA K

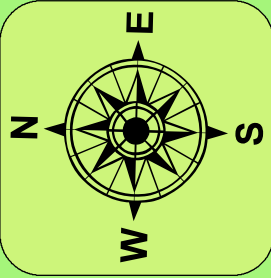
**Pin:** 150193400

**County:** Clay County, MN



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	910.7	0	910.7	0
50-Year	916.5	0	921.7	7
100-Year	917.5	1.5	922.3	8.5
500-Year	919.7	7	922.6	9

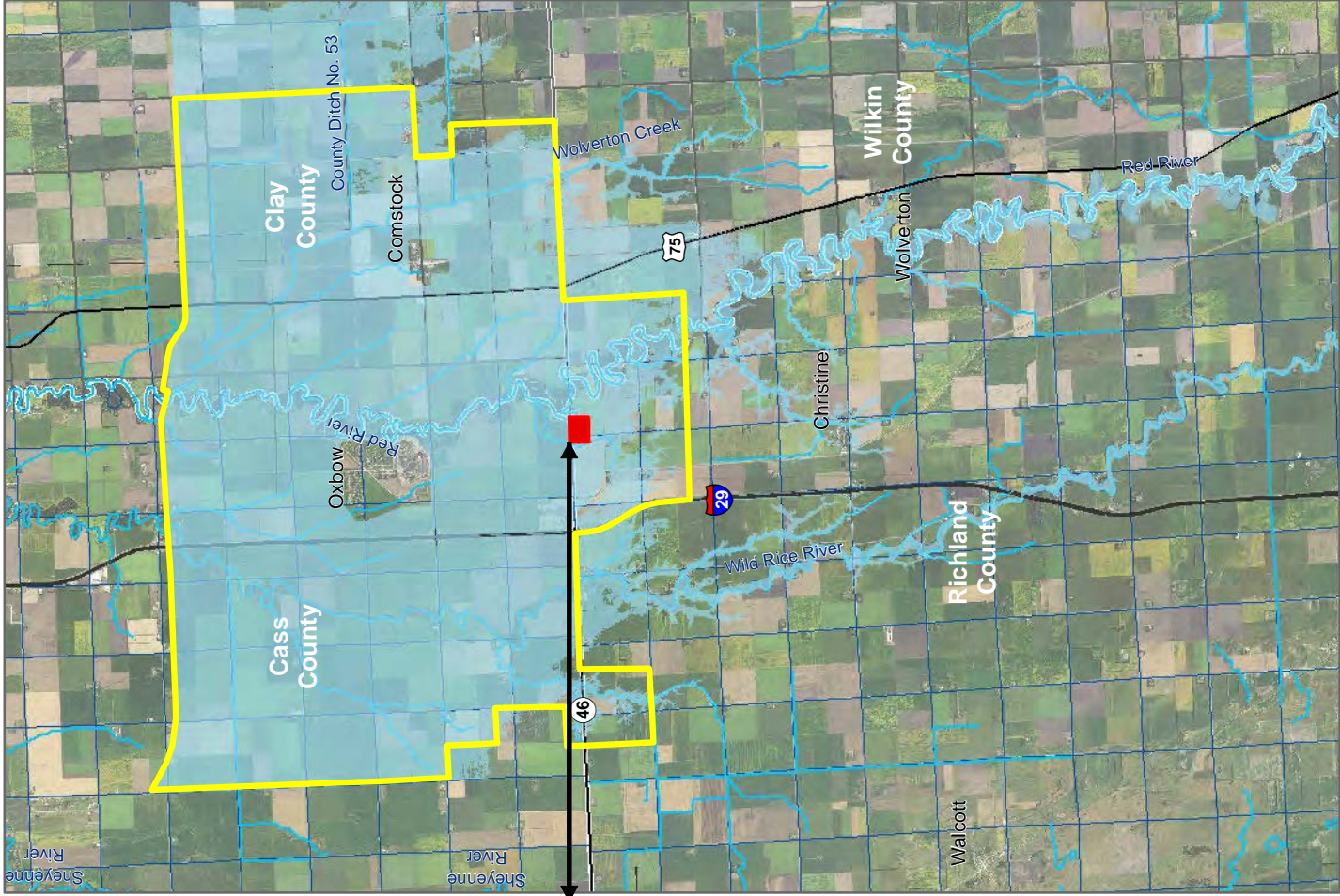
Note: 917.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models





# Cemetery Map

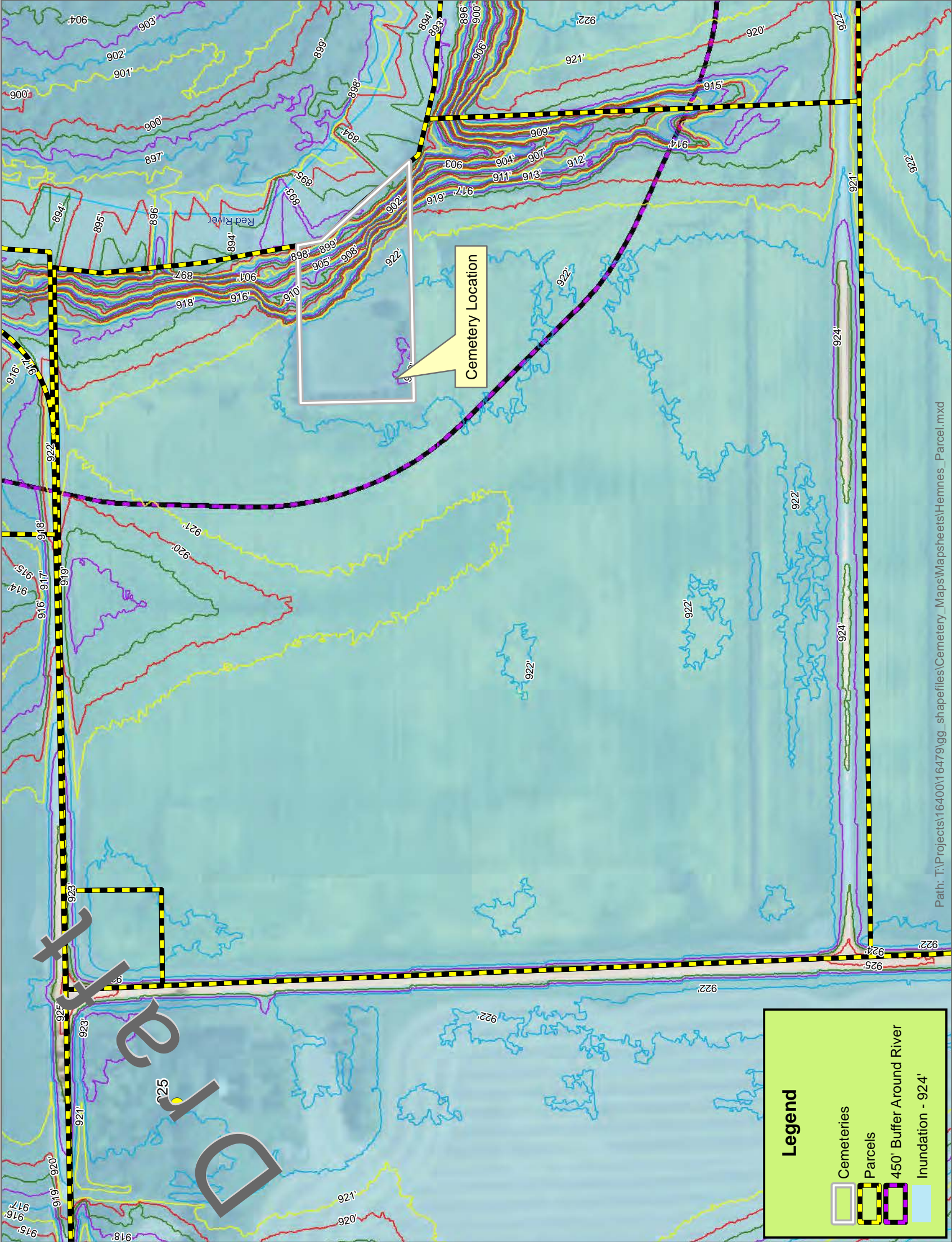
## HEMNES CEMETERY



**Owner:** YSTEBO, STUART T & LAVERNA LLLP

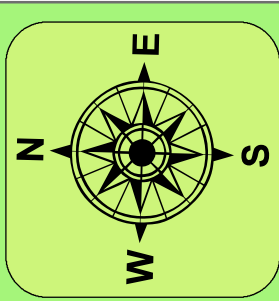
**Pin:** 1000000066000

**County:** Richland County, ND



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	912.2	0	912.2	0
50-Year	918.3	0	922.1	0.5
100-Year	919.6	0	922.7	3.5
500-Year	923.1	3	923.7	6

Note: 922.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models

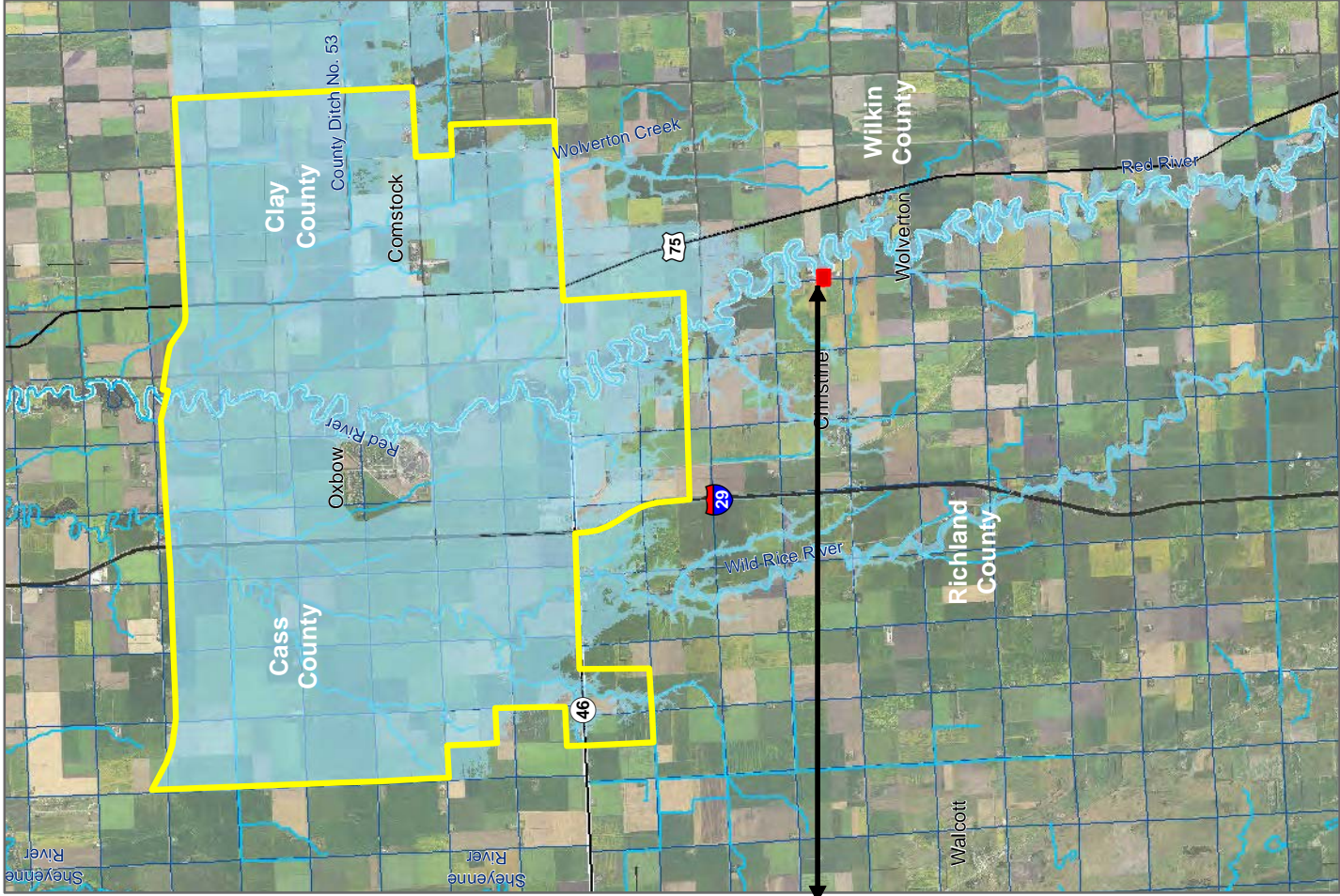




# Cemetery Map

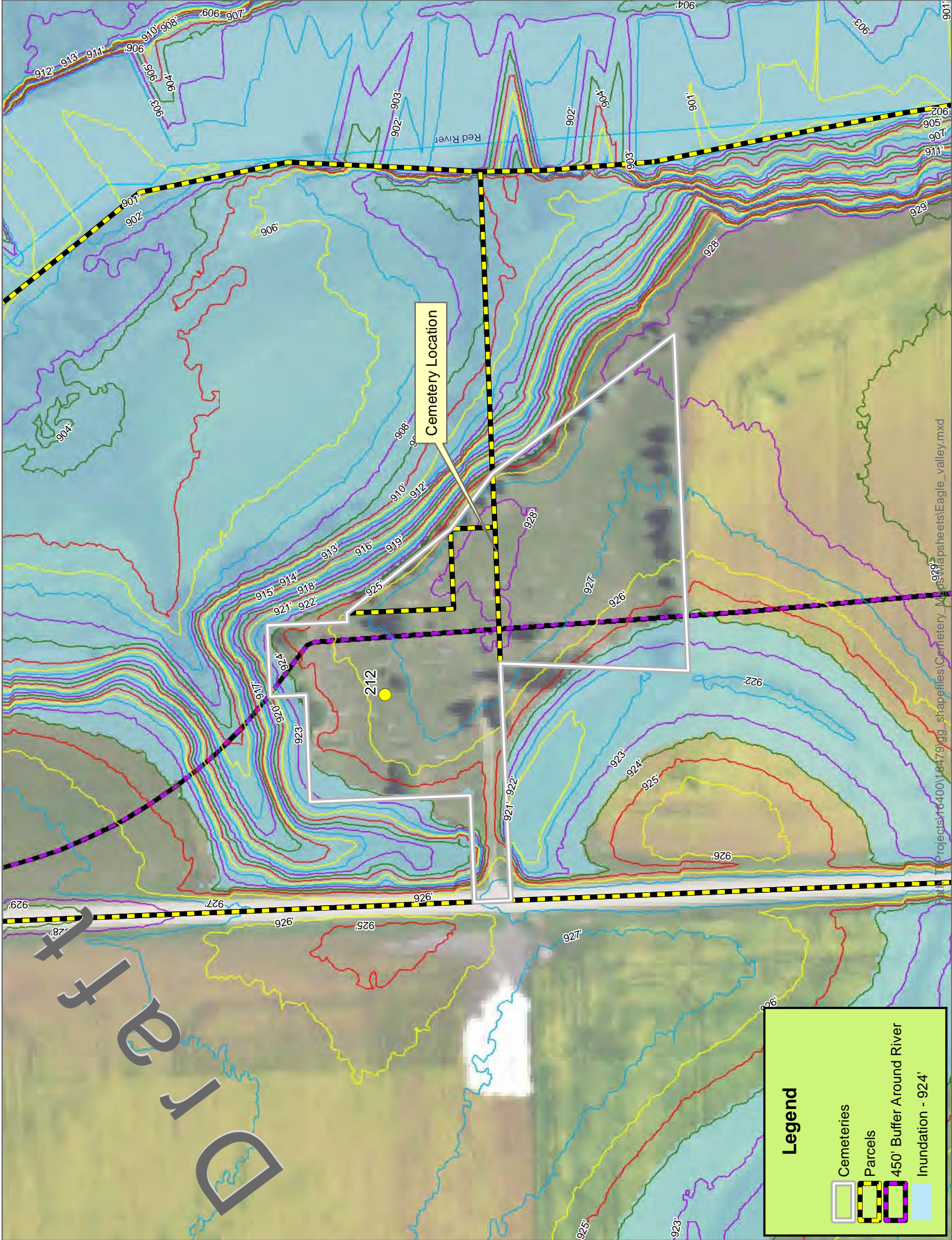
## EAGLE VALLEY

### EVANGELICAL CEMETERY



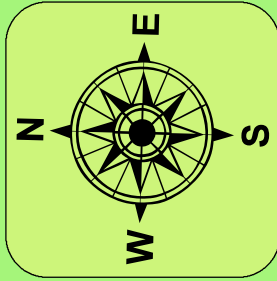
**Owner:**  
**Pin:**  
**County:**

EAGLE VALLEY EVANGELICAL  
1000000030200  
1000000029000  
Richland County, ND



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	917.0	0	916.9	0
50-Year	923.9	0	924.9	4
100-Year	925.7	2.5	926.2	5
500-Year	928.3	7	928.3	8

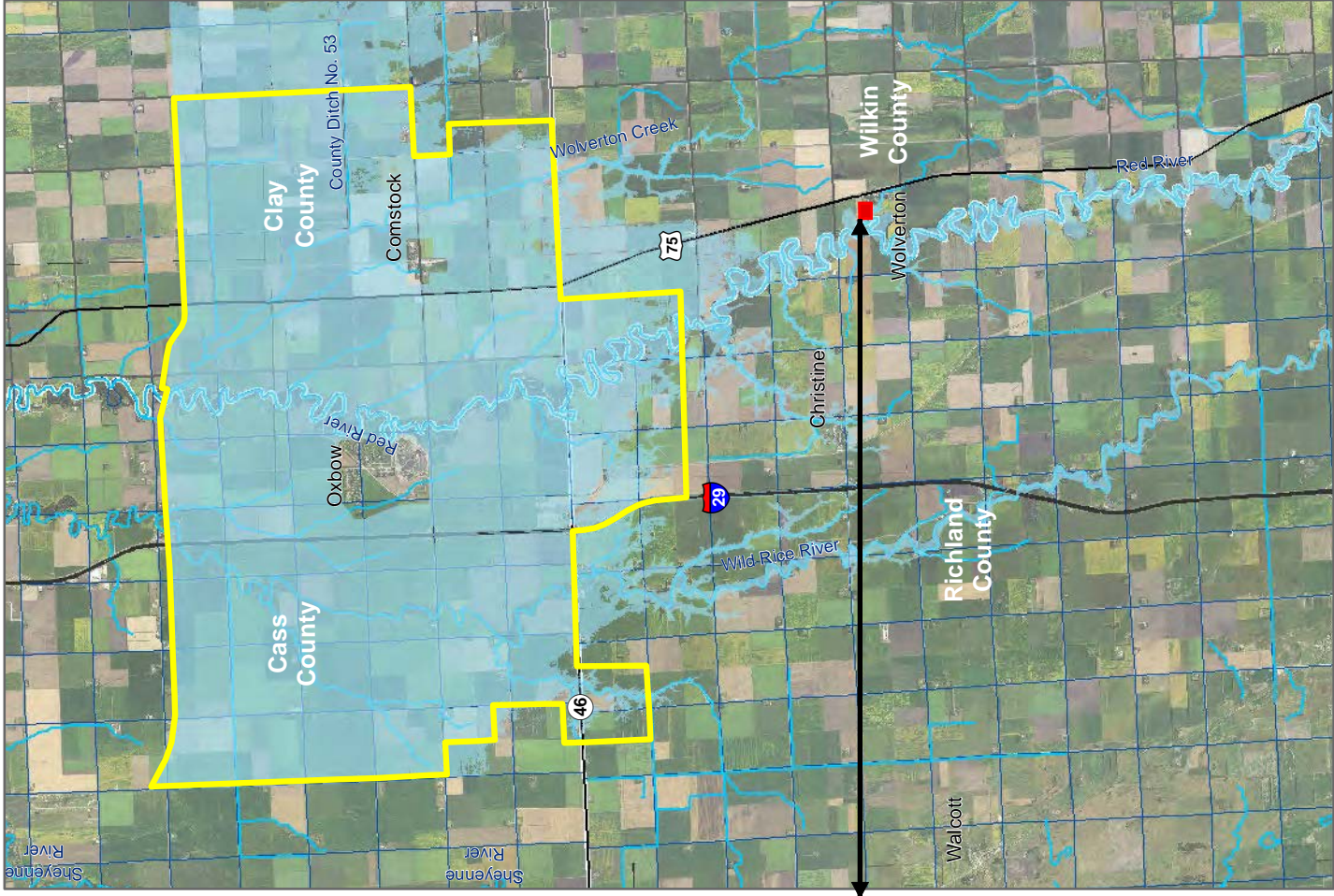
Note: 924.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models





# Cemetery Map

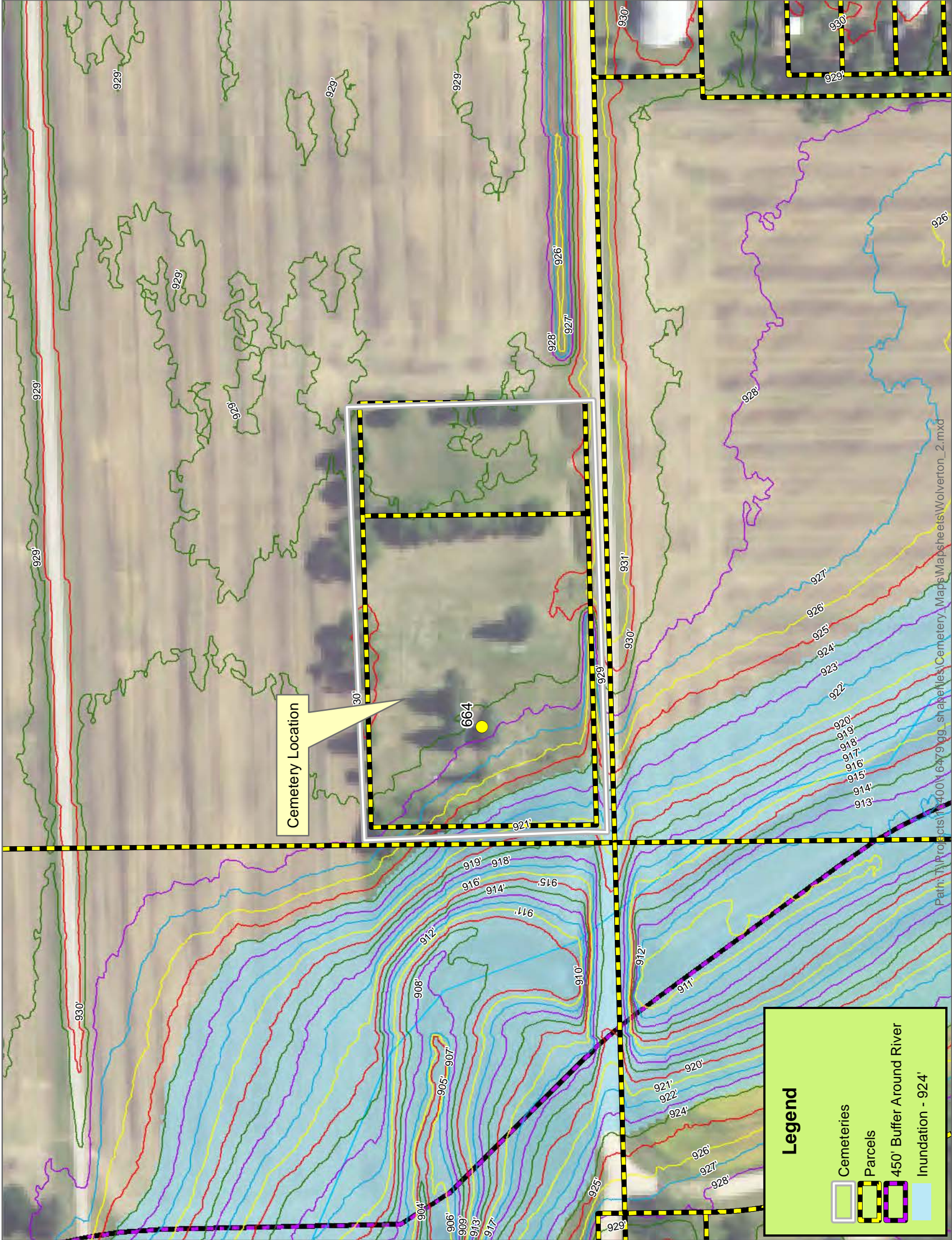
## WOLVERTON CEMETERY



**Owner:** Swedish Evangelical Lutheran  
Faith Lutheran Church

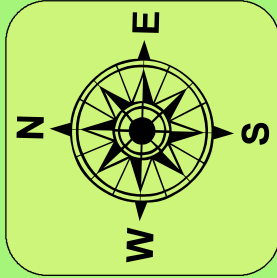
**Pin:** 31-028-0050  
31-028-0040

**County:** Wilkin County, MN



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	917.7	0	917.7	0
50-Year	925.0	3.5	925.7	5.5
100-Year	926.8	4	927.2	7
500-Year	930.0	8.5	930.0	9.5

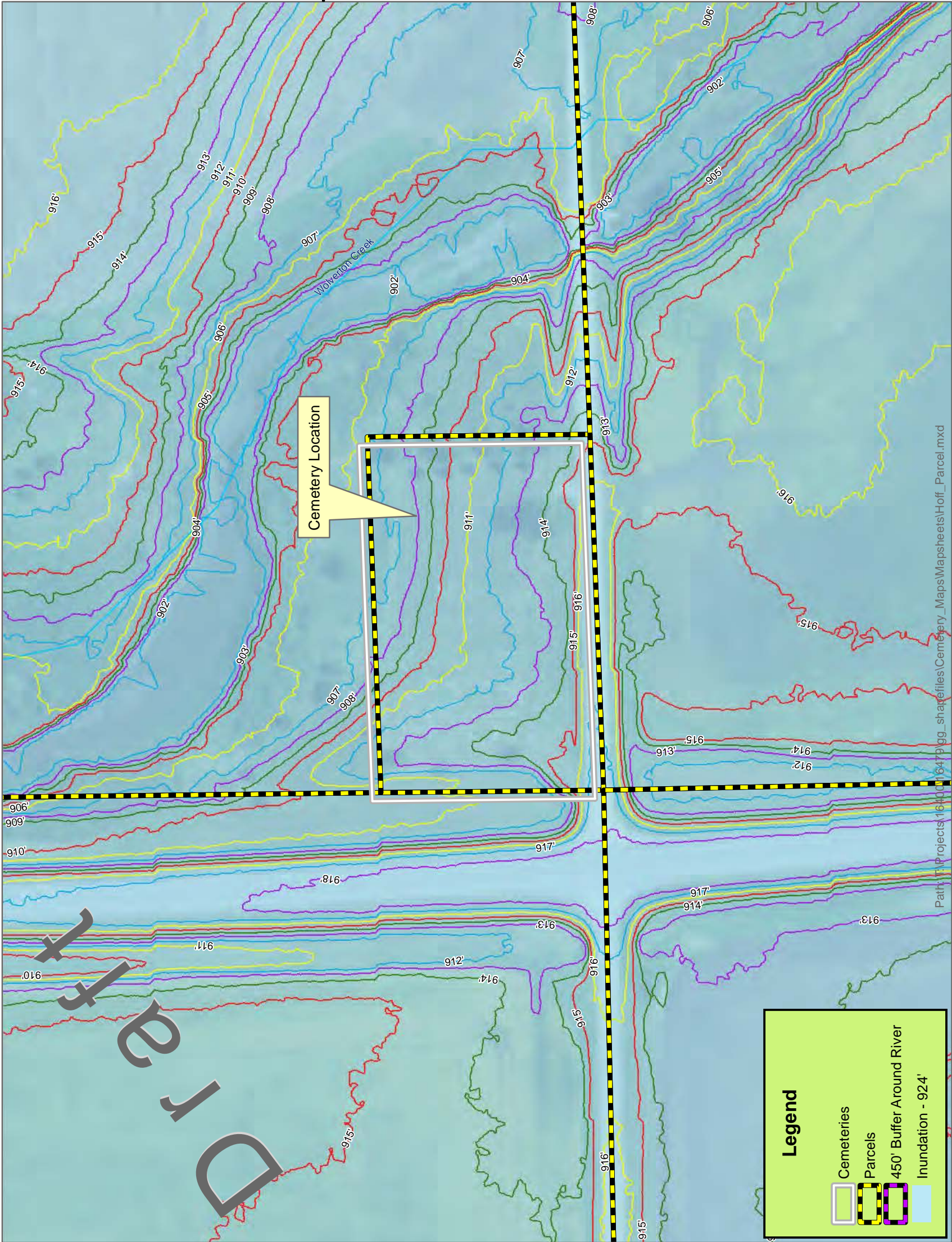
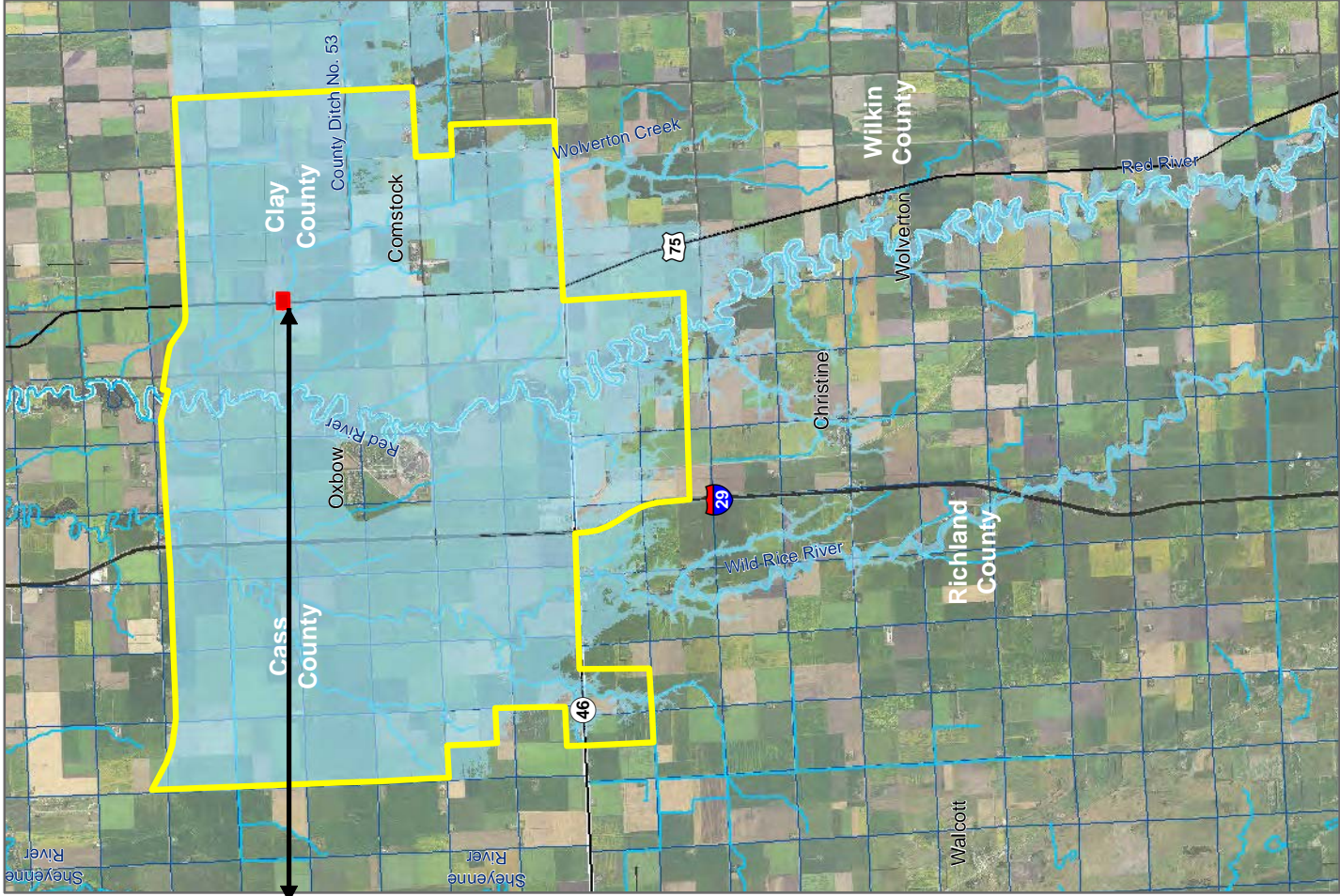
Note: 923.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models





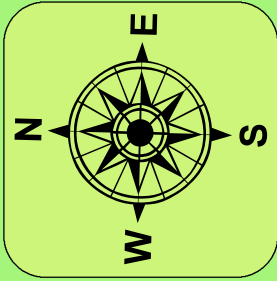
# Cemetery Map

## HOFF CEMETERY



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	909.5	3	909.6	3
50-Year	913.5	9	921.5	11.5
100-Year	914.2	10	922.2	12
500-Year	915.1	14.5	922.2	14

Note: 908.0 is the approximate lowest site elevation  
All Hydraulic Data Taken from Phase 7 HEC-RAS Models



**Owner:** HOFF AMERICAN LUTHREN CHURCH

**Pin:** 1500933301

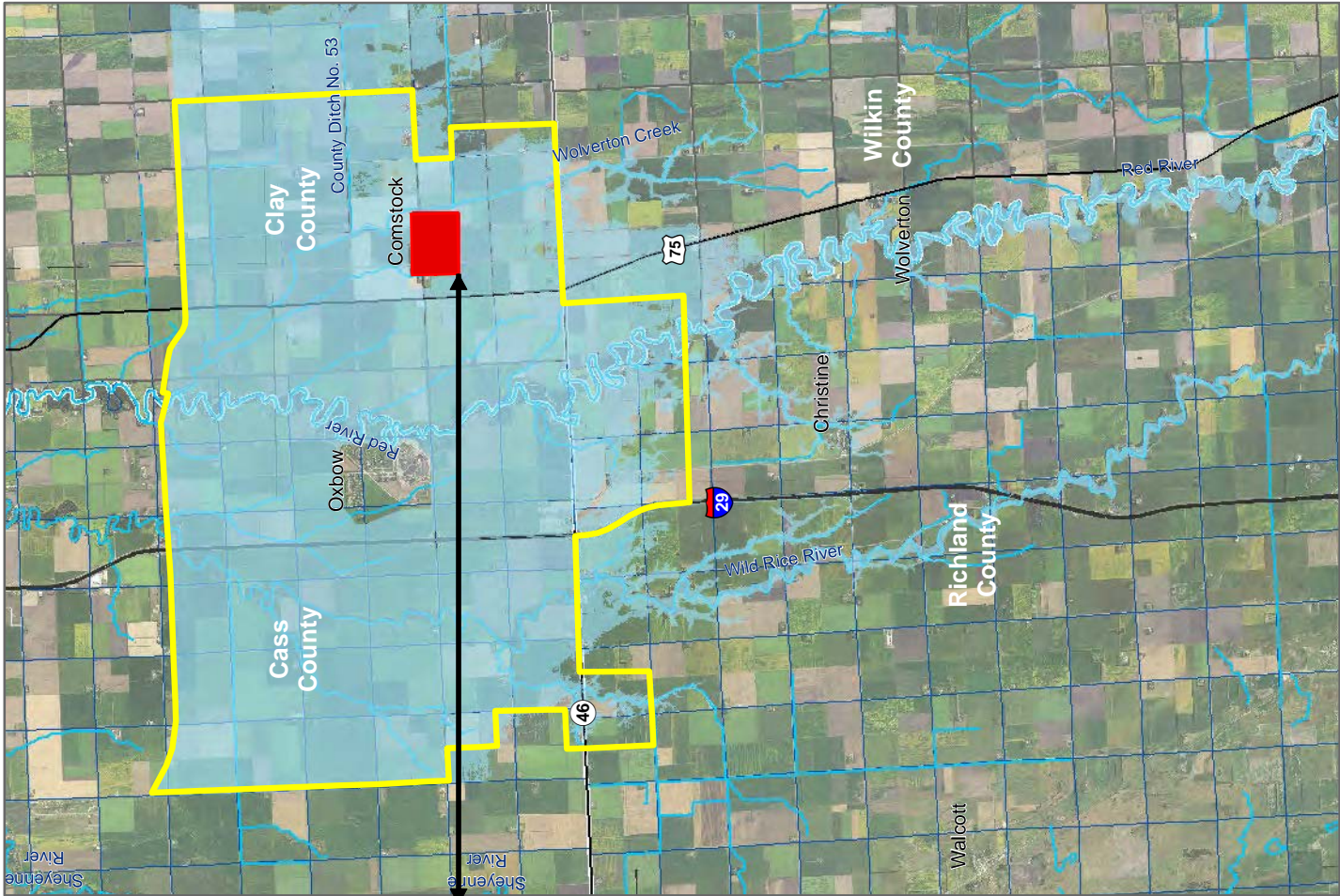
**County:** Clay County, MN





# Cemetery Map

## COMSTOCK CEMETERY



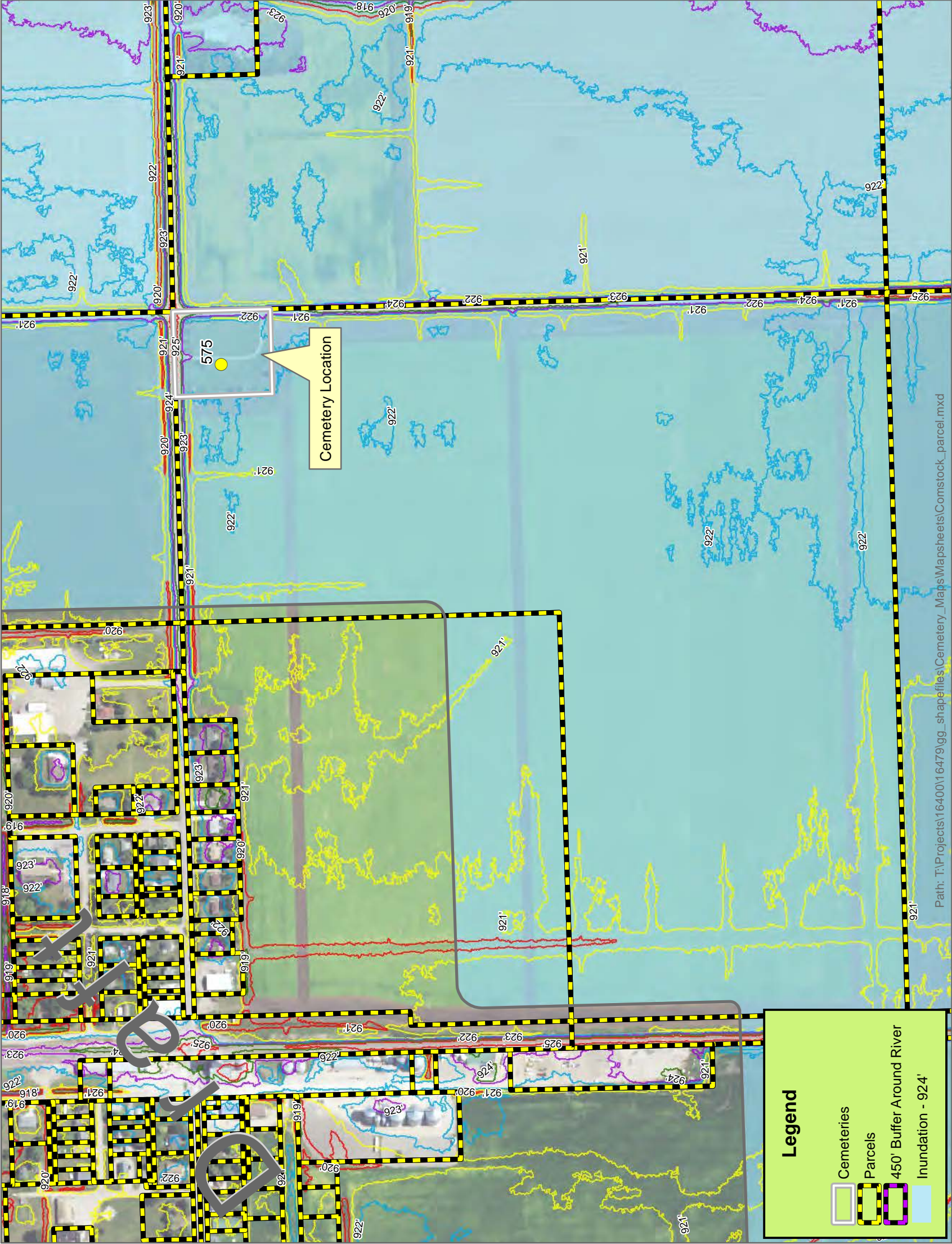
**Owner:** ASKEGAARD THOMAS & KATHERINE

**Pin:** 150281000

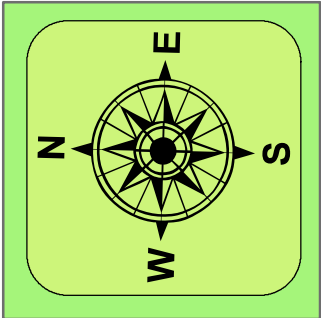
**County:** Clay County, MN

01753507001,0501,400

Feet



Return Frequency	Existing Conditions		With Project	
	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground	Peak Water Elevation	Duration (Days) of WSEL Above Natural Ground
10-Year	No River Flooding	No River Flooding	No River Flooding	No River Flooding
50-Year	No River Flooding	No River Flooding	921.5	0
100-Year	No River Flooding	No River Flooding	922.3	2
500-Year	No River Flooding	No River Flooding	922.3	2
Note: 922.0 is the approximate lowest site elevation All Hydraulic Data Taken from Phase 7 HEC-RAS Models				





## Mitigation of Historic Properties

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The Diversion Authority, USACE, and State Historical Preservation Offices from North Dakota and Minnesota have entered into a Programmatic Agreement to address preservation and mitigation of historical properties. The Programmatic Agreement and Amendment No. 1 are attached.

### Attachments

- Programmatic Agreement (11 pages)
- Amendment No. 1 (3 pages)

**PROGRAMMATIC AGREEMENT  
AMONG THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT,  
THE NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICER, AND  
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
THE FARGO-MOORHEAD METRO FLOOD RISK MANAGEMENT PROJECT,  
CASS COUNTY, NORTH DAKOTA AND CLAY COUNTY, MINNESOTA**

Final – 2011

**WHEREAS**, the St. Paul District, U.S. Army Corps of Engineers (Corps) is conducting a feasibility study of flood risk management measures for the cities of Fargo, Cass County, North Dakota and Moorhead, Clay County, Minnesota; and

**WHEREAS**, the Corps is considering the following flood risk management measures for the Fargo Moorhead metropolitan area and adjacent county areas (Figures 1 and 2): (1) a diversion channel capable of passing 20,000 cfs on the west (North Dakota) side of the Red River of the North along with upstream storage and staging areas, (Locally Preferred Plan [LPP] alternative) and (2) a diversion channel capable of passing 35,000 cfs on the east (Minnesota) side of the Red River of the North (Federally Comparable Plan [FCP] alternative).

**WHEREAS**, the necessary cultural resources investigations, evaluations, and coordination for compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, cannot be completed by the Corps or its agent prior to starting the design stage of the Fargo-Moorhead Metropolitan Flood Risk Management Project (Project); and

**WHEREAS**, the Corps has established the Project's Area of Potential Effects (APE), as required by 36 CFR § 800.4(a)(1) and defined in section 800.16(d), as consisting of the footprint of the selected diversion plan including the diversion channel alignment, its associated tieback levee(s), associated construction work areas, construction staging areas, borrow areas, and disposal areas, as well as associated upstream water storage and water staging areas, project-related floodproofing locations, and the viewshed to one-half mile from the diversion channel's centerline, to one-eighth mile from the tieback levee's centerline, and to one-eighth mile outside the storage area boundary levee's centerline; and

**WHEREAS**, the Corps has determined that the Project may have effects on historic properties within the APE and has consulted with the Advisory Council on Historic Preservation (Advisory Council) pursuant to section 800.2(b) of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), and the Advisory Council has declined to participate in the Programmatic Agreement for this Project; and

**WHEREAS**, the City of Fargo, North Dakota, and the City of Moorhead, Minnesota (Cities), as the non-Federal sponsors for the Project, have participated in consultation on the Project's flood risk management measures and have been invited to concur in this Programmatic Agreement as consulting parties; and



**WHEREAS**, Cass County in North Dakota and Clay County in Minnesota are also interested parties and have been invited to participate in consultation on the Project's flood risk management measures and to concur in this Programmatic Agreement as consulting parties; and

**WHEREAS**, the Corps' St. Paul District Engineer initially contacted the chairman or chairwoman of the Sisseton-Wahpeton Oyate, the White Earth Band of Minnesota Chippewa, the Leech Lake Band of Ojibwe, the Turtle Mountain Band of Chippewa, the Upper Sioux Community of Minnesota, the Lower Sioux Indian Community, the Spirit Lake Tribe, and the Red Lake Band of Chippewa Indians, by letter dated April 8, 2009; initially contacted the chairman or chairwoman of the Bois Forte Band of Chippewa Indians, the Three Affiliated Tribes (Mandan, Hidatsa and Arikara Nation), the Northern Cheyenne Tribe, the Standing Rock Sioux Tribe, the Yankton Sioux Tribe, and the Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, by letter dated October 7, 2010; and initially contacted the chairman of the Crow Creek Sioux Tribe and the Flandreau Santee Sioux Tribe, by letter dated May 2011, to determine these tribes' interest in the Project, particularly regarding potential Project effects on properties important to their history, culture, or religion, including traditional cultural properties, and the Corps will consult with any of these tribes interested in this Project; and

**WHEREAS**, opinions and comments on the Project and its alternative alignments have been and will be solicited through comment periods on the Environmental Impact Statement and public meetings, including those held to comply with the National Environmental Policy Act (NEPA);

**NOW THEREFORE**, the Corps, the North Dakota State Historic Preservation Officer (SHPO), and the Minnesota State Historic Preservation Officer agree that upon filing this Programmatic Agreement (PA) with the Advisory Council on Historic Preservation, the Corps will implement the following stipulations in order to comply with Section 106 of the National Historic Preservation Act, as amended, with respect to the Project.

## **STIPULATIONS**

The Corps will ensure that the following measures are carried out prior to the start of construction on Project flood risk management features at the cities of Fargo, Cass County, North Dakota, and Moorhead, Clay County, Minnesota:

A. The Corps will ensure that archeologists, historians, and architectural historians meeting the professional qualification standards given in the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* will conduct or directly supervise all cultural resources identification, evaluation, and mitigation related to this Project, to include archeological surveys and testing, historic structure inventories and evaluation, and data recovery and documentation mitigation, and be permitted in North Dakota pursuant to North Dakota Century Code Section 55-03-01 and in Minnesota pursuant to Minnesota Statutes Sections 138.31 to 138.42.



B. Literature and Records Search – Prior to conducting any cultural resources fieldwork, the Corps or its contractors or the Cities' contractors shall at a minimum consult the site files, previous survey reports, and other documents at the Historic Preservation Division of the State Historical Society of North Dakota at Bismarck and at the State Historic Preservation Office at the Minnesota Historical Society in St. Paul, for information on previously recorded cultural resources sites, site leads, and previously surveyed areas in the Project's APE.

C. Phase I Cultural Resources Investigation – The Corps or its contractors or the Cities' contractors will conduct a Phase I survey of all previously uninventoried project areas in order to locate any cultural resources (prehistoric, historic, and architectural) within the Project's APE. The cultural resources investigation will be an intensive, on-the-ground study of the area sufficient to determine the number and extent of the resources present and their relationships to Project features. The archeological investigations will take into account the unique geomorphology of the Red River Valley, and the potential for deeply buried soils. The survey also will consider and address visual effect impacts of proposed above-ground components (e.g., tieback levees) to cultural resources and landscapes within the project APE.

D. Phase II Testing and Evaluation – The Corps or its contractors or the Cities' contractors will evaluate the National Register of Historic Places eligibility of all cultural resources sites or structures over 50 years old located within the APE. Evaluation shall include subsurface testing using one-meter by one-meter excavation units to determine the information potential of prehistoric and historic archeological sites and archival research for historic archeological and architectural sites. The Corps will request the concurrence of the North Dakota SHPO or Minnesota SHPO, whichever is applicable, in determining each such site or structure's eligibility or non-eligibility to the National Register.

E. Phase III Mitigation – The Corps will avoid or minimize Project-related adverse effects to historic properties (National Register of Historic Places-listed or eligible sites, structures, buildings, districts, or objects) to the extent practicable. Where adverse effects due to the Project are not avoidable, the Corps will coordinate and implement a Memorandum of Agreement (MOA) with the North Dakota and/or Minnesota SHPO and the other consulting parties, any affected Indian tribes, and other interested parties, as applicable, to mitigate the adverse effects.

F. Burials – If any human burials are encountered during the cultural resources field work or Project construction, the Corps and its contractors and the Cities' contractors will comply with the Native American Graves Protection and Repatriation Act (NAGPRA) for federal or tribal lands, or with North Dakota Century Code Section 23-06-27, "Protection of Human Burial Sites, Human Remains, and Burial Goods," and North Dakota Administrative Code Chapter 40-02-03, "Protection of Prehistoric and Historic Human Burial Sites, Human Remains, and Burial Goods," for all other lands in North Dakota, or with Minnesota Statutes Section 307.08, Minnesota Private Cemeteries Act, for all other lands in Minnesota, whichever is applicable.

G. Traditional Cultural Properties – The Corps or its contractor will consult and coordinate with the tribes listed in the 8th WHEREAS clause above to identify sites of traditional religious or cultural importance to the tribe or their members within the Project area. Such sites shall be



avoided or adverse effects to them minimized to the extent practicable and the remaining effects mitigated per a MOA developed between the Corps, the applicable SHPO, and the affected tribe(s). Specific cultural and locational information on Traditional Cultural Properties (TCPs) is considered sensitive information by the tribes. Only general descriptions and general locational information will be released to the general public, unless otherwise required by law.

H. Curation – The Corps or its contractors or the Cities’ contractors shall ensure that all materials and records resulting from the survey, evaluation, and data recovery or mitigation conducted for the Project, or recovered during Project construction, will be curated in accordance with 36 CFR Part 79, “Curation of Federally-Owned and Administered Archeological Collections” at a facility within the state of North Dakota or the state of Minnesota, depending upon the location of the cultural resources fieldwork or site(s) being investigated, unless the private landowner wishes to retain ownership of artifacts recovered from his/her land.

I. Construction Monitoring – In order to minimize or avoid construction delays, monitoring of construction earthwork by a qualified professional archeologist is recommended at certain Project locations, such as river terraces, oxbows, and floodplains, which have a high potential for deeply buried archeological resources that cannot be reached by normal archeological subsurface testing methods. Any monitoring at a TCP location will also have a knowledgeable tribal representative present or available. The Corps will determine which specific locations should have construction monitoring based upon the results of the Phase I cultural resources investigation and the TCP study (Stipulations C and G above) and available soils and geomorphology information.

J. Discoveries During Project Implementation – Should an unidentified site or property that may be eligible for inclusion in the National Register be discovered during Project construction, the Corps will cease all work in the vicinity of the discovered property until it can be evaluated pursuant to guidelines in Stipulation D of this Programmatic Agreement. If the property is determined to be eligible, the Corps shall comply with the provisions of Stipulation E above. Project actions which are not in the area of the discovery may proceed while the consultation and any necessary evaluation and mitigation work is conducted.

K. Reports – The Corps shall ensure that draft and final reports resulting from actions pursuant to the Stipulations of this Programmatic Agreement will be provided to the appropriate SHPOs, the non-Federal sponsors, and upon request, to other parties to this agreement. All parties will have 30 days to review and comment on any draft reports furnished to them.

## **ADMINISTRATIVE PROCEDURES**

L. Dispute Resolution – Should the North Dakota SHPO, the Minnesota SHPO, or a concurring party to the PA object to any plans, documents, or reports prepared under the terms of this PA within 30 days after receipt, the Corps shall consult with the party to resolve the objection. If the Corps determines that the objection cannot be resolved, the Corps shall forward all documentation relevant to the dispute to the Advisory Council. Any recommendation or comment provided by the Advisory Council will be understood to pertain only to the subject of

the dispute. The Corps' responsibility to carry out all actions under this PA that are not the subject of the dispute will remain unchanged.

M. Amendments – Any party to this PA may request that it be amended, whereupon the parties will consult to consider such amendment. The PA may only be amended with the written concurrence of all parties who have signed the PA.


N. Anti-Deficiency Provision – All obligations on the part of the Corps under this PA shall be subject to the appropriation, availability and allocation of sufficient funds to the St. Paul District for such purposes.

O. Termination

1. Proof of compliance with the Stipulations to the satisfaction of the Corps, the North Dakota SHPO and the Minnesota SHPO will constitute termination of this Programmatic Agreement.
2. If the terms of this PA have not been implemented fifteen years after execution, this agreement will be null and void. In such an event, the Corps shall notify the North Dakota SHPO and the Minnesota SHPO of its expiration, and if appropriate, shall re-initiate review of the undertaking in accordance with 36 CFR part 800.
3. Any signatory party to this PA may withdraw from it by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to withdrawal to seek agreement on amendments or other actions that would avoid withdrawal. In the event of termination, or withdrawal, the Corps will comply with federal regulation 36 CFR part 800, Protection of Historic Properties.

Execution of this Programmatic Agreement, its subsequent filing with the Advisory Council, and implementation of its Stipulations evidences that the Corps has taken into account the effects of the Project on National Register listed or eligible historic properties, and has satisfied its Section 106 responsibilities for all aspects of this undertaking.

ST. PAUL DISTRICT, U.S. ARMY CORPS OF ENGINEERS

BY:  Date: 29 June 2011  
LTC. Kendall A. Bergmann, Acting District Engineer  
*Sud, th L. A. DesHornais*

NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICER

BY:  Date: July 13, 2011  
Merlan E. Paaverud, Jr., State Historic Preservation Officer



MINNESOTA STATE HISTORIC PRESERVATION OFFICER

BY:  Date: 6/29/11  
Britta Bloomberg, Deputy State Historic Preservation Officer


Concur:

CITY OF FARGO

BY:  Date: 7-11-11  
Dennis Walaker, Mayor

CITY OF MOORHEAD

BY:  Date: 7-6-2001  
Mark Voxland, Mayor

BY:  Date: 7-6-11  
Michael J. Redlinger, City Manager

CASS COUNTY BOARD OF COMMISSIONERS

BY:  Date: 7-6-11  
Darrell Vanyo, Chairman

CLAY COUNTY BOARD OF COMMISSIONERS

BY:  Date: 7/6/11  
Jon Evert, Chairman

Concur:

SISSETON WAHPETON OYATE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Robert Shepherd, Chairman

WHITE EARTH BAND OF MINNESOTA CHIPPEWA

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Erma Vizenor, Chairwoman

LEECH LAKE BAND OF OJIBWE

BY: \_\_\_\_\_ Date: July 26, 2011  
  
~~Arthur "Archie" LaRose, Chairman~~  
GINA LEMON, LLTHPO

TURTLE MOUNTAIN BAND OF CHIPPEWA

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Merle St. Claire, Chairman

UPPER SIOUX COMMUNITY OF MINNESOTA

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Kevin Jensvold, Chairman

LOWER SIOUX INDIAN COMMUNITY

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Gabe Prescott, President

Concur:

SPIRIT LAKE TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Roger Yankton, Sr., Chairman

BOIS FORTE BAND OF CHIPPEWA INDIANS

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Kevin Leecy, Chairman

THREE AFFILIATED TRIBES (MANDAN, HIDATSA AND ARIKARA NATION)

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Tex G. Hall, Chairman

NORTHERN CHEYENNE TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Leroy Spang, President

STANDING ROCK SIOUX TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Charles W. Murphy, Chairman

ASSINIBOINE AND SIOUX TRIBES OF THE FORT PECK INDIAN RESERVATION

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
A.T. "Rusty" Stafne, Chairman

Concur:

YANKTON SIOUX TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Robert Cournoyer, Chairman

CROW CREEK SIOUX TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Duane Big Eagle, Sr., Chairman

FLANDREAU SANTEE SIOUX TRIBE

BY: \_\_\_\_\_ Date: \_\_\_\_\_  
Anthony Reider, President

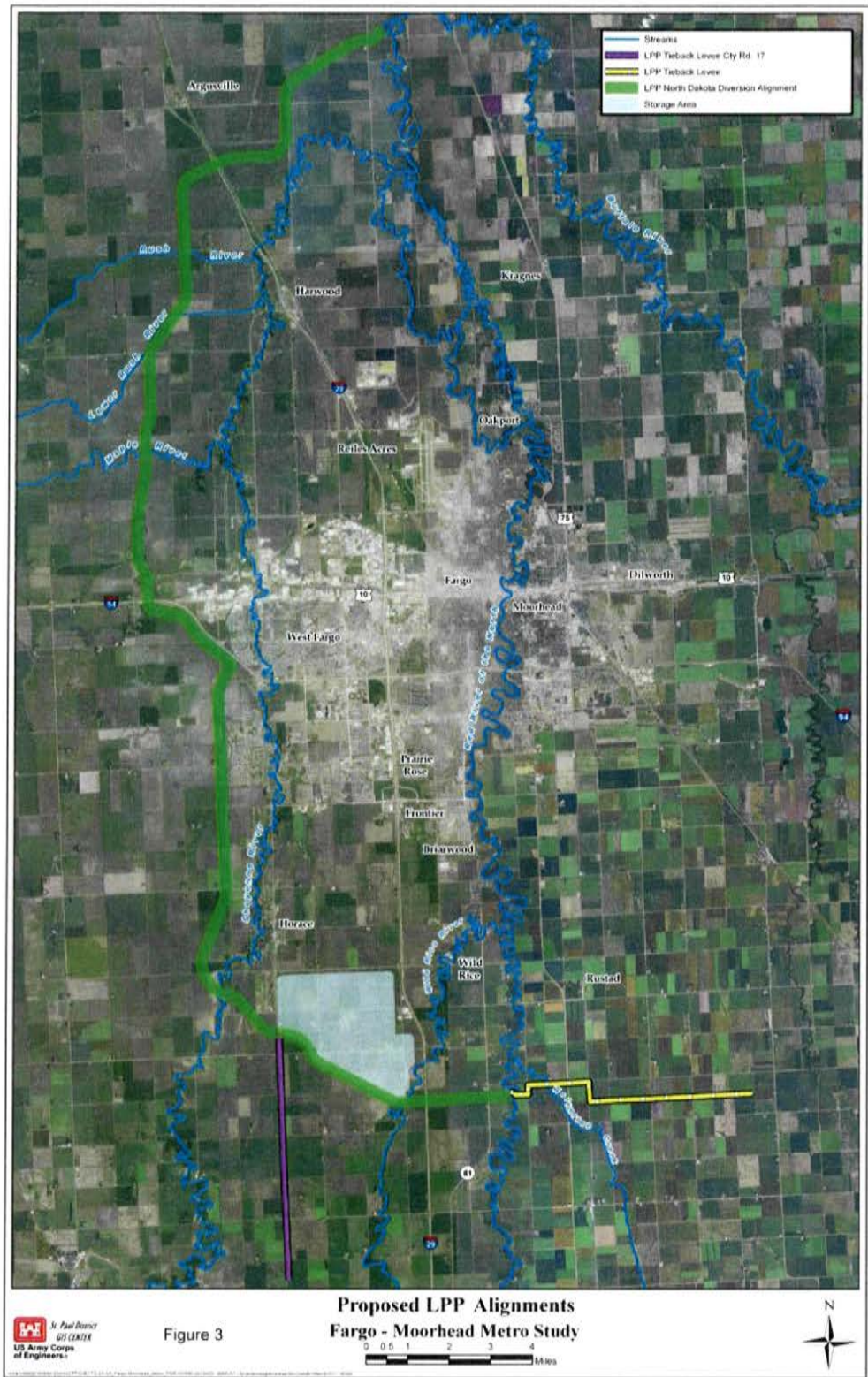


Figure 1. Proposed North Dakota Diversion alignments (Locally-Preferred Plan).



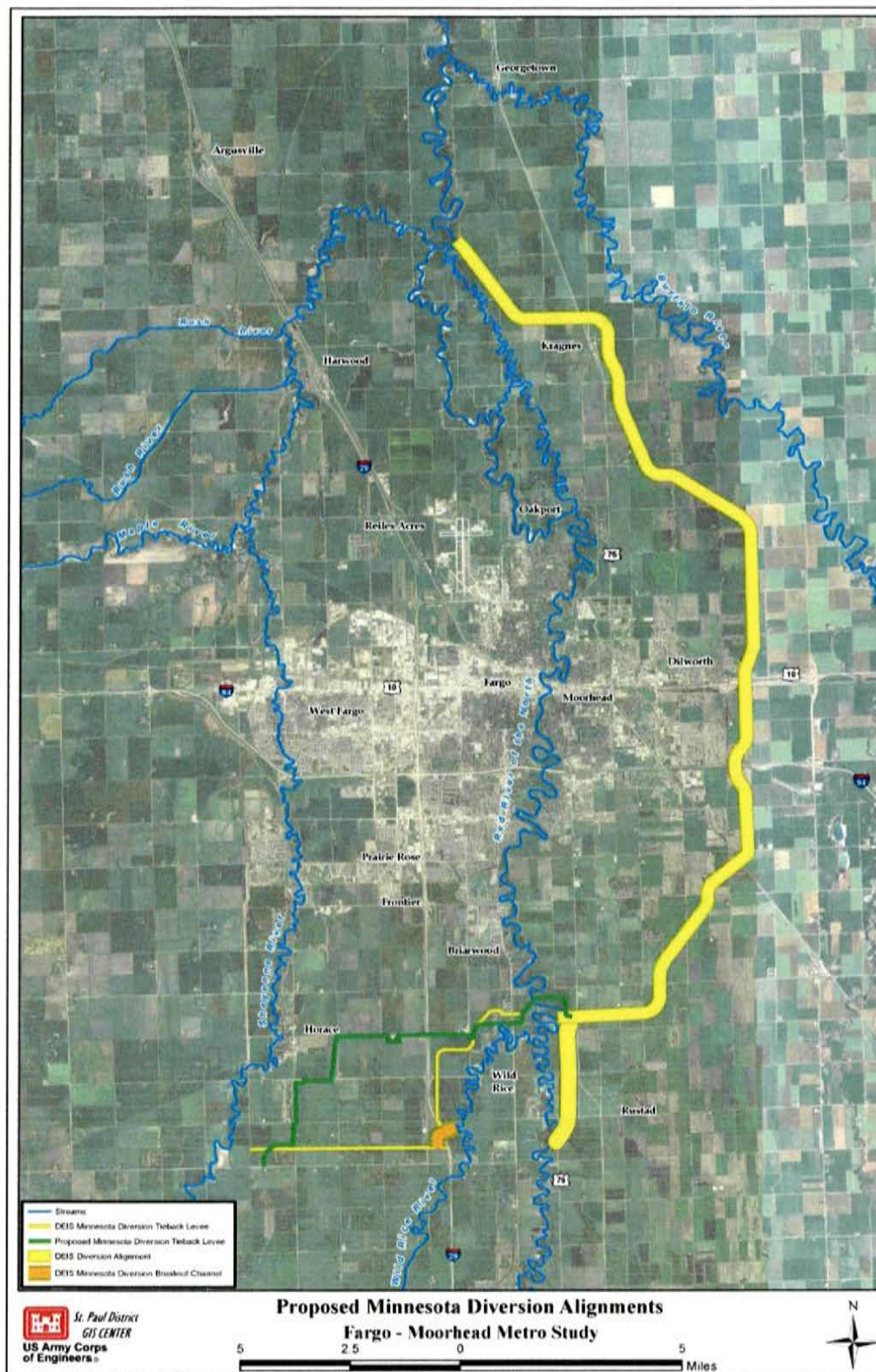


Figure 2. Proposed Minnesota Diversion alignments (Federally Comparable Plan).



**PROGRAMMATIC AGREEMENT  
AMONG THE U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT,  
THE NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICER, AND  
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICER  
REGARDING  
THE FARGO-MOORHEAD METRO FLOOD RISK MANAGEMENT PROJECT,  
CASS COUNTY, NORTH DAKOTA AND CLAY COUNTY, MINNESOTA  
AMENDMENT NO. 1**

WHEREAS, the St. Paul District, U.S. Army Corps of Engineers (Corps) is continuing to evaluate and design flood risk management measures for the cities of Fargo, Cass County, North Dakota and Moorhead, Clay County, Minnesota; and

WHEREAS, a Programmatic Agreement between the Corps, the North Dakota State Historic Preservation Officer, and the Minnesota State Historic Preservation Officer, was executed on June and July 2011; and

WHEREAS, project features may include environmental mitigation areas and in-town (Fargo and Moorhead) levees, in addition to those previously addressed in the original Programmatic Agreement;

NOW THEREFORE, the parties agree to amend the Programmatic Agreement as follows:

Revise the 4th WHEREAS clause from:

**WHEREAS**, the Corps has established the Project's Area of Potential Effects (APE), as required by 36 CFR § 800.4(a)(1) and defined in section 800.16(d), as consisting of the footprint of the selected diversion plan including the diversion channel alignment, its associated tieback levee(s), associated construction work areas, construction staging areas, borrow areas, and disposal areas, as well as associated upstream water storage and water staging areas, project-related floodproofing locations, and the viewshed to one-half mile from the diversion channel's centerline, to one-eighth mile from the tieback levee's centerline, and to one-eighth mile outside the storage area boundary levee's centerline; and

To the following:

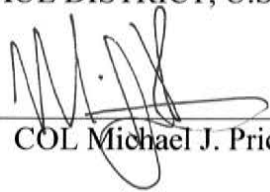
**WHEREAS**, the Corps has established the Project's Area of Potential Effects (APE), as required by 36 CFR § 800.4(a)(1) and defined in section 800.16(d), as consisting of the footprint of the selected diversion plan including the diversion channel alignment, its associated tieback levee(s), associated construction work areas, construction staging areas, borrow areas, and disposal areas, as well as associated upstream water storage and water staging areas, project-related floodproofing locations, project-related environmental mitigation areas, project-related in-town

Programmatic Agreement Amendment No. 1  
Fargo-Moorhead Metro Flood Risk Management Project  
Page 2 of 3

(Fargo and Moorhead) levees, and the viewshed to one-half mile from the diversion channel's centerline and all other above-ground project features; and

Signature below indicates concurrence with the above proposed amendment to the original Programmatic Agreement.

ST. PAUL DISTRICT, U.S. ARMY CORPS OF ENGINEERS

BY:  DATE: 15 Nov 2012  
COL Michael J. Price, District Engineer

NORTH DAKOTA STATE HISTORIC PRESERVATION OFFICER

BY:  DATE: 11-20-12  
Merlan E. Paaverud, Jr., State Historic Preservation Officer

MINNESOTA STATE HISTORIC PRESERVATION OFFICER

BY:  DATE: 12-04-2012  
Barbara M. Howard, MN Deputy State Historic Preservation Officer

Concur:

CITY OF FARGO

BY:  DATE: 12-19-12  
Dennis Walaker, Mayor

CITY OF MOORHEAD

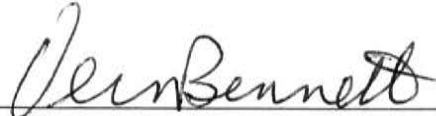
BY:  DATE: 2-14-2013  
Mark Voxland, Mayor

BY:  DATE: 2/13/13  
Michael J. Redinger, City Manager

Concur:

CASS COUNTY BOARD OF COMMISSIONERS

BY:

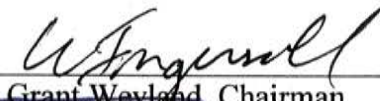
  
~~Ken Pawluk, Chairman~~  
Vern Bennett

DATE:

1-7-2013

CLAY COUNTY BOARD OF COMMISSIONERS

BY:

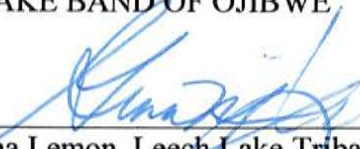
  
~~Grant Weyland, Chairman~~  
Wayne Engersoll

DATE:

2-15-13

LEECH LAKE BAND OF OJIBWE

BY:

  
Gina Lemon, Leech Lake Tribal Historic Preservation Officer

DATE:

5-15-13

## Post-Operation Private Lands Debris Clean-Up Plan

---

### Introduction

Operation of the FM Area Diversion Project (“Project”) will result in the staging and retention of flood waters upstream of the Fargo-Moorhead metro area. The upstream retention area will impact a different amount of acres for each flood event depending on the magnitude of the flood and a variety of other factors. The Diversion Authority will obtain flowage easements on the properties that are within a defined mitigation area. The flowage easement will compensate property owners for the impacts associated with the Project, but it places the responsibility for post-operation clean-up on the property owner. In recognition that operation of the upstream retention area may cause debris (logs, straw, trash, etc.) to accumulate within and along the edges of the upstream retention area, the Diversion Authority has developed the following post-operation debris clean-up plan.

### Post-Operation Debris Clean-Up Plan

If the Project operates, the Diversion Authority will enact the following post-operation debris clean-up plan. The plan is specific to clean-up of debris in the upstream retention area from operation of the Project.

- The plan will pattern the “clean-up week” approach used throughout the metro area.
- The Diversion Authority will declare the Project operated.
- The Diversion Authority will define the boundary of the upstream retention area based on the actual flood event.
- The Diversion Authority will notify affected property owners in the area eligible via posting of a map on the Project website ([www.fmdiversion.com](http://www.fmdiversion.com)) for clean-up assistance and provide direction on clean-up procedures.
- The Diversion Authority will solicit quotes from contractors for clean-up of flood debris in the upstream retention area.
- Upon receipt of quotes, the Diversion Authority will retain one or more contractors to conduct the flood debris clean-up operations in the upstream retention area.
- Property owners will be responsible for moving debris to established field entrances or access points that the contractors can access without impacting farm operations.
- Contractors will only enter upon established field entrances or access points to pick up the debris.
- Eligible debris for pick-up will be limited to debris caused by the flood event.
- The contractors will be responsible for ultimate disposal of the debris.



## Post-Operation Public Lands Repair and Clean-Up Plan

---

### Introduction

Operation of the FM Area Diversion Project ("Project") will result in the staging and retention of flood waters upstream of the Fargo-Moorhead metro area. The upstream retention area will impact a different amount of acres for each flood event depending on the magnitude of the flood and a variety of other factors. There are a variety of "public lands" in the upstream retention area such as township and county roads, drainage ditches, cemeteries, and parks. In recognition that operation of the upstream retention area may cause some damage to these public lands as well as the accumulation of debris (logs, straw, trash, etc.), the Diversion Authority has developed the following post-operation public lands repair and clean-up plan.

### Post-Operation Public Lands Repair and Clean-Up Plan

If the Project operates, the Diversion Authority will enact the following post-operation public lands repair and clean-up plan. The plan is specific to repair and clean-up of public lands in the upstream retention area from operation of the Project. Public lands include township and county roads, drainage ditches, cemeteries, and parks. This plan will allow local government entities (townships, water boards, etc.) to contract for the repair and clean-up work on the public lands, and then submit for reimbursement to the Diversion Authority. This plan allows the local government entities the ability to contract for the work as they prefer.

- The plan will pattern the approach the FEMA uses for post-disaster damage assessment and reimbursements.
- The Diversion Authority will declare the Project operated.
- The Diversion Authority will define the boundary of the upstream retention area based on the actual flood event.
- The Diversion Authority will notify public entities of eligible areas and request that the public entity identify any damage that may have been caused by the Project operation, including debris removal.
- The Diversion Authority will send a representative to meet with the public entities to verify damage on a site by site basis.
- The public entities shall solicit quotes (in conformance with procurement, legal, and regulatory requirements) for the repairs or clean-up work at each site, and submit the quotes for each site to the Diversion Authority for review.
- The Diversion Authority shall review the quotes for reasonableness, and either approve, request additional details, or deny the quote.
- The Diversion Authority will confirm the work was completed in accordance with the quote, and then reimburse the public entity.
- The Diversion Authority will also consider reimbursement of emergency repairs that may be needed in advance of following this process.

## Summer Operation Supplemental Farm Revenue Program

---

### Introduction

The Project includes the temporary and occasional retention of flood waters immediately upstream of the Fargo-Moorhead metro area. The Diversion Authority will need to provide mitigation for properties in the upstream retention area, and the mitigation has generally been considered to be the acquisition of a flowage easement, which is required by USACE.

The flowage easement will cover impacts associated with the Project and will be a one-time payment at the time the easement is purchased. Under this plan, the one-time payment for the flowage easement would compensate the land-owner for impacts associated with delayed planting, prevented planting, debris, loss of development rights, etc.

The Diversion Authority recognizes the impact to the agricultural community on both the North Dakota and Minnesota side of the Red River and has studied and considered supplemental mitigation solutions, which are greater than what has historically been provided to property owners. In recognition of the importance of the farm economy to the region, that summer operation would damage growing crops, and that summer operation of the Project is extremely unlikely, the Diversion Authority will adopt a Summer Operation Supplemental Farm Revenue program to provide additional assurance to producers in the upstream retention area. The Program would provide producers coverage for the risk associated with Project induced flooding on growing crops during summer operation of the Project. The Diversion Authority understands and acknowledges that this program is important to the agricultural community because under these events, it is believed that producers will not be able to utilize the federal crop insurance program(s) for damages caused by operation of the Project.

### Proposed Summer Operation Supplemental Farm Revenue Program

The Diversion Authority will either purchase an insurance product or create a self-funded insurance reserve fund for the Summer Operation Supplemental Farm Revenue Program. The program will compensate producers for crop losses caused by operation of the Project during the normal crop growing season.

The Diversion Authority will seek an independent, third party agent to administer damage claims associated with summer operation of the Project and determining whether payments should be made from the Program. The Diversion Authority would be responsible to make timely payment claims based on the adjustment decisions of the third party agent.

Though there has never been a summer flood event in recorded history that would have triggered the operation of the Diversion Project, it is possible that an event could happen. If this major rain event occurs during the normal crop growing season, and if the rain is significant enough to cause project to operate, flooding will occur on farmlands due to the rain event. A producer could submit a damage claim and then the claims adjuster would evaluate a universe of data to determine liability, and shares

of liability, etc. If the claims administrator and adjuster find the Project is liable, then the Diversion Authority would make the payment to the producer.

To be eligible for the program, the producer must participate in federal crop insurance program. Producers obtain various rates of coverage through federal crop insurance. Some are insured for 65 percent, others insure for upwards of 80 percent. The Diversion Authority's Program would provide 90 percent coverage for damages caused by summer operation of the Project.

### **Additional Background:**

- The FM Diversion Project includes an upstream retention area for staging of flood waters as a necessary feature of the Project.
- USACE has defined a portion of the upstream staging as an "operating pool". This area is necessary to offset the downstream impacts that would exist without upstream retention, and the operating pool is based on areas with impacts greater than 1-foot (generally).
- The upstream impacts extend beyond the "operating pool" for a total area of approximately 53,000 acres.
- The NDSWC and MDNR have suggested using the top elevation of the Limited Service Spillway, or the maximum pool elevation, which are both 924-feet, to define the area of mitigation.
- Mitigation is generally considered a flowage easement, as USACE has mandated that the Diversion Authority obtain a flowage easement for areas within the operating pool.
- The flowage easement will cover impacts associated with the Project, and will be a one-time payment at the time the easement is secured. Under this plan, the flowage easement would cover impacts associated with delayed planting, loss of development rights, etc.
- The Diversion Authority has considered additional mitigation solutions such as a farm revenue replacement program. One of the primary considerations of additional farm mitigation is to help ensure producers are covered for the risk of Project induced flooding on growing crops. Under these events, producers will not be able to tap into federal crop insurance.
- Based on insured values and crop types in 2014, along with the size of the upstream retention area, the total liability of a complete loss is approx. \$20-25M.
- The Diversion Authority will either purchase an insurance product or self-fund the program. The Diversion Authority is exploring insurance products for this purpose. The Diversion Authority has the financial strength to sustain a self-funded insurance reserve fund in order to assume the risk of this type of event, given that the probability of events that would cause summer operation are extremely low, and given the O&M Funding Program that will be established.
- If this Program is utilized, the Diversion Authority would utilize an O&M Funding Program to fund/finance the costs associated the farm revenue payments.

## **Financial Assurance Plan for On-Going Mitigation**

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### **Introduction**

The FM Area Diversion Project (Project) will require operation and maintenance for many generations. In addition to defining the financial plan for construction of the Project, it is important to develop a financial plan for on-going operation and maintenance of the Project, including funding for the various mitigation efforts that will be required well into the future.

### **O&M Funding Program**

The Diversion Authority will establish an on-going O&M Funding Program and utilize either sales taxes or a maintenance district, or a combination of both to fund the costs. In addition, the Diversion Authority will make sure that all of the mitigation costs outlined in the Mitigation Plan will be eligible for funding through the O&M Funding Program. The O&M Funding Program will also provide a mechanism for funding unforeseen mitigation needs that may arise due to Project operation. The Project will follow an Adaptive Management and Monitoring Plan (AMMP) to monitor performance of environmental mitigation projects along with environmental changes after Project operation events, and the O&M Funding Program will fund additional required mitigation as determined through the AMMP.



## Mitigation Communication Plan

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### Introduction

The Diversion Project is a massive civil works project that has a tremendous amount of public interest. This has been the case since federal studies began in 2008. Public interest is expected to continue through construction and beyond as the Project is operational – both for protection of the metro area, and for proper planning and notification of impacts to the upstream retention area. Communications during construction and operation will remain an important long-term goal of the Diversion Authority, and any other entity responsible for operation and maintenance of the Project.

### Existing Communication Structures

To date, the primary means of communication with the general public has been through regular contact with staff at the government entities that make up the Diversion Authority and through the Project website [www.fmdiversion.com](http://www.fmdiversion.com). In addition, traditional local media has covered the project during various Project milestones. Tools including fact sheets, newsletters, social media, news conferences, and videos have also been used.

It is likely that the government entities that make up the Diversion Authority will remain the key front-line communicators of the Project during maintenance and recreation, and during times of flooding and operations.

The Diversion Authority is also committed to the long-term existence of [www.fmdiversion.com](http://www.fmdiversion.com) as a primary communication method with the general public. The website allows for universal access regardless of location or time. From time to time, the Diversion Authority may review the use of the project website to determine if communication needs to expand beyond the technology in use. For example, currently the Diversion Authority utilizes a Twitter account and newsletter to keep the public abreast of the latest news and progress. These continue to be useful tools but may be augmented in the future if new technology presents more useful tools that better achieve communication goals.

Working with traditional media sources will continue, but will likely evolve with technological advancements as well. During times of flood, traditional communication channels that the public is comfortable with are critical in getting timely information disseminated.

### Future Project-Specific Communication Methods

With the completion of the Project, there will be significant ongoing maintenance and operational specifics every year. In times of extreme flooding, communication efforts become especially important for safety, agricultural planning, timely burials, and other land management concerns of those in the upstream retention area.

Property owners within the upstream retention area will be given timely notification of impending operation of the Project to ensure proper management of their properties. This notification will occur before the Project operates with as much notice as the emergency level of the situation allows.

In addition to communications regarding operation of the Project, there will be a recurring need to notify and remind property owners with flowage easements attached to their property. The Diversion Authority will utilize the project website to host maps indicating the upstream retention area in which flowage easements are in place. The maps on the project website will serve as a reminder for property owners to make sure they remain aware of existing flowage easements and the obligations of the property owner and the Diversion Authority under the terms of the flowage easement. In addition, it should be noted that the Diversion Authority will also record those flowage easements with the County Records office to ensure it is available for legal purposes at all times.

## Oxbow Hickson Bakke Mitigation Project

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### Summary

The FM Area Diversion Project (Project) includes an upstream retention area for temporarily and occasionally storing flood waters. The upstream retention area would require acquisition and relocation of the City of Oxbow, Hickson, and Bakke if a ring levee was not constructed to protect those communities and mitigate the impacts from the Project. The Oxbow, Hickson, Bakke (OHB) Ring Levee Project was developed as a mitigation solution in 2013 as a means to mitigate existing, natural, and induced flooding. The OHB Ring Levee Project was incorporated into the Supplemental Environmental Assessment prepared by USACE in September 2013.

The OHB Ring Levee Project includes:

- Construction of a ring levee around the three communities.
- Internal drainage improvements.
- Acquisition and relocation of 40 residences, the golf course clubhouse, several golf holes, and farmland to make way for the levee.
- Construction of new residential lots for relocation of displaced Oxbow residences, and relocation of displaced upstream retention area residences.

Upon completion, the Cass County Joint Water Resource District (CCJWRD) will own and maintain the OHB Ring Levee, in coordination with the City of Oxbow and the Diversion Authority.

### Supplemental EA Appendix C

Appendix C from the Supplemental Environmental Assessment provides a summary and background, identification of alternatives, and description of the selected OHB ring levee alternative. The report is attached to this Mitigation Plan for convenience.

### Additional Details

Additional details regarding the OHB Ring Levee can be found in a Technical Memorandum dated March 12, 2013. The Technical Memorandum can be found online at:

[http://www.fmdiversion.com/pdf/CorpsEA/References/OHB%20Ring%20Levee/TM\\_OHB\\_20120312.pdf](http://www.fmdiversion.com/pdf/CorpsEA/References/OHB%20Ring%20Levee/TM_OHB_20120312.pdf)



**US Army Corps  
of Engineers®**  
St. Paul District

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# **Oxbow/Hickson/Bakke Ring Levee Appendix C**

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Fargo Moorhead Metropolitan Area  
Flood Risk Management Project

EA Document



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# Oxbow/Hickson/Bakke Ring Levee

## Appendix C

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# Oxbow/Hickson/Bakke Ring Levee

## Appendix C

### 1 INTRODUCTION

#### 1.1 Summary

Operation of the Fargo Moorhead Metropolitan Area Flood Risk Management Project (Project) would result in flood water being staged upstream of the cities of Fargo and Moorhead, including around the city of Oxbow, the village of Hickson, and the Bakke subdivision. The Final Feasibility Report and Environmental Impact Statement (FEIS) included acquiring all structures in fee in the Oxbow, Hickson, and Bakke area. The United States Army Corps of Engineers (Corps), at the request of the non-Federal sponsors, has determined that constructing a ring levee around the Oxbow, Hickson, and Bakke area is a viable alternative to a total fee acquisition. The ring levee around the Oxbow, Hickson, and Bakke area is the alternative recommended by the non-Federal sponsors. The cost to construct the proposed levee and associated features is estimated to be approximately \$65 million. The cost for a fee acquisition of all three communities, as presented in the FEIS, is estimated to cost approximately \$74 million.

#### 1.2 Background

In the FEIS, the communities of Oxbow, Hickson, and Bakke are identified as being located within the Staging Area. During development of the FEIS, the city of Oxbow asked that either all residential structures be benefited by the construction of a permanent ring levee, or the entire community be acquired in fee. Through analysis during the feasibility phase it was determined that all residential structures could not be benefited. Due to their proximity to the riverbank and geotechnical stability issues, several homes would need to be removed to construct a ring levee to benefit the remainder of the communities. After the determination that all residential structures could not be benefited with a ring levee, it was recommended that the community be acquired in fee.

After the FEIS was completed, the non-Federal sponsors asked the Corps to analyze a ring levee option to benefit the three communities, with the understanding that several homes would need to be removed, but could be replaced on a one-for-one basis within the ring levee benefitted area.

#### 1.3 Development of Alternative Alignments

An alignment was developed and is shown in Figure 1. This conceptual alignment was presented to the communities and general public at a meeting on January 8, 2013 in Fargo, North Dakota. Individual meetings were also held for residents of Oxbow, Hickson, and Bakke after the public meeting and the following two days in Hickson, North Dakota. The meetings were held to provide information on the proposed ring levee concept, to meet with impacted residents, and to address concerns about the

proposed ring levee. Residents impacted by the ring levee were invited, via letter, to attend the public meeting and to sign up for a one-to-one meeting.

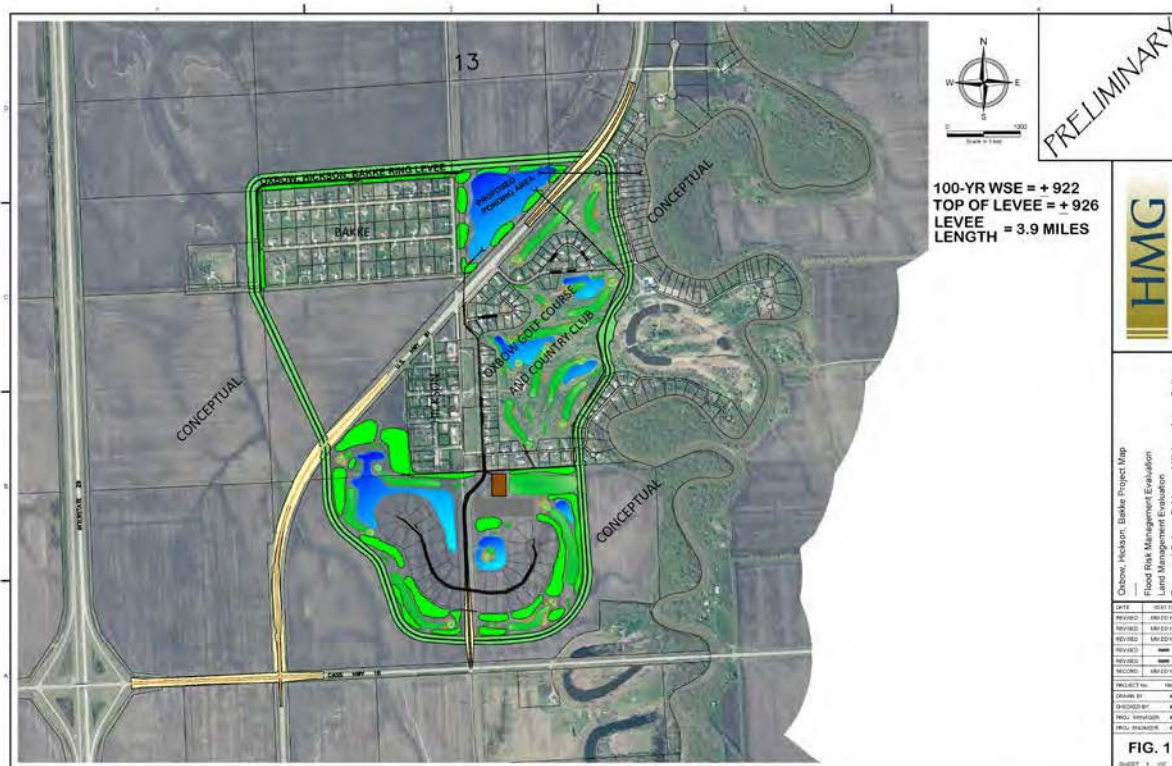


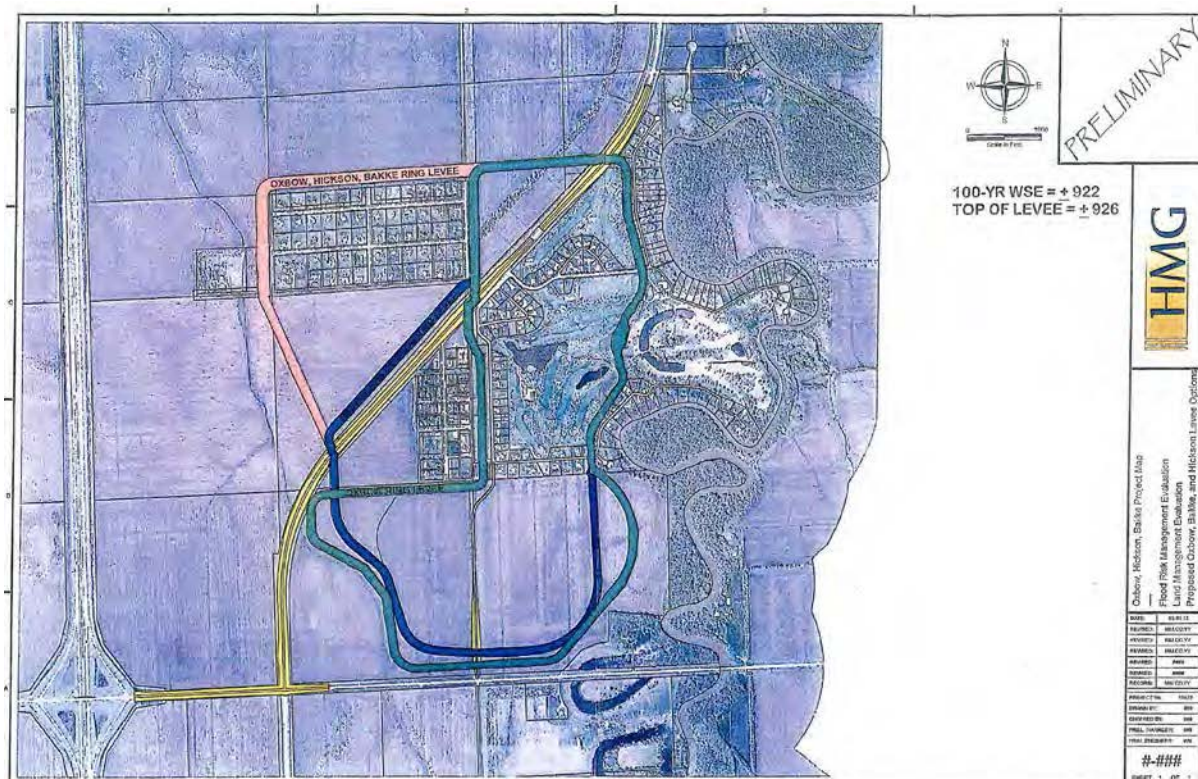
Figure 1 Ring Levee Alignment

Over 150 people attended the public meeting and 76 individual meetings were held in person or over the phone. An anonymous, informal survey was also provided to residents to gain additional information from impacted residents. The survey results indicate that many residents of Oxbow support the ring levee concept, while many Bakke and Hickson residents do not support the ring levee concept.

On January 23, 2013, the city of Oxbow City Council carried a motion to remove from the record a previous resolution as it related to any opposition against the Project. In addition, it also carried a motion to rescind a previous resolution which supported the Richland Wilkin JPA (Joint-Powers Agreement) formed to oppose the Project. On January 10, 2013, Pleasant Township passed a Resolution of Opposition to Fargo-Moorhead Metropolitan Area Flood Risk Management Project. The resolution is in opposition of the diversion project as well as the proposed ring levee for the communities of Oxbow, Hickson, and Bakke.

Because of the varying support and opposition to the ring levee concept, two additional alternatives were developed. The additional alternative alignments are as follows: ring levee for Oxbow and Hickson with a fee acquisition for Bakke residents; ring levee for Oxbow only with fee acquisitions for Hickson and Bakke residents. All three alternative alignments are shown in Figure 2.





## 1.4 Comparison of Alternative Alignments

Each alternative alignment would provide benefits up to the 0.2-percent chance (500-year) event. The full Oxbow, Hickson, and Bakke alignment would cost approximately \$65 million and benefit 196 properties. The Oxbow/Hickson ring levee alternative would cost approximately \$85 million and benefit 139 properties and the Oxbow-only ring levee alternative would cost approximately \$90 million and benefit 106 properties. All alignments would maintain the Oxbow Country Club.

The full alignment would benefit the church, community center, and businesses in Hickson and Oxbow. The full alignment would maintain this area's tax base for the Kindred School District, while the Oxbow/Hickson alternative alignment would reduce the tax base by \$21 million and the Oxbow-only alternative alignment would reduce the tax base by \$26 million.

Table 1 provides additional information on the costs and other information related to each levee alignment.

Table 1 Oxbow, Hickson, and Bakke Area Levee Alternatives

Options	Technically Feasible	Properties Protected	Cost					Community Preference
			Total	Buyout (Staging)	Buyout (Alignment)	Design	Construction	
<b>100% Buyout</b>	Yes	0	<b>\$74M</b> (all 2018+)	\$74M	\$0	\$0	\$0	O: No B: Yes H: TBD
<b>Full OHB Levee</b>	Yes	196	<b>\$65M</b> (all 2013/15)	\$0	\$24M	\$5M	\$36M	O: Yes B: No H: TBD
<b>OH only Levee</b>	Yes	139	<b>\$85M</b> (\$64M-2013/15; 21M-2018+)	\$21M	\$24M	\$5M	\$35M	O: Yes B: Yes H: TBD
<b>Oxbow only Levee</b>	Yes	106	<b>\$90M</b> (\$64M-2013/15; 26M-2018+)	\$26M	\$24M	\$5M	\$35M	O: Yes B: Yes H: TBD

### 1.5 Recommendation of Proposed Alternative by the non-Federal Sponsors

The non-Federal sponsors recommended that the Corps consider the full Oxbow, Hickson, and Bakke alignment because it benefits the most properties and is the lowest in cost.

## 2 PROPOSED ALTERNATIVE

The full Oxbow, Hickson, and Bakke ring levee would be designed to provide flood risk management for the Oxbow, Hickson, and Bakke area, transportation improvements intended to maintain access to the communities, and infrastructure to replace public and private infrastructure affected by the construction of the ring levee. The alignment for the proposed alternative is a conceptual alignment that may be modified during detailed design studies; any changes in alignment will be evaluated for changes to impacts from what is being discussed in this EA. It is not anticipated at this time that there would be an appreciable change in scope or magnitude to impacts. The attached technical memorandum, entitled “Oxbow, Hickson, Bakke Ring Levee”, outlines a feasibility level design and cost estimate for constructing a ring levee for the Oxbow, Hickson, and Bakke area.

The full Oxbow, Hickson, and Bakke ring levee, shown in Figure 3, surrounds Hickson, Bakke, and a portion of Oxbow. Oxbow is located along the banks of the Red River of the North and generally



[illegible]

## 2.1 Impacts to Roads and Highways

Supplemental Environmental Assessment  
 Fargo-Moorhead Flood Risk Management Project Appendix C

Cass County Highway 18 between Cass County Highway 81 and Interstate 29 would also be raised. Raising the road would allow the residents of the Oxbow, Hickson, and Bakke communities to access their homes and business during events up to a 0.2-percent chance (500-year) event.

Cass County Highway 25 would be raised where it intersects the proposed Oxbow, Hickson, and Bakke ring levee on the south side of the communities. The change in road grade would begin at the intersection of Cass County Highways 25 and 18 until it reaches its maximum elevation height as it crosses the proposed ring levee, and it would then be graded back until it meets the existing roadway elevations.

## **2.2 Impacts to Local Structures**

The construction of the ring levee would result in the removal of approximately 40 homes as well as disruptions to the Oxbow Country Club including several golf holes and the club house. The ring levee plan includes replacement of lost infrastructure, including residential lots and associated infrastructure and reconfiguration of the Oxbow Country Club. Replacement infrastructure described here is conceptual and would be subject to modifications through consultation with the city of Oxbow and the Oxbow Country Club during final design. The plan included here is intended to produce an overall footprint and cost estimate for the purpose of determining impacts of the proposed action. The following sections include a more detailed description of infrastructure replaced as part of the ring levee plan.

The proposed Oxbow, Hickson, and Bakke ring levee would require alteration of some of the infrastructure of the benefited communities. Most of the alterations would occur in the city of Oxbow, where a significant portion of the existing infrastructure is located under the proposed alignment or outside of the benefited area. To mitigate for the loss of infrastructure, an Oxbow addition is proposed. The Oxbow addition would include additional residential lots and new holes for the golf course and country club. The proposed Oxbow addition, as conceptualized, would extend the existing Sunset Drive south and shift the alignment along Cass County Highway 25, where it would cross the ring levee at a minimum elevation of 926 feet to meet levee height requirements and tie into Cass County Highway 25. The proposed road would include one intersection that services two cul-de-sacs, where the proposed residential lots would be located for the Oxbow addition. In addition to residential lots, the Oxbow Country Club would be relocated along Sunset Drive to allow for easy access to the clubhouse from either Cass County Highway 81 or Cass County Highway 18. Proposed roadways in the Oxbow addition would be paved. The proposed layout is a concept and may be altered in the future based on input from the local communities, the country club, the golf course architect, and other local authorities.

The existing sanitary sewer system serving the Oxbow Drive and Oxbow Circle area generally flows west to east to a lift station located outside of the ring levee area. This lift station would be abandoned and removed. A new lift station located near Oxbow Drive within the benefited area of the levee would be constructed to maintain sewer service to that portion of the City. The proposed Oxbow addition would require a new sanitary system that ties into an existing sanitary pipe network system located near the intersection of Sunset Drive and Riverbend Road. The system would be gravity fed into the existing system.



The existing water main for the city of Oxbow has a connecting loop that would be located on the un-benefited side of the levee. To maintain the loop, a pipe running parallel to the levee along the golf course that ties the water lines at Riverbend Road and Oxbow Drive together is included. The proposed Oxbow addition would tie into the existing water main located near the intersection of Sunset Drive and Riverbend Road.

The existing storm system generally slopes from west to east and ultimately outfalls into the Red River. To reduce the number of pipes crossing the levee, two separate pipe network systems are proposed, one that utilizes the existing storm pipe network and one that would be for the proposed Oxbow addition. Both systems would outfall into a proposed ponding area within the benefited area. The proposed ring levee does not create conflicts with the sanitary, water, or transportation infrastructure for the Hickson or Bakke communities.

### **2.3 Oxbow Golf Course**

The proposed Oxbow, Hickson, and Bakke ring levee would create a need to re-configure the golf course as well as relocate the clubhouse and other facilities provided by the Oxbow Country Club. Eight golf holes and the driving range would need to be relocated and three other golf holes require alterations to accommodate the proposed ring levee. Interior drainage would be designed to convey water to a proposed retention basin. Sanitary sewer, storm sewer, water lines, and parking lots needed to service the Oxbow Country Club, the golf course, and the other amenities offered by the country club would be tied into the new urban infrastructure along the proposed Sunset Drive alignment.

### **2.4 Internal Drainage**

The internal drainage for the Oxbow, Hickson, and Bakke ring levee would be comprised of a combination of open channels, storm sewer, a stormwater ponding area, and a storm sewer pump station. The combination of the available storage and pumping capacity of the pump station would be sized to prevent internal flooding during a river flood event when the gravity outfall is inoperable. The ponding area would be located east of the Bakke addition and northwest of the Cass County Highway 81.

The existing conditions in the city of Oxbow include a storm sewer network and overland drainage on the golf course. These systems both ultimately outfall into the Red River and would need to be altered to accommodate the proposed ring levee. The proposed storm sewer system would be routed to outfall into the proposed ponding area. The drainage in the proposed Oxbow addition would be part of a separate storm sewer system that would outfall into the proposed ponding area. The Bakke addition and the Hickson area currently use open ditches to accommodate their storm water runoff. Both areas would use the existing channels to accommodate runoff to the proposed ponding area. As a part of the storm water detention system, there would be a pump station located on the north end of the proposed ponding area, which, during times of flooding, would pump water out of the ponding area and into the Red River. The pump station design would include a sluice gate to allow the gravity system to be positively closed during periods of flooding to prevent back flow of floodwater.

## Comstock Mitigation Project

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Similar to Oxbow, Hickson, Bakke, the City of Comstock will be impacted by the upstream retention area associated with the FM Area Diversion Project (Project). To mitigate the impacts to the City of Comstock, the Diversion Authority and USACE propose to construct a ring levee around Comstock. The proposed ring levee would provide protection not only from the impacts caused by the Project but also reduce the risk of overland flooding on Comstock. The proposed ring levee would also provide an opportunity to create an area for relocation of upstream retention area residences.

In preliminary meetings with Comstock representatives, it was noted that protecting the City's lagoons and improving transportation access into and out of the community are important aspects that should be incorporated into the proposed ring levee. The Diversion Authority and USACE representatives will approach the City of Comstock to begin advancing discussions related to the proposed ring levee mitigation project.

Upon completion, it is proposed that through an agreement between the Diversion Authority and the City of Comstock, the City of Comstock would own and maintain its ring levee.



## In-Town Levee Mitigation Projects

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### Summary

The Federal Environmental Impact Statement (FEIS) for the FM Area Diversion Project (Project) was originally formulated to pass flow at a River Stage of approximately 30-feet through town during a one-percent annual chance (100-year) flood event with the Project. A 30-foot river stage is approximately 10,700 cubic feet per second (cfs) and represents an approximately 3.6-year return frequency event.

The Supplemental Environmental Assessment (EA) completed in September 2013 included additional analysis of the amount of flow passed through town with the Project in place. Allowing more flows through town would serve as environmental mitigation because the Project would operate less frequently, thereby reducing the impacts to fish passage and eliminating the need for constructed fish passage features at the Red and Wild Rice River control structures. In addition, less frequent operation of the Project would reduce the impacts on farmlands in the upstream retention area.

The July 2012 study that was utilized for the Supplemental EA evaluated passing a range of flows and river stages from 30-feet to 37-feet through town under a one-percent annual chance (100-year) flood event. The analysis resulted in a recommendation to construct levees allowing a River Stage of 35-feet through town.

### Supplemental EA Appendix B

Appendix B from the Supplemental Environmental Assessment provides a background information, identification of alternatives, and a description of the selected In-Town Levees alternative. The report is attached to this Mitigation Plan for convenience.

### Additional Details

Additional details regarding the Flows Through Flood Damage Reduction Area can be found in a Technical Memorandum dated July 16, 2012. The Technical Memorandum can be found online at: [http://www.fmdiversion.com/pdf/CorpsEA/References/Flows/FINAL%20REPORT\\_2012\\_07\\_18.pdf](http://www.fmdiversion.com/pdf/CorpsEA/References/Flows/FINAL%20REPORT_2012_07_18.pdf).



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## **In-Town Levees Appendix B**

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Fargo Moorhead Metropolitan Area  
Flood Risk Management Project

EA Document



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# In-Town Levees

## Appendix B

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# In-Town Levees

## Appendix B

### 1 BACKGROUND

Following completion of the Final Feasibility Report and Environmental Impact Statement (FEIS) for the Fargo-Moorhead Metropolitan (FMM) Area Flood Risk Management Project (Project), a study was conducted to evaluate options for increasing the flow through the flood risk management area during flood events on the mainstem of the Red River of the North. Allowing river stages through the flood risk management area that would exceed the stage of 30.8 feet during the 1-percent chance flood event contemplated in the Locally Preferred Plan (LPP) in the FEIS could serve as environmental mitigation because the Project would operate less frequently, thereby reducing the impacts to fish passage and eliminating the need for constructed fish passage features at the Red and Wild Rice River control structures. The report from the study, “Final Technical Memorandum, AWD-00002 – Flows Through Flood Damage Reduction Area” dated July 16, 2012, is included as a reference. This study is also referred to as the “In-Town Levees” study.

#### 1.1 Level of Protection

The purpose of the Flows Through Flood Damage Reduction Area study was to evaluate options for increasing the flow and resultant residual Red River of the North flood stage through the flood risk management area, in order to determine the potential for providing an alternative to the proposed fish passages at the Red and Wild Rice River control structures. The study evaluated a range of potential target flood stages at the USGS Fargo stream gage ranging from 30 feet to 37 feet during the 1-percent chance event. A residual stage of 31 feet was used for the FRP for the 1-percent chance event. The study looked at a number of factors for each flood stage:

- Frequency of operation for each flood stage
- Residual flood stage impacts inside the flood risk management area
- Existing and emergency protection measures inside the flood risk management area
- Impacted private property (urban and rural) within the flood risk management area
- Impacted infrastructure and open spaces within the flood risk management area
- Effects on stage and frequency of flooding depth on upstream staging and storage areas
- Transportation mitigation measures

The following tables (Table 1 and Table 2) include the residual peak 1-percent chance event flood stage, discharge, approximate existing frequency for each river stage, and land impacts, as summarized in the July 16, 2012 report. The 35 foot stage would reduce the operation of the diversion channel to when

flows reach 17,000 cubic feet per second (cfs), which would occur less frequently than a 10-percent chance event. The in-town levees would eliminate the need for the proposed fish passages on the Red and Wild Rice River control structures by maintaining connectivity on the Red River and Wild Rice River during more frequent flood events. Historically, the discharge at the USGS gage in Fargo has only reached 17,000 cfs during spring snow-melt events. Therefore there have not been any historic flood events during the growing season in which the Project would have operated. This will minimize the probability of impacts to farming operations during the growing season. The tables also show the incremental increase in impacted acreage. These factors, combined with input from the cities of Fargo and Moorhead and Cass County on past experience with flood fighting were the primary factors in recommending a flood stage of 35 feet.

**Table 1 Residual Peak 1-Percent Chance Event (100-year) Flood Stage, Discharge, and Approximate Existing Frequency Conditions**

Residual 1-percent chance event Flood Stage	Residual 1-percent chance event Peak Discharge (cfs)	Approximate Existing Condition Frequency (yr)
30 feet	10,700	3.6
31 feet	11,900	4.8
32 feet	13,300	6.0
33 feet	14,600	7.1
34 feet	15,900	8.4
35 feet	17,500	10.2
36 feet	19,200	11.4
37 feet	21,000	12.9

**Table 2 Flood Risk Management Area Land Use Impacts**

Residual Flood Stage	Land Use Class (NLCD) (acres)			Total Acres Impacted
	Agricultural	Developed	Other (Water, Wetland, Forest, Grass, etc.)	
30 feet	14,764	2,229	5,483	22,476
31 feet	14,920	2,311	5,581	22,812
32 feet	15,266	2,409	5,681	23,356
33 feet	15,881	2,524	5,781	24,186
34 feet	16,722	2,656	5,894	25,272
35 feet	17,998	2,858	6,062	26,918
36 feet	19,658	3,191	6,222	29,071
37 feet	21,773	3,556	6,386	31,715

## 2 ALTERNATIVES CONSIDERED

Wherever practical, two conceptual options for each flood stage from 30 feet to 37 feet were evaluated. They were referred to as Option 1 and Option 2 in the Flows Through Flood Damage Reduction Area report referenced above. Generally, Option 1 was more focused on structural protection (e.g. levees and floodwalls) and Option 2 focused more on floodplain abandonment (e.g. acquisitions). However, the overall scope of the options varied considerably depending on the location and residual flood under consideration. Considerations that went into the evaluation included:

- Hydraulic impact – A hydraulic analysis was performed for each option and the impacts of each option were negligible.
- Geotechnical stability – For features that included levees and floodwalls, preliminary geotechnical analysis was performed to ensure they met FEMA and USACE stability requirements.
- Social impacts – Input from the non-Federal sponsors, the cities of Fargo and Moorhead, along with Cass County, was obtained on the social impacts. Efforts to minimize the impacts to residences and businesses were made in the development of the options.
- Cost – Construction cost estimates and Operation and Maintenance costs were developed for the options and were part of the decision process.
- Transportation – Transportation impacts were considered as part of the 2<sup>nd</sup> St. N. /Downtown flood control options. There was a desire to maintain traffic on 2<sup>nd</sup> St. N. during flood events.
- Residual floodplain—the residual floodplain through the flood risk management area was mapped to identify impacted areas which require additional flood risk management measures.

Within Option 1, geotechnical stability was the primary factor that influenced the decision between levees and floodwalls. Where practical from a geotechnical standpoint, levees were selected. This includes the El Zagal area, Mickelson Field Phase 2, and the 2<sup>nd</sup> St. South area. For areas where the geotechnical stability did not allow levees, floodwalls were considered, including the 2<sup>nd</sup> St. N./Downtown area. Preliminary screening of alternatives utilized preliminary geotechnical information developed by the cities of Fargo and Moorhead as part of previous flood protection planning efforts. Current design efforts are utilizing more detailed geotechnical evaluations that are ongoing. Other factors in developing levee and floodwall alternatives included transportation impacts and impacts to commercial and residential structures. These factors are discussed in more detail under the discussion of the 2<sup>nd</sup> St. N. flood protection (Options 1-5) below.

The features included in Options 1 and 2 are summarized in the following table (Table 3) along with the decision criteria. These measures include construction of levees and floodwalls, and acquisition and removal of structures, and are collectively referred to “In-Town Levees.” Most locations had identical features under both options, with the exception of the El Zagal Area and the 2<sup>nd</sup> St. N. Levee and Floodwall.

**Table 3 Features of Options 1 and 2**



<b>Location</b>	<b>Option 1</b>	<b>Option 2</b>	<b>Remarks</b>
Ridgewood/VA Levee (Fargo)	Certification of existing levee to FEMA	Certification of existing levee to FEMA	Same for both options
Project Area F1 (Moorhead)	Certification of existing levee to FEMA	Certification of existing levee to FEMA	Same for both options
El Zagal Area (Fargo)	Construction of levee	Acquisition	Option 1 – Desire to have facility remain (social)
Mickelson Field Phase 1 Levee (Fargo)	Certification of existing levee to FEMA	Certification of existing levee to FEMA	Same for both options
Mickelson Field Phase 2 Levee (Fargo)	Construction of levee	Construction of levee	Same for both options
2 <sup>nd</sup> St. N. Levee and Floodwall (Fargo)	Construction of floodwall between 1 <sup>st</sup> Ave. N. and BNSF Railway and relocation of 2 <sup>nd</sup> St. N.	Construction of floodwall between 1 <sup>st</sup> Ave. N. and BNSF Railway and along west side of 2 <sup>nd</sup> St. N.	See discussion below about additional features considered subsequent to initial study.
2 <sup>nd</sup> St. South Area (Fargo)	Acquisition	Acquisition	Same for both options. However, sponsors will likely construct a levee on this property as part of local flood protection efforts
Storm Sewer Lift Station LS FC2 Modification (Moorhead)	Flood-proof existing lift station	Flood-proof existing lift station	Same for both options
Isolated Urban Property (Moorhead)	Acquisition	Acquisition	Same for both options
Woodlawn Area Levee (Moorhead)	Certification of existing levee to FEMA	Certification of existing levee to FEMA	Same for both options
Belmont Area (Fargo)	Acquisition	Acquisition	Same for both options
Horn Park Area Levee (Moorhead)	Certification of existing levee to FEMA	Certification of existing levee to FEMA	Same for both options

In addition to Options 1 and 2 presented in the Flows Through Flood Damage Reduction Area report, three additional options (Options 3, 4, and 5) were identified for the 2<sup>nd</sup> St. N. area (north of Main

Avenue) in Fargo as more detailed design progressed. The following is a summary of the alternatives for 2<sup>nd</sup> St. N:

- Option 1 – This option includes the relocation of 2<sup>nd</sup> St. N. to the west and construction of a floodwall from 1<sup>st</sup> Avenue North to the BNSF Railroad grade. It includes full acquisition of the Park East Apartments, Northland Hospitality (Howard Johnson), Feder Realty, and Fargo Board of Education storage facility. 2<sup>nd</sup> St. N. would remain open during flood events.
- Option 2 – This option includes constructing a floodwall from 1<sup>st</sup> Avenue North to the BNSF Railroad grade along the west side of 2<sup>nd</sup> St. N. It includes full acquisition of the Park East Apartments and Fargo Board of Education storage facility. 2<sup>nd</sup> St. N. would stay on its current alignment and would be closed during flood events using structural emergency closures.
- Option 3 – This option includes the relocation of 2<sup>nd</sup> St. N. to the west and construction of a floodwall from 1<sup>st</sup> Avenue North to the BNSF Railroad grade. It includes full acquisition of the Park East Apartments, Feder Realty, and Fargo Board of Education storage facility and a partial acquisition of the Northland Hospitality (Howard Johnson) structure. 2<sup>nd</sup> St. N. would remain open during flood events.
- Option 4 – This option includes the relocation of 2<sup>nd</sup> St. N. to the west and construction of a floodwall from NP Avenue to the BNSF Railroad grade. It includes full acquisition of the Park East Apartments, Northland Hospitality (Howard Johnson), Feder Realty, and Fargo Board of Education storage facility. It also includes construction of a levee on the Park East Apartment property. 2<sup>nd</sup> St. N. would remain open during flood events.
- Option 5 - This option includes the relocation of 2<sup>nd</sup> St. N. to the west and construction of a floodwall from NP Avenue to the BNSF Railroad grade. It includes full acquisition of the Park East Apartments, Feder Realty, and Fargo Board of Education storage facility and partial acquisition of the Northland Hospitality (Howard Johnson) structure. It also includes construction of a levee on the Park East Apartment property. 2<sup>nd</sup> St. N. would remain open during flood events.

All five options provide a similar level of protection for the 2<sup>nd</sup> St. N./Downtown area. Option 5 is proposed for the 2<sup>nd</sup> St. N. area because it accomplishes all of the following goals of the city of Fargo:

- Desire to have the line of protection extend from NP Avenue to the BNSF Railroad Grade. Only Options 4 and 5 accomplish this.
- Desire to maintain traffic on 2<sup>nd</sup> St. N. (north of Main Avenue) during flood events. Options 1, 3, 4, and 5 accomplish this.
- The city of Fargo is considering the construction of a levee on the Park East Apartment property to provide additional flood protection for the community. This would be done as a betterment to the Federal project. Options 4 and 5 include this levee.
- The owner of the Northland Hospitality (Howard Johnson) structure has expressed a desire for a partial acquisition rather than a full acquisition. The final decision on whether the property is a full acquisition or a partial acquisition will be worked out during the land acquisition process. Options 2, 3, and 5 may allow for a partial acquisition.

In addition to Options 1-5, a tunnel concept was considered separately by the city of Fargo at the direction of the Fargo City Commission as part of planning efforts for the downtown area. The flood risk management portion of the tunnel alternative would have been similar to the 2<sup>nd</sup> St. N. flood wall concept. However, the tunnel concept was rejected due to the high cost associated with the concept and the lack of vehicular and pedestrian traffic benefits.

### **3 PROPOSED PLAN**

The proposed plan for In-Town Levees is Option 1 for a river stage of 35 feet as recommended in the Flows Through Flood Damage Reduction Area report for all features with the exception of 2<sup>nd</sup> Street N., where the proposed plan is Option 5 as identified in more detailed design. The proposed plan includes the following features (Figure 1):

- Certification of the existing Ridgewood/VA levee.
- Certification of the existing project area F1 levee.
- Construction of the El Zagal Area levee
  - The El Zagal Area levee consists of an approximately 500-foot long levee near 3<sup>rd</sup> Street North between 14<sup>th</sup> Avenue North and 15<sup>th</sup> Avenue North. No structures would be removed for this feature.
- Mickelson Field levee
  - Phase 1 of the Mickelson Field Levee consists of certifying a levee that is being constructed by the city of Fargo in the Mickelson Field area of north Fargo. The planned levee is approximately 1500 feet long beginning near 11<sup>th</sup> Ave. North and extending to an existing levee near 8<sup>th</sup> Ave. North.
  - Phase 2 of the Mickelson Field levee consists of an approximately 150-foot long levee connecting the Phase 1 levee to high ground near the intersection of North Terrace and North River Road. Three structures would require removal for this feature.
- Construction of the 2<sup>nd</sup> Street North floodwall
  - The 2<sup>nd</sup> Street North floodwall includes realigning 2nd Street to the west to accommodate construction of a floodwall between the river and the roadway. However, the top elevation of the proposed floodwall is 39.5 feet +5.5 feet. The city of Fargo requested this floodwall elevation to provide the downtown area with interim flood protection to the preliminary FEMA 1-percent chance (100 year) event elevation of 39.5 feet plus freeboard until the diversion is completed and operational. It also helps provide flood protection for events larger than a 1-percent chance (100-year) event after the diversion is complete. This feature would include the acquisition of property north of 1st Avenue North including the Feder Realty Company building and the Fargo Board of Public Education building, and partial acquisition of the Northland Hospitality (Howard Johnson) structure. In order to provide minimum protection to 39.5 feet, this feature would extend protection through the Case Plaza parking lot using a permanent floodwall constructed throughout the parking lot. This option also



includes the acquisition of the Park East Apartments to remove that property from the floodplain at a river stage of 35 feet and higher and to allow for the construction of a levee across the property. An additional floodwall would then also be constructed to connect this levee to the north end of the existing 4th Street levee.

- Modification of the storm sewer lift station LS FC2 in Moorhead to flood proof the structure.
- Acquisition of the isolated urban property near Wood Lawn Park.
- Certification of the existing Woodlawn Area levee.
- Acquisition of two residential structures in the Belmont Area that are impacted at a flood stage of 35 feet. These properties are currently protected by a non-accredited levee; however certification of this levee to protect these structures is not feasible.
- Certification of the existing Horn Park Area levee.

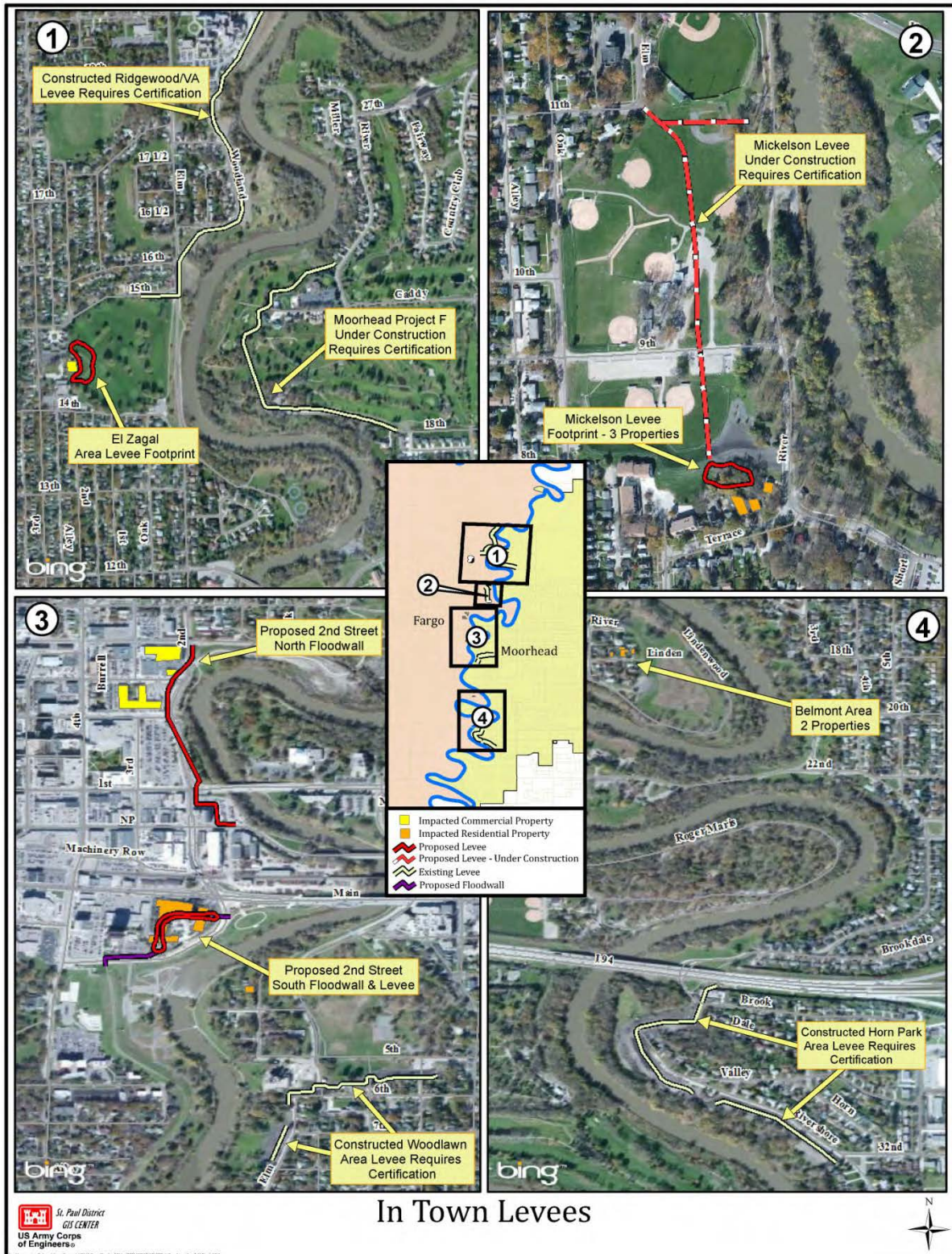


Figure 1 Proposed Alignment





## Pre-PPA Medical Hardship Acquisition Program

***NOTE: This Program was put into effect in 2011, and has been used successfully prior to the PPA being signed on July 11, 2016. Now that the PPA is signed, several parts of this program are outdated. However, the Diversion Authority will continue to accept requests for early acquisitions.***

The Flood Diversion Authority hereby approves and establishes the following policy for the early buyout of residential property where it is determined that a property owner suffers from a Serious Health Condition giving rise to a hardship. Applications are encouraged from property owners who feel circumstances warrant considerations hereunder.

At the time of adoption of this policy, the United States Congress has not yet authorized the Diversion Project (“Project”), nor has Congress appropriated funds for the construction of the Project. Nevertheless, property owners living in areas potentially impacted by the Project assert the Project is already impacting their ability to sell their properties at fair market values and to finance such sales. The Diversion Authority recognizes that while it is difficult to quantify the impacts resulting from the impending Project on property values, or discern between Project-related impacts and general economic conditions or other market forces, the Diversion Authority wishes to establish a policy that will allow property owners who establish a serious health condition hardship to have their homes determined eligible for early buyout by the Diversion Authority or one of its member entities. It is recognized that, ultimately, the Project may require acquisition of a greater number of residential, and other, properties at a later date.

This policy is intended to be in effect prior to a Project Partnership Agreement (PPA) between the U.S. Army Corps of Engineers and the non-federal sponsors of the Project. This hardship policy may be amended to include additional considerations after the PPA is signed.

**SECTION 1. DEFINITIONS.** For purposes of this policy, the following definitions shall apply:

- 1.1 Affected Property** means a parcel which the Hardship Review Committee determines is within the anticipated buy-out area associated with the Diversion Project, as proposed, that is used as a residence. To the extent a single parcel is used for multiple principal uses, such as residential and agricultural uses, the Hardship Review Committee may identify a portion of said parcel that shall, for purposes of this program, be deemed to be the “Affected Property” and any purchase offer for said Affected Property may be limited to such residential portion of said parcel. The Diversion Authority may designate, by map or boundary line, an area within which this program shall only apply. The area shall generally include the diversion and levee footprint, the storage area, and areas in the staging area with water depths greater than three feet.

- 1.2 Affected Property Owner** means the owner or co-owners in fee of an Affected Property, whether one or more persons, firms or entities.
- 1.3 Early Buyout List** means the list of Affected Properties for which applications for early buyout under this program have been approved by the Hardship Review Committee, as described in Section 3, herein.
- 1.4 Hardship Review Committee** shall mean the decision-making body, consisting of three to five members, the membership of which shall be established by motion or resolution of the Diversion Board of Authority. The Diversion Board of Authority may authorize an existing committee or subcommittee to serve in the capacity of the Hardship Review Committee and to exercise the powers described herein.
- 1.5 Program Administrator** shall mean a person who is authorized by the Diversion Board of Authority to administer the early buyout program described herein, as the same may be amended from time to time. Reference to the Program Administrator shall include any deputies or delegates that have been authorized by the Program Administrator to assist in the administration of this program.
- 1.6 Serious Health Condition** shall mean a health condition suffered by a resident of an Affected Property that is:
- a. a physical or mental health condition that requires assisted living care or significantly impairs a major life function, including but not limited to breathing, mobility or vision; or
  - b. physical or mental health condition that is life-threatening;
- which condition shall be certified, in writing using the attached Certificate of Serious Medical Condition form, by a medical professional, including a medical doctor, doctor of osteopathy or licensed psychologist. The death of a resident of an Affected Property shall also be deemed a Serious Health Condition for purposes of this program.

**SECTION 2. PROCEDURE FOR HARDSHIP DETERMINATION.** The Hardship Review Committee is authorized to determine whether a property owner is eligible for an early buyout of residential property as a result of a Serious Health Condition in accordance with the following:

- 2.1 Applications.** An Affected Property Owner may submit an application for determination of hardship to the Program Administrator. The Program Administrator may issue such form or forms necessary to facilitate the application process and to gather the information needed for review of the hardship application. An application must be accompanied by a qualified medical professional's certification that the

Affected Property Owner, or other individual residing within an Affected Property, suffers from a Serious Health Condition. The application must also include an explanation as to the circumstances which, in combination with the Serious Health Condition, require that the occupants of the Affected Property relocate and require that the Affected Property be immediately sold. The applicant must state the reason or reasons why the Serious Health Condition will not allow the Affected Property Owner sufficient time to sell the residence in question in the customary marketplace, but, instead, requires said residence to be sold immediately and purchased by the Diversion Authority (or one of its member entities).

- 2.2 Complete Applications.** The Program Administrator is authorized to accept an application and to review the application for completeness. Applications that do not include required information may be returned to the applicant as incomplete and no further processing of the application will occur until the deficiencies are corrected. Once a complete application is accepted by the Program Administrator, the Program Administrator will schedule the matter for review by the Hardship Review Committee at a public meeting. The applicant will be provided with written notice of the time, date and location of the meeting at which the matter will be considered by the Hardship Review Committee. The notice to the applicant shall be deposited in the U.S. mail at least 10 days before the meeting.
- 2.3 Public Meeting—Review Criteria.** The Hardship Review Committee shall consider the application at a public meeting along with any other relevant testimony or materials. The Hardship Review Committee shall consider the following criteria in its review of the application:
- a. The extent to which the Serious Health Condition combines with the surrounding circumstances require the Affected Property Owner to move away from the Affected Property and require immediate sale of the Affected Property.
  - b. The extent to which the Serious Health Condition combines with the surrounding circumstances to make it difficult for the person with the Serious Health Condition and all other occupants of the Affected Property to continue residing at, and care for, the Affected Property.
  - c. The Committee may consider the financial hardship that may or will result from the continued occupancy and/or ownership of the Affected Property by either the person with the Serious Health Condition or the spouse or other occupant of the Affected Property. In other words, if the Serious Health Condition requires that person to be admitted to an assisted living facility, long-term health facility or other place for people requiring such special



needs, and such relocation will cause a significant financial hardship that requires immediate sale of the Affected Property, the Committee may consider such financial impacts. It is intended; however, that the Committee will not consider financial hardships other than those that are related to, or resulting from, a Serious Health Condition.

As stated above, although the existence of, or extent of, the negative impact of the Project upon the ability of any given Affected Property Owner to sell an Affected Property or upon the market value of an Affected Property, if any, is not known. For purposes of the administration of this program, the Committee may assume that an Affected Property Owner will not be able to immediately or promptly sell their Affected Property because of the pendency of the Project and, therefore, the Committee need only determine if the Serious Health Condition in combination with the other relevant circumstances warrants prompt or immediate sale and, if so, the Committee may approve an application and place the property on the Early Buyout List.

If an application for determination of hardship is denied by the Hardship Review Committee, the property owner may later reapply if circumstances have changed which the Affected Property Owner feels warrant such reapplication. An Affected Property Owner may not reapply for at least three months from the date of the Hardship Review Committee determination denying a prior application.

### **SECTION 3. EARLY BUYOUT LIST – PROCEDURE FOR DETERMINING**

**PURCHASE OFFER.** If the Hardship Review Committee determines that a hardship exists and the Affected Property is therefore eligible for early buyout; the Affected Property shall be placed on an early buyout list established and maintained by the Program Administrator [the “Early Buyout List”]. To the extent funds have been made available for the purchase of eligible Affected Properties under this program, the Program Administrator is authorized to extend an offer to purchase the Affected Property. The offer shall be based upon a good faith estimate as to the fair market value of the Affected Property as determined by the rules governing property acquisition associated with federal projects, defined fully in the “Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970”, and Title IV, “Uniform Relocations Act Amendments of 1987”.

- 3.1 Purchase Timeframe.** Although the affected residential property for which a hardship has been determined will be placed upon the Early Buyout List immediately upon the hardship determination having been made by the Hardship Review Committee, actual purchases will occur as funds are authorized and made available by the Diversion Authority. Once the affected property owner and the governmental entity who will actually enter into the Purchase Agreement have arrived upon an agreeable price and other terms, parties will enter into a Purchase Agreement for the Affected Property.

- 3.2 Buyouts in Chronological Order.** It is the intent of the Diversion Authority that actual purchase of Early Buyout List properties shall be acquired by the applicable governmental entity (Diversion Authority, County or City) based upon the order in which a complete application for early buyout was received; the Diversion Authority reserves the right to purchase a property out of chronological order where hardship circumstances warrant the same.
- 3.3 Voluntary Sale and Purchase.** This program is intended to provide a method for identifying those properties that are eligible to be placed on the Early Buyout List. It is further intended that an offer to purchase the property is to be made based upon a good faith estimate of the fair market value, as described herein; however, the Affected Property Owner receiving the offer is not compelled in any way to accept such offer and the Affected Property Owner may reject such offer or any counteroffers without prejudice, this program being a voluntary buyout process and this is not a program based upon any power of eminent domain.

## Hardship Application Form

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ E-mail (if applicable): \_\_\_\_\_

1. Explain the circumstances which, in combination with the Serious Health Condition, require the occupants of the Affected Property to relocate and the Affected Property be immediately sold (use additional paper if necessary):

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2. Explain how the Serious Health Condition does not allow the Affected Property Owner sufficient time to sell the residence in question in the customary marketplace, but instead requires said residence to be sold immediately and purchased by the Flood Diversion Board of Authority (or one of its member entities) (use additional paper if necessary):

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This Hardship Application Form **must** be completed and submitted with the Physician's Certificate to:

Cass County Auditor's Office  
P.O. Box 2806  
Fargo, ND 58108-2806

INFORMATION IN THIS FORM IS PUBLIC INFORMATION UNDER NORTH DAKOTA OPEN RECORDS PROVISIONS



## Physician's Certificate of Serious Health Condition

I hereby certify that \_\_\_\_\_ of

(Applicant)

\_\_\_\_\_  
(Address)

Has a serious medical condition that impacts a significant life function, such as breathing, walking, and engaging in other everyday life activities.

Physician Comments:

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Effective Date of Disability: \_\_\_\_\_

\_\_\_\_\_  
Physician

Date: \_\_\_\_\_

\_\_\_\_\_  
Physician's Address

This Physician's Certificate **must** be completed and submitted with the Hardship Application. A doctor of medicine or licensed psychologist shall sign this statement indicating a serious health condition exists, and that as a result of such condition the homeowner will experience a long term or permanent period of incapacity.

Send Physician's Certificate and Hardship Application to:

Cass County Auditor's Office  
P.O. Box 2806  
Fargo, ND 58108-2806

INFORMATION IN THIS FORM IS PUBLIC INFORMATION UNDER NORTH DAKOTA OPEN RECORDS PROVISIONS

## **Adaptive Management and Mitigation Plan**

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### **Introduction**

An adaptive management plan for compensatory mitigation sites was prepared by the U.S. Army Corps of Engineers, St. Paul District (USACE) as part of the Final Feasibility Report and Environmental Impact Statement for the Fargo-Moorhead Metropolitan Area Flood Risk Management Project dated July 2011. The adaptive management plan was provided as Attachment 6 to that report. The Adaptive Management and Mitigation Plan (AMMP) is a living document, and MN State EIS (2016) provided suggestions for the AMMP.

The Diversion Authority is committed to reviewing and periodically updating the AMMP. The USACE plan and suggestions provided in the MN State EIS include details on monitoring techniques, locations, and frequencies, along with suggestions for identification of performance standards, protocols, etc. The Project AMMP will be a collaborative agency effort.

### **AMMP Funding**

The Diversion Authority will establish an on-going O&M Funding Program and utilize either sales taxes or a maintenance district, or a combination of both to fund the mitigation of impacts identified by the AMMP process.

## Environmental Mitigation

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### A. Environmental Impacts and Mitigation

All effects of the FM Area Diversion Project (Project), both adverse and beneficial, are described in the Final MN EIS, Chapter 3. Mitigation is described for all impacts in the Final MN EIS, Chapter 6, Appendix B, and Appendix O. Additional details will be developed as the design phase progresses. Mitigation shall be in accordance with federal requirements. Potential environmental hazards and mitigation for project impacts are described in the Final MN EIS, Chapter 3.7.

It should be noted that the base no action alternative would do nothing to address existing recognized environmental conditions (RECs) within the existing floodplain, and Project mitigation would significantly reduce environmental hazards throughout the inundated areas affected by the Project. In addition, the Project would significantly reduce flood impacts to RECs located in benefitted areas. The Project will reduce impacts from environmental hazards.

### B. Water Supply Impacts and Mitigation

The federal EIS did not identify any significant adverse impacts to water supply. The authorized action would improve water supply through reduced risk of contamination or loss of water supply during floods. Water use is described in Section 13 of the Scoping Environmental Assessment Worksheet (MN). Impacts and mitigation for rural water supply utilities are described in the MN Final EIS, Section 3.13.3.3. Impacts and mitigation for water wells are described in the Final MN EIS, Section 3.16.2.3.6.

### C. Groundwater or Sub-Surface Water Impacts and Mitigation

The federal EIS identified a low likelihood of potential impacts to aquifers (Section 5.2.1.6.1). Groundwater is discussed in Section 12 of the Environmental Assessment Worksheet (MN) dated April 12, 2013, which states "The Project is not expected to have adverse impacts to the cumulative condition of aquifers or shallow groundwater in the region." There is no mitigation proposed for aquifers. Groundwater monitoring is discussed in the Final MN EIS, Appendix B, page 7.

### D. Navigation Impacts and Mitigation

Navigation on the Red River and tributaries is primarily recreation-related. No impacts to recreational opportunities were identified in the federal EIS (Section 5.2.3.1.3). This would include recreational boating. The Project would only operate under moderate to high flood conditions when such activities would already be limited if not impossible and dangerous. No mitigation is proposed for navigation. There is a Recreational Plan described in Appendix M of the federal EIS. Watercraft use is discussed in Section 15 of the Environmental Assessment Worksheet (MN).

### E. Drainage Impacts and Mitigation

Drainage features of the project are described in the Final MN EIS, throughout Chapter 2 and specifically in Section 2.1.1.9. The Project will affect water surface elevations in the upstream inundated area while it is in operation, including drainage ditches that convey flow to the Red River and Wild Rice River in the



vicinity of the upstream retention area. When the Project control structures are not in operation, there will be no effect on drainage systems upstream. Potential geomorphic changes that could possibly affect drainage over many years are discussed in the Final MN EIS, Section 3.3 STREAM STABILITY. Specific drainage issues raised in public comments are discussed and responded to with possible mitigation options in Appendix L, including comment #72cc on page 97, comment #112h on page 100, comments summarized on page 104, comment #72t on page 134, and comment #128f on page 138.

## **F. Fish and Wildlife Habitat Impacts and Mitigation**

Details on potential impacts to fish and wildlife habitat was exhaustively discussed in the federal EIS (Section 5.2). Proposed mitigation and monitoring also has been discussed in Attachment 6 of the federal EIS as well as in section 6 of the MN EIS. Any updates to potential effects have been included in the Supplemental federal EA (FONSI signed September 2013). Mitigation for the proposed action has included various features to minimize the frequency that the project would operate, including in-town floodwalls and levees. Since the completion of the federal EIS additional details on fish and wildlife habitat mitigation and monitoring have been developed through long, extensive coordination with MnDNR and other resource agencies. This includes:

### ***Fish Passage/Connectivity***

- Fish passage and connectivity impacts and mitigation is described in the MN EIS page ES-49 and Section 3.8.
- Drayton Dam Fish Passage Project: includes completion of detailed Plans and Specs and an Environmental Assessment specific to this action (FONSI signed January 2013). This project is located in both ND and MN, has been strongly supported by NDSWC and MDNR, and is ready to construct pending federal appropriations and permits from USACE, NDSWC, and MDNR.
- Wild Rice Dam Removal Fish Passage Project: includes completion of detailed Plans and Specs and an Environmental Assessment specific to this action (FONSI signed October 2014). This project is located entirely within North Dakota and is ready to construct pending federal appropriations and permits.

### ***Aquatic Habitat***

- Aquatic habitat impacts and mitigation for the project are described in the MN EIS page ES-50, section 3.8.2 (impacts) and section 3.8.3 monitoring and mitigation. More recently the agency team has been meeting and has agreed to pursue a mitigation project on the Bois de Sioux River. The Bois de Sioux habitat restoration is in the preliminary stages of speaking with land owners about the feasibility of this project. This habitat restoration site was agreed to following lengthy discussion with the natural resource agency team, including MDNR. A draft plan has been prepared and submitted as part of the Section 404 authorization request to USACE regulatory - Omaha district dated August 23, 2016; see "D3: Mitigation Proposal for Aquatic Habitat Impacts July 2016" attached.

### ***Forest Land***

- Forested wetland and upland forest mitigation is described in the MN EIS page ES-44, section 3.9 impacts, 3.4.3 (mitigation and monitoring) and 3.9.3 (mitigation and monitoring). A more

detailed draft plan for much of this mitigation has been prepared and submitted as part of the Section 404 authorization request to USACE regulatory Omaha District dated August 23, 2016 ; see “D2: Forested Wetland Mitigation Plan April 2016”, attached.

- A 13 acre forest mitigation project has already been partially developed along the Red River. This area was in farm production until 2014 where it was abandoned and has regenerated naturally with four native tree species, an additional five native tree and shrub species have been planted at the site to add diversity. Monitoring wells have been installed to monitor hydrology to the site, to determine how many of the 13 acres will be considered forested wetland mitigation.

## **G. Agricultural Impacts and Mitigation**

Adverse effects to agriculture and farmland are discussed at length in the federal EIS (Section 5.2) as well as the supplemental EA. Agricultural impacts are discussed in the Final MN EIS in Section 3.16.2.3.8 on pages 3-252 through 3-258. Mitigation for agricultural impacts is described in the Final MN EIS, Chapter 6; mitigation will be strictly adhered to according to federal law and a takings analysis as it relates to lost property or crop production due to Project features or Project operation. Some property has already been purchased outright, with additional real estate actions to be pursued over the next few years. The Diversion Authority is also developing a summer operation supplemental farm revenue program as described herein.

## **H. Waterways, Bank Stability, Erosion, and Sedimentation Impacts and Mitigation**

Potential effects to waterways, bank stability, erosion and sedimentation within and outside the existing channel and floodplain (including newly inundated areas) has been discussed at length in the federal EIS (geomorphic impacts discussion including Section 5.2). These impacts and related monitoring are also described in the Final MN EIS, Section 3.3 and Appendix B. As outlined in the Final federal EIS and the MN EIS, no significant adverse impacts are anticipated. The Project would not likely have a significant effect on stream stability and geomorphology throughout the potentially impacted/affected environment. The Project has incorporated multiple features to reduce the frequency the flood Project would operate in the future. This was done specifically to minimize potential adverse effects to multiple resource types, including geomorphology. With reduced Project operations, no significant adverse effects are anticipated, and no mitigation is proposed. However, geomorphic conditions will be monitored as a part of the Projects’ Adaptive Management Plan. The approach for monitoring has been discussed at length with the natural resource agency team, including geomorphology experts from the MDNR. The monitoring plan for geomorphology has been developed, and is being revised over time, as needed, to capture any new concerns. Pre-Project geomorphology monitoring is on schedule to be conducted spring/summer 2017.

## **I. Wetlands and Land Use Impacts and Mitigation**

Adverse effects to wetlands are discussed at length in the federal EIS (Section 5.2) as well as the supplemental EA and the Final MN EIS, Section 3.4 and Tables 6.4, 6.5, 6.6, and 6.7. This includes impacts from direct actions (e.g., footprint impacts) as well as indirect effects (e.g., altered hydrology).

Mitigation planning is well underway, with some features already established. USACE has coordinated with its regulatory office to ensure the Project is in compliance with Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

- Wetlands will be created and/or restored in the bottom of the diversion channel as described in the Federal EIS Attachment 6 section 3.3 and Final MN EIS, Section 3.4.3. The channel would be planted with native wetland species on the bottom and the fringe of the side slopes of the channel, with the remainder of the side slopes being planted as a prairie swale type community.
- Additional wetland projects have been developed to mitigate for impacts that have occurred before the diversion channel would be constructed to include the OHB project, Diversion Inlet project and County Rd 16 and 17 re-alignment project.
- Attached is a more detailed description of the wetland mitigation plan that was submitted to USACE regulatory office on 23 August 2016 as part of the Section 404 authorization request package.

## **K. Invasive Species Management Plan**

A formal invasive species management plan will not be prepared for this Project. The Project will not be anticipated to contribute to the spread of invasive species. Invasive species concerns may be addressed individually within mitigation areas for wetlands or floodplain forest to ensure mitigation success. Plans and specifications for all construction actions also will require that construction equipment is free of AIS and does not contribute to the spread of invasive species.

## **Attachments**

- D1 – Diversion Channel Site Mitigation Plan – April 2016 (17 pages)
- D2 – Forested Wetland Mitigation Plan – April 2016 (8 pages)
- D3 – Aquatic Habitat Mitigation Plan – July 2016 (6 pages)



## **D1 - Diversion Channel Site Mitigation Plan**

### **April 2016**

#### Objectives

Construction of the diversion channel will result in the creation of flow-through shallow marsh wetlands in the lowest portions of the channel bottom and fresh wet meadow wetlands between the deeper water areas and the upland slope. A portion of these areas will be identified and managed as a mitigation site and will be used to offset unavoidable project impacts to wetlands. The mitigation site described in this Diversion Channel Site Mitigation Plan (DCSMP) will result in the creation of 1540 acres of wetlands. This amount is more than what is required to offset the impacts authorized by the North Dakota Regulatory Office (NDRO) Clean Water Act Section 404 permit. The surplus of wetlands created under this mitigation plan will be used as mitigation for impacts associated with the federally constructed portion of the project in North Dakota. Currently, the amount of compensatory mitigation required for the NDRO Section 404 permit is estimated to be 1304.6 acres. The additional 236 acres of wetlands created at the site will be applied toward the mitigation requirement for the federally constructed features.

The wetland mitigation site will fully offset the impacts of the project by providing a continuous wetland corridor composed of several wetland plant community types adjacent to a created meandering low flow channel. The functions of the wetlands at the mitigation site will be greater than those of the impact sites because the mitigation areas will not be subject to regular disturbance (diking, plowing, and drainage) and native plant communities will be established and maintained. The mitigation site will be located in the Red River of the North watershed which is the same watershed where the impacts will occur.

#### Site Selection

Site selection was based primarily on opportunities associated with construction of the diversion channel. Specifically, these included: (1) Availability of lands that would be acquired for the project; (2) Potential for self-sustaining wetlands as a result of hydrology supplied by tributaries to the Red River of the North, groundwater discharges, and periodic overbank flow from the meandering channel during flood events; (3) Potential to create a 30 mile long wetland/river corridor that operates as a system and connects with the Red River of the North in a landscape highly altered and fragmented by roads, agriculture, and other types of development; (4) Limited opportunities to pursue other large scale mitigation projects to offset unavoidable project impacts to wetlands.

#### Site Protection Instrument

A conservation easement or other protective mechanism will not be used for the mitigation site. Because of the flood damage reduction purpose of the diversion channel there will be a need to periodically perform maintenance activities in the channel to insure that design flows can be effectively conveyed during periods of operation. Although this will represent a form of disturbance, the removal of accumulated sediment and other debris from the diversion channel will help maintain the quality and quantity of wetlands in the diversion channel. If these activities are not performed some wetland areas would likely be converted to non-wetlands over time as sediment and other debris is deposited during periods of project operation.

The diversion channel will, however, be owned by the Diversion Authority (public ownership) throughout the life of the project. The operation and maintenance manual prepared for the project and provided to the Diversion Authority upon completion will specify the requirements for maintaining the quality and quantity of the wetlands in the diversion channel after construction is completed.

#### Baseline Information

The location and amount of wetlands impacted by the project and the amount that would be located in the diversion channel itself is discussed in Section 5.2.1.5 of the FEIS and augmented by Section 5.3 of the Supplemental Environmental Assessment prepared by the U.S. Army Corps of Engineers, St. Paul District in September 2013.

#### Determination of Credits

The analyses in the FEIS indicated that there would be sufficient opportunity to mitigate for all of the non-forested wetland impacts in the diversion channel at a minimum of one acre created for each acre impacted. In 2016, the Corps and the non-Federal sponsors conducted an analysis to determine the amount of mitigation that would be required if compensatory mitigation requirements were to be fulfilled based on functional replacement. The functional assessment was focused on seasonally flooded basins located on agricultural lands (FSFBs) since this wetland type represented the vast majority of the wetlands impacted by the project and there was likely a strong potential to realize a discernible difference between the function of impacted wetlands and properly constructed mitigation sites. A description of the methodology and results of the assessment is provided as Attachment 1 to this plan. The functional approach was coordinated with the regulatory agencies in North Dakota with authority over the project in March 2016. There were no objections to the approach. Based on the functional assessment, the amount of mitigation required for FSBS will be 0.88 acre for each acre impacted resulting in a final mitigation requirement of 1150.1 acres of mitigation (assuming that the mitigation site is consistent with that used in the analysis).

Compensatory mitigation requirements for other non-forested wetland types (shallow marsh and wet meadow) were not altered subsequent to the FEIS and SEA and remains at least at a minimum of one acre created for each acre impacted. Thus, the diversion channel mitigation site, at a minimum, will result in the creation of 1304.6 acres of wetlands. This total also includes credits for native upland buffers along the side slopes of the channel credited at 4:1.

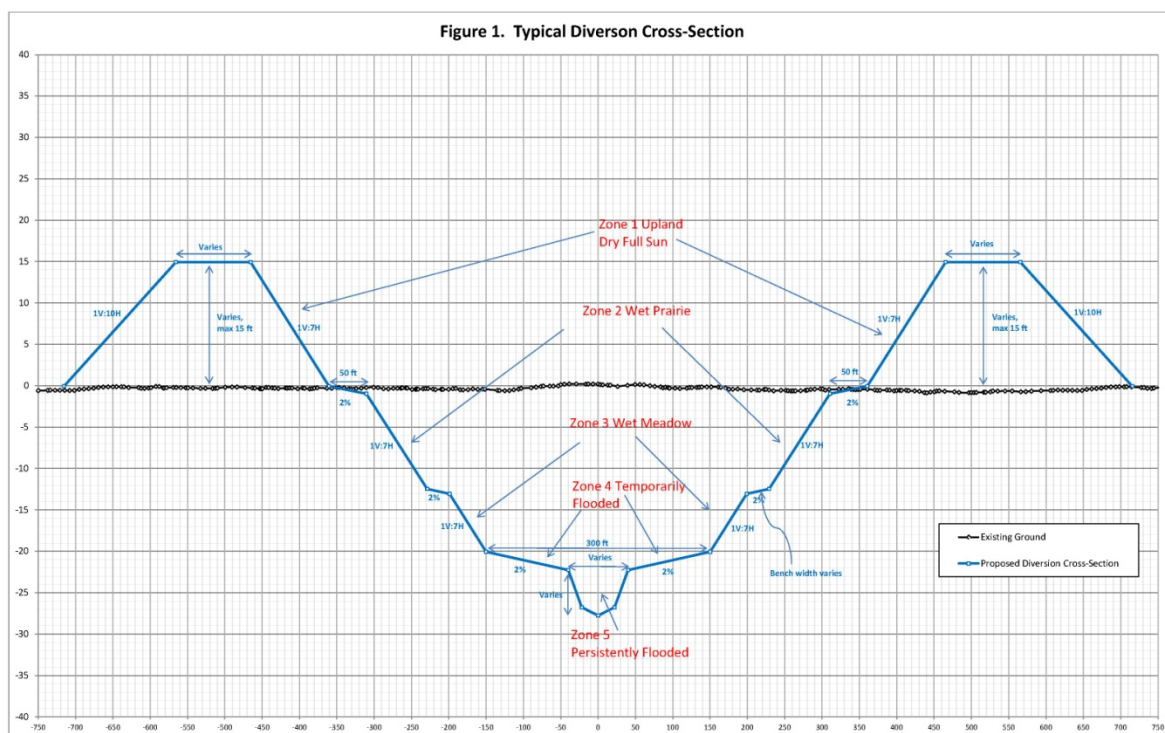
#### Mitigation Work Plan

The diversion channel mitigation site will consist of the following features: a meandering low flow channel, rock riffle structures (grade control) within the low flow channel to create ponded areas, three wetland plant community types, and upland buffer. The low flow channel will be approximately 80 feet wide and 6 feet deep at the downstream end and will be slightly smaller upstream, and will meander across the diversion channel bottom. The diversion channel will be constructed over a period of approximately six years. Therefore, the mitigation site will be constructed in phases, as sections of the diversion channel are completed. Hydrology for the created wetlands outside of the low flow channel will be supplied primarily by precipitation and supplemented by overbank flow from the meandering low flow channel and groundwater seepage from the banks of the channel. The diversion channel

bottom will include scrapes and depressional areas to increase diversity in habitat types. Development of the diversion channel mitigation site is constrained by the following requirements:

- The roughness coefficient for the diversion channel (Manning's  $n$  coefficient) cannot exceed 0.03 in order to maintain the conveyance capacity of the diversion channel. Therefore woody plants are not part of the planting plan for the mitigation site and any woody species that become established in the diversion channel will be removed as part of the routine maintenance activities;
- The diversion channel will be subject to periodic maintenance activities to maintain its capacity and integrity. Periodic maintenance may include the following activities: correction of erosion problems, removal of excessive accumulated sediment, and reconstruction of the low flow channel if it migrates to within 50 feet of the toe of the diversion channel.

The planting area consists of the entire diversion channel and its features which include: the excavated material berm piled along the diversion channel (zone 1), the 1V:7H slopes leading down to the bottom of the channel (zones 2 and 3), the 2% slopes leading to the low flow channel (zone 4) and finally the low flow channel (zone 5) see figure 1.



The seed mixes for the site are designed or selected to increase diversity, create competition for invasive species, and to promote plant community stability. They also are satisfactory to ensure that the roughness created by these plants will not have an adverse impact on the conveyance of channel flows.



The native seed mix design manual from the Minnesota Department of Transportation (MNDOT) was used to guide the selection of seed mixes and/or specific plant recommendations. For zones 1-3 seed mixes were adapted from the manual and are based on standard mixtures used by MNDOT, the Minnesota Board of Water and Soil Resources (BWSR) and the Minnesota Department of Natural Resources (MNDNR). Additional species were also added for more diversity and enhanced adaptation to the environmental conditions, and plants more adapted to North Dakota were added to the Minnesota mixes. For zones 4-5, the seed mix is made up of a combination of existing seed mixes with additional species incorporated to help satisfy the other criteria of the planting plan.

A cover crop of oats and/or winter wheat with native soil stabilizing grasses will also be used for all seed mixes.

- a) Zone 1: The seed mix proposed for zone 1 is a Mesic Prairie mix. Warm-season prairie grasses will have the highest success rate if planted between April 15 and June 30. Prairie forbs and sedges will have the highest success rate if planted from Oct 15 – frozen soils. The choice for seeding time will depend on construction completion date, site preparation, and weed control needs. Grass and forbs seeding rates may be adjusted to account for seeding time.
- b) Zone 2: The seed mix proposed for zone 2 is the recommended Wet Prairie Mix. Warm-season prairie grasses will have the highest success rate if planted between April 15 – June 30. Many wetland grasses are cool season grasses and will have a higher success rate if planted Oct 15 – frozen soils. Wetland sedges and forbs and prairie sedges and forbs will have the highest success rate if planted from Oct 15 – frozen soils. The choice for seeding time will depend on construction completion date, site preparation, and weed control needs. Grass and forbs seeding rates may be adjusted to account for seeding time.
- c) Zone 3: The seed mix proposed for zone 3 is the recommended Wet Meadow mix. Warm-season prairie grasses will have the highest success rate if planted between April 15 – June 30. Many wetland grasses are cool season grasses and will have a higher success rate if planted Oct 15 – frozen soils. Wetland sedges and forbs and prairie sedges and forbs will have the highest success rate if planted from Oct 15 – frozen soils. The choice for seeding time will depend on construction completion date, site preparation, and weed control needs. Grass and forbs seeding rates may be adjusted to account for seeding time.
- d) Zones 4 and 5: The seed mix proposed for zones 4 and 5 is a combination of the recommended Temporary Flooded Mix, Persistently Flooded Mix, and from expert opinions to create a combined mix (Table 4). Warm-season prairie grasses will have the highest success rate if planted between April 15 – June 30. Many wetland grasses are cool season grasses and will have a higher success rate if planted Oct 15 – frozen soils. Wetland sedges and forbs and prairie sedges and forbs will have the highest success rate if planted from Oct 15 – frozen soils. The majority of species in the wetter zones are cool-season grasses and sedges. The choice for seeding time will depend on construction completion date, site preparation, and weed control needs. Grass and forbs seeding rates may be adjusted to account for seeding time. In addition to seeding, Zone 4 and 5 will be planted with plugs of certain species to promote rapid

stabilization of the low-flow channel banks. Many wet plant species do not succeed from seed, but have very high success rates and rapid growth from plugs.

The species contained in each seed mix are provided in Attachment 2 to this plan.

#### Maintenance Plan

After initial construction of a diversion channel mitigation site phase, it will be monitored annually to assess the success in creating wetlands along the channel bottom. Periodic mowing, burning, and spot treating with herbicide will be required to control the establishment of non-desirable species and increase the successful establishment of planted species. Once seeded, it is anticipated that native grasses will take approximately three to five years to become established under favorable growing conditions.

Other adaptive management measures may be employed to address vegetative or hydrologic concerns identified during and after the initial establishment period. Maintenance needs will be identified as part of the annual monitoring conducted to determine compliance with the mitigation performance standards for the site and as part of the periodic inspections conducted in accordance with the operation and maintenance plan for the project.

#### Performance Standards

The following performance standards have been established for the wetlands at the diversion channel mitigation site:

##### *Seasonally Flooded Basin Wetland Compensatory Mitigation Performance Standards*

1. Seasonally flooded basin plant community types shall achieve a species composition that includes ten or more species of native/non-invasive grasses, sedges, ferns, rushes and/or forbs by the end of the fifth full growing season. Alternatively, a MnRAM vegetative diversity and integrity rating of “high quality” at the end of the fifth full growing season will also satisfy this performance standard.
2. More than 50 percent of vegetative areal cover within the wetland communities of the mitigation site shall be composed of FAC, FACW or OBL species.
3. Control of invasive and/or non-native plant species shall be carried out for five full growing seasons. Control shall consist of mowing, burning, disking, mulching, biocontrol and/or herbicide treatments. By the third growing season, any areas one-quarter acre in size or larger that have greater than 50 percent areal cover of invasive and/or non-native species shall be treated (e.g., herbicide) and/or cleared (e.g., disked) and then reseeded. Follow-up control of invasive and/or non-native species shall be implemented as stated above.
4. Hydrology shall consist of inundation by a few inches to 24 inches of water for a minimum of 14 consecutive days during the growing season under normal to wetter than normal hydrological conditions (the 70 percent of years based on the most recent 30-year record of precipitation). Inundation shall be

typically absent following the first 6 weeks of the growing season and the water table typically drops below 12 inches from the soil surface for the majority of the growing season in most years ( $\geq 50$  percent). Minor deviations from this hydrology standard shall be allowed provided monitoring data demonstrates that the site has wetland hydrology and the Corps concurs that the vegetative performance standards for a seasonally flooded basin have been achieved.

#### *Shallow Marsh Wetland Compensatory Mitigation Performance Standards*

1. Shallow marsh plant community types shall be dominated by three or more native aquatic species, with at least four native species occurring within areas demarcated as shallow marsh by the end of the 5<sup>th</sup> full growing season. Alternatively, a MnRAM vegetative diversity and integrity rating of “high quality” at the end of the fifth full growing season will also satisfy this performance standard.
2. More than 50 percent of vegetative areal cover within the wetland communities of the mitigation site shall be composed of FAC, FACW or OBL species.
3. Control of invasive and/or non-native plant species shall be carried out for five full growing seasons. Control shall consist of mowing, burning, disking, mulching, biocontrol and/or herbicide treatments. By the third growing season, any areas one-quarter acre in size or larger that have greater than 50 percent areal cover of invasive and/or non-native species shall be treated (e.g., herbicide) and/or cleared (e.g., disked) and then reseeded. Follow-up control of invasive and/or non-native species shall be implemented as stated above.
4. Hydrology shall consist of a water table  $\leq 6$  inches below the soil surface, to inundation up to 6 inches in depth, for a minimum of 56 consecutive days, or two periods of 28 or more consecutive days, or four periods of 14 or more consecutive days, during growing seasons under normal to wetter than normal hydrological conditions (the 70 percent of years based on the most recent 30-year record of precipitation). During the growing season, inundation up to 18 inches in depth is permissible during wetter than normal years or in response to precipitation events provided that the duration does not exceed 28 consecutive days (i.e., water depth drops from 18 inches to 6 inches within 28 days).

#### *Wet Meadow Wetland Compensatory Mitigation Performance Standards*

1. Wet meadow plant community types shall achieve a species composition that includes ten or more species of native/non-invasive grasses, sedges, ferns, rushes and/or forbs by the end of the fifth full growing season. Alternatively, a MnRAM vegetative diversity and integrity rating of “high quality” at the end of the fifth full growing season will also satisfy this performance standard.
2. More than 50 percent of vegetative areal cover within the wetland communities of the mitigation site shall be composed of FAC, FACW or OBL species.
3. Control of invasive and/or non-native plant species shall be carried out for five full growing seasons. Control shall consist of mowing, burning, disking, mulching, biocontrol and/or herbicide treatments. By the third growing season, any areas one-quarter acre in size or larger that have greater than 50 percent areal cover of invasive and/or non-native species shall be treated (e.g., herbicide) and/or cleared (e.g., disked) and then reseeded. Follow-up control of invasive and/or non-native species shall be implemented as stated above.



4. Hydrology shall consist of a water table 12 inches or less below the soil surface for a minimum of 28 consecutive days, or two periods of 14 or more consecutive days, during growing seasons under normal to wetter than normal hydrological conditions (the 70 percent of years based on the most recent 30-year record of precipitation). Depth of inundation during the growing season shall typically be 6 inches or less with duration of less than 14 consecutive days (Exceptions can be made for wetter than normal years or sites with hummocky microtopography where hollows between hummocks can have standing water depths up to 6 inches for extended periods of time). Minor deviations from this hydrology standard shall be allowed provided monitoring data demonstrates that the site has wetland hydrology and the Corps concurs that the vegetative performance standards for a wet meadow have been achieved.

#### Monitoring Requirements

Post-construction monitoring shall be conducted to determine the type, quality, and amount of wetlands created as compensatory mitigation for the unavoidable impacts of the Project. The purpose of the monitoring is to provide information to determine if the site is successful in meeting its performance standards. The monitoring period for non-forested wetlands shall be five years. This period may be shortened if the monitoring reports demonstrate that the mitigation site(s) has met its performance standard(s) in two consecutive reports and the regulatory agencies and the Corps of Engineers concur that additional monitoring is not required.

Monitoring reports shall be concise and effectively provide the information necessary to assess the status of the compensatory mitigation project. Monitoring shall commence the first full growing season following completion of construction (construction includes earth moving, excavation and other physical work as well as planting and seeding). The first monitoring report shall be submitted on or before December 31st of the first monitoring year. Subsequent reports shall be submitted on or before December 31st for the following four years (total of five reports).

Monitoring reports shall contain the following information and any additional information necessary to evaluate the performance of the mitigation site:

1. Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted;
2. A brief paragraph describing the mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts;
3. Written description of the location of the compensatory mitigation project including information to locate the site perimeter(s), and coordinates of the mitigation site (expressed as latitude, longitudes, UTM's, state plane coordinate system, etc.);
4. Dates the compensatory mitigation project commenced and/or was completed;
5. Short statement on whether the performance standards are being met;
6. Summary data, including photo documentation, to substantiate the success and/or potential challenges associated with the compensatory mitigation project;
7. Maps showing the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, monitoring well locations, and/or other features pertinent to the mitigation plan;
8. A summary of the amounts and type of wetlands restored, enhanced, and created at the mitigation site identified by wetland plant community types based on Wetland Plants and Plant Communities of Minnesota and Wisconsin (Eggers and Reed).

9. Dates of any recent corrective or maintenance activities conducted since the previous report submission;
10. Specific recommendations for any additional corrective or remedial actions.

The final monitoring report shall also include a wetland delineation completed in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*.

#### Long-term Management Plan

As part of the Federal flood damage reduction project for the Fargo-Moorhead metropolitan area the diversion channel wetland mitigation site will be turned over to the non-federal Sponsor (the Diversion Authority) once construction of the project is completed. The non-federal sponsor would then assume responsibility for maintenance and management of the mitigation site in accordance with the project partnering agreement which lays out the requirements for the long-term management of the site. The agreement will be consistent with the goals and objectives for the site summarized in the DCSMP.

#### Adaptive Management Plan

An adaptive management plan for compensatory mitigation sites was prepared by the U.S. Army Corps of Engineers, St. Paul District as part of the Final Feasibility Report and Environmental Impact Statement for the Fargo-Moorhead Metropolitan Area Flood Risk Management Project dated July 2011. The adaptive management plan was provided as Attachment 6 to that report. The AMMP is a living document, and MN State EIS (2016) provided suggestions for the AMMP.

#### Financial Assurance

A financial assurance is not proposed for this mitigation site since it is part of a Federal project undertaken by the U.S. Army Corps of Engineers. The Corps will ensure that the mitigation site is constructed in accordance with the mitigation plan and meets the established performance standards.

## Attachment 2 Wetland Seed Mixes by Plant Community Type

### ZONE 1 MESIC PRAIRIE SEED MIX

#### Forbs

Description	
Agastache foeniculum	Anise Hyssop
Allium stellatum	Prairie Onion
Apocynum sibiricum	Clasping Dogbane
Artemisia ludoviciana	White sagebrush
Asclepias verticillata	Whorled Milkweed
Astragalus canadensis	Canada Milk Vetch
Dalea candida	White Prairie Clover
Dalea purpurea	Purple Prairie Clover
Desmodium canadense	Showy Tick Trefoil
Galium boreale	Northern Bedstraw
Glycyrrhiza lepidota	Wild Licorice
Helianthus pauciflorus	Showy Sunflower
Heliopsis helianthoides	Early Sunflower
Heuchera richardsonii	Prairie Alumroot
Lathyrus venosus	Veiny Pea
Liatris aspera	Rough Blazing Star
Liatris pycnostachya	Prairie Blazing Star
Monarda fistulosa	Wild Bergamot
Oenothera biennis	Common Evening Primrose
Pedicularis canadensis	Wood Betony
Pycnanthemum virginianum	Mountain Mint
Ratibida columnifera	Long-headed Coneflower
Rudbeckia hirta	Black-eyed Susan
Solidago nemoralis	Old Field Goldenrod
Solidago rigida	Stiff Goldenrod
Solidago speciosa	Showy Goldenrod
Symphyotrichum ericoides	Heath Aster
Symphyotrichum laeve	Smooth Blue Aster
Thalictrum dasycarpum	Purple Meadow Rue
Verbena hastata	Blue Vervain
Zizia aptera	Heart-leaf Golden Alexanders



## TREES, SHRUBS & VINES

Description	
<i>Amorpha canescens</i>	Lead Plant

## GRASSES, SEDGES & RUSHES

Description	
<i>Andropogon gerardii</i>	Big Bluestem
<i>Bouteloua curtipendula</i>	Side-Oats Grama
<i>Bouteloua gracilis</i>	Blue Grama
<i>Bromus kalmii</i>	Prairie Brome
<i>Carex brevior</i>	Shortbeak Sedge
<i>Deschampsia cespitosa</i>	Tufted Hairgrass
<i>Elymus canadensis</i>	Canada Wild Rye
<i>Elymus trachycaulus</i>	Slender Wheatgrass
<i>Hesperostipa spartea</i> (syn. <i>Stipa spartea</i> )	Porcupine Grass
<i>Koeleria cristata</i>	June Grass
<i>Muhlenbergia glomerata</i>	Marsh Muly
<i>Muhlenbergia richardsonis</i>	Mat Muhly
<i>Panicum virgatum</i>	Switchgrass
<i>Pascopyrum smithii</i>	Western Wheatgrass
<i>Schizachyrium scoparium</i>	Little Bluestem
<i>Sorghastrum nutans</i>	Indian Grass
<i>Sphenopholis obtusata</i>	Prairie Wedgegrass
<i>Sporobolus heterolepis</i>	Prairie Dropseed
<i>Stipa viridula</i> (syn. <i>Nassella viridula</i> )	Green Needle Grass

## ZONE 2 WET PRAIRIE SEED MIX

### Forbs

Description	
Anemone canadensis	Canada Anemone
Apocynum sibiricum	Clasping Dogbane
Asclepias incarnata	Swamp Milkweed
Aster puniceus	Swamp Aster
Dalea purpurea	Purple Prairie Clover
Desmodium canadense	Showy Tick Trefoil
Doellingeria umbellata	Flat-Topped Aster
Eupatorium maculatum	Joe Pye Weed
Eupatorium perfoliatum	Boneset
Euthamia graminifolia	Grass-leaved Goldenrod
Galium boreale	Northern Bedstraw
Helenium autumnale	Sneezeweed
Helianthus grosseserratus	Saw-tooth Sunflower
Lathyrus venosus	Veiny Pea
Liatris ligulistylis	Meadow Blazing Star
Liatris pycnostachya	Prairie Blazing Star
Lobelia siphilitica	Great Blue Lobelia
Lysimachia quadriflora	Prairie Loosestrife
Mimulus ringens	Monkey Flower
Pycnanthemum virginianum	Mountain Mint
Solidago gigantea	Late Goldenrod
Thalictrum dasycarpum	Purple Meadow Rue

Verbena hastata	Blue Vervain
Vernonia fasciculata	Common Ironweed
Veronicastrum virginicum	Culver's Root
Zizia aurea	Golden Alexanders
<b>GRASSES, SEDGES &amp; RUSHES</b>	
Description	
Agrostis scabra	Ticklegrass
Andropogon gerardii	Big Bluestem
Bromus ciliatus	Fringed Brome
Bromus kalmii	Prairie Brome
Calamagrostis canadensis	Blue Joint Grass
Calamagrostis stricta	Northern reedgrass
Carex buxbaumii *	Buxbaum's Sedge
Carex pellita *	Wooly Sedge
Carex praegracilis	Freeway Sedge
Carex sartwellii *	Sartwell's Sedge
Carex stricta	Upright Sedge
Carex vulpinoidea	Fox Sedge
Deschamsia cespitosa	Tufted Hairgrass
Elymus trachycaulus	Slender Wheatgrass
Elymus virginicus	Virginia Wild Rye
Glyceria grandis	Reed Manna Grass
Glyceria striata	Fowl Manna Grass
Leymus triticoides	Beardgrass Wild Rye
Muhlenbergia glomerata	Marsh Muhly
Muhlenbergia richardsonis	Mat Muhly



<i>Panicum virgatum</i>	Switchgrass
<i>Pascopyrum smithii</i>	Western Wheatgrass
<i>Poa palustris</i>	Fowl Bluegrass
<i>Schizachyrium scoparium</i>	Little Bluestem
<i>Scirpus atrovirens</i>	Green Bulrush
<i>Scirpus cyperinus</i>	Woolgrass
<i>Sorghastrum nutans</i>	Indian Grass
<i>Spartina pectinata</i>	Prairie Cordgrass
<i>Sporobolus heterolepis</i>	Prairie Dropseed
<i>Stipa viridula</i> (syn. <i>Nassella viridula</i> )	Green Needle Grass

\* Indicates species that are highly desired.

### ZONE 3 WET MEADOW SEED MIX

#### Forbs

Description	
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Aster puniceus</i>	Swamp Aster
<i>Boltonia asteroides</i>	False Aster
<i>Doellingeria umbellata</i>	Flat-topped Aster
<i>Epilobium glandulosum</i>	Northern Willow Herb
<i>Eupatorium maculatum</i>	Joe Pye Weed
<i>Eupatorium perfoliatum</i>	Boneset
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod
<i>Helenium autumnale</i>	Sneezeweed
<i>Helianthus grosseserratus</i>	Saw-tooth Sunflower
<i>Hypoxis hirsuta</i>	Yellow Star Grass
<i>Lobelia siphilitica</i>	Great Blue Lobelia
<i>Lycopus americanus</i>	Water Horehound
<i>Lysimachia ciliata</i>	Fringed Loosestrife
<i>Mentha arvensis</i>	Wild Mint
<i>Mimulus ringens</i>	Monkey Flower
<i>Pedicularis lanceolata</i>	Marsh Betony

<i>Pycnanthemum virginianum</i>	Mountain Mint
<i>Solidago gigantea</i>	Late Goldenrod
<i>Symphyotrichum lanceolatum</i>	Panicked Aster
<i>Thalictrum dasycarpum</i>	Purple Meadow Rue
<i>Verbena hastata</i>	Blue Vervain
<i>Vernonia fasciculata</i>	Common Ironweed
<i>Veronicastrum virginicum</i>	Culver's Root
<i>Zizia aurea</i>	Golden Alexanders

### GRASSES, SEDGES & RUSHES

Description	
<i>Agrostis scabra</i>	Ticklegrass
<i>Andropogon gerardii</i>	Big Bluestem
<i>Beckmannia syzigachne</i>	American Sloughgrass
<i>Bromus ciliatus</i>	Fringed Brome
<i>Bromus kalmii</i>	Prairie Brome
<i>Calamagrostis canadensis</i>	Blue Joint Grass
<i>Calamagrostis stricta</i>	Northern reedgrass
<i>Carex bebbii</i>	Bebb's Sedge
<i>Carex buxbaumii</i> *	Buxbaum's Sedge
<i>Carex comosa</i>	Bottlebrush Sedge
<i>Carex lasiocarpa</i>	Woolyfruit Sedge
<i>Carex pellita</i> *	Wooly Sedge
<i>Carex praeegracilis</i> *	Freeway Sedge
<i>Carex sartwellii</i> *	Sartwell's Sedge
<i>Carex scoparia</i>	Broom Sedge
<i>Carex sprengei</i>	Sprengel's Sedge
<i>Carex stipata</i>	Awlfruit Sedge
<i>Carex stricta</i> *	Tussock Sedge
<i>Carex vulpinoidea</i>	Fox Sedge
<i>Distichlis spicata</i>	Inland Saltgrass
<i>Elymus trachycaulus</i>	Slender Wheatgrass
<i>Elymus virginicus</i>	Virginia Wild Rye
<i>Glyceria grandis</i>	Reed Manna Grass
<i>Glyceria striata</i>	Fowl Manna Grass
<i>Hierochloa odorata</i>	Sweetgrass
<i>Hordeum jubatum</i>	Foxtail Barley

<i>Juncus tenuis</i>	Path Rush
<i>Leersia oryzoides</i>	Rice Cutgrass
<i>Leymus triticoides</i>	Beardless Wild Rye
<i>Muhlenbergia glomerata</i>	Marsh Muhly
<i>Muhlenbergia richardsonis</i>	Mat Muhly
<i>Panicum virgatum</i>	Switchgrass
<i>Poa palustris</i>	Fowl Bluegrass
<i>Scirpus atrovirens</i>	Green Bulrush
<i>Scirpus cyperinus</i>	Woolgrass
<i>Scolochloa festucacea</i>	Common Rivergrass
<i>Sorghastrum nutans</i>	Indian Grass
<i>Spartina pectinata</i>	Prairie Cordgrass

\* Indicates the species that are highly desired.

## ZONE 4 and 5 BOTTOM MIX

### Forbs

Description	
<i>Acorus americanus</i>	Sweet Flag
<i>Acorus calamus</i>	Sweet Flag
<i>Alisma trivale</i>	Northern Water Plantain
<i>Asclepias incarnata</i>	Swamp Milkweed
<i>Bidens cernua</i>	Nodding Bur Marigold
<i>Epilobium glandulosum</i>	Northern Willow Herb
<i>Eupatorium maculatum</i>	Joe Pye Weed
<i>Impatiens capensis</i>	Spotted Touch-me-not
<i>Iris versicolor</i>	Northern Blue Flag
<i>Lycopus americanus</i>	Water Horehound
<i>Lysimachia ciliata</i>	Fringed Loosestrife
<i>Mentha arvensis</i>	Wild Mint
<i>Mimulus ringens</i>	Monkey Flower
<i>Penthorum sedoides</i>	Ditch Stonecrop
<i>Physostegia virginiana</i>	Obedient Plant
<i>Polygonum pensylvanicum</i>	Pinkweed
<i>Polygonum punctatum</i>	Smartweed
<i>Polygonum sagittatum</i>	Tear Thumb
<i>Rumex orbiculatus</i>	Bitter Dock



<i>Sagittaria latifolia</i>	Common Arrowhead
<i>Scutellaria laterifolia</i>	Mad-dog Skullcap
<i>Sium suave</i>	Tall Water Parsnip
<i>Sparganium eurycarpum</i>	Great Bur Reed
<i>Stachys palustris homotricha</i>	Woundwort
<i>Teucrium canadense</i>	Germander
<b>GRASSES, SEDGES &amp; RUSHES</b>	
Description	
<i>Agrostis scabra</i>	Ticklegrass
<i>Andropogon gerardii</i>	Big Bluestem
<i>Beckmannia syzigachne</i>	American Sloughgrass
<i>Bromus ciliatus</i>	Fringed Brome
<i>Calamagrostis canadensis</i>	Blue Joint Grass
<i>Carex aquatilis</i> *	Water Sedge
<i>Carex aurea</i>	Golden Sedge
<i>Carex bebbii</i> *	Bebb's Sedge
<i>Carex comosa</i>	Bottlebrush Sedge
<i>Carex lacustris</i> *	Lake Sedge
<i>Carex lasiocarpa</i> *	Woollyfruit Sedge
<i>Carex pellita</i> *	Wooly Sedge
<i>Carex praegracilis</i>	Freeway Sedge
<i>Carex sartwellii</i> *	Sartwell's Sedge
<i>Carex scoparia</i> *	Broom Sedge
<i>Carex stipata</i>	Awlfruit Sedge
<i>Carex stricta</i>	Tussock Sedge
<i>Carex utriculata</i> *	Common Yellow Lake Sedge
<i>Carex vulpinoidea</i>	Fox Sedge
<i>Distichlis spicata</i>	Inland Saltgrass
<i>Eleocharis obtusa</i>	Blunt Spikerush
<i>Eleocharis palustris</i>	Common Spikerush
<i>Elymus virginicus</i>	Virginia Wild Rye
<i>Glyceria grandis</i>	Reed Manna Grass
<i>Glyceria striata</i>	Fowl Manna Grass
<i>Hierochloa odorata</i>	Sweetgrass
<i>Hordeum jubatum</i>	Foxtail Barley
<i>Juncus balticus</i>	Baltic Rush

<i>Juncus effusus</i>	Common Rush
<i>Leersia oryzoides</i>	Rice Cutgrass
<i>Muhlenbergia glomerata</i>	Marsh Muhly
<i>Panicum virgatum</i>	Switchgrass
<i>Poa palustris</i>	Fowl Bluegrass
<i>Scirpus acutus</i>	Hardstem Bulrush
<i>Scirpus atrovirens</i>	Green Bulrush
<i>Scirpus cyperinus</i>	Woolgrass
<i>Scirpus fluviatilis</i>	River Bulrush
<i>Scirpus pungens</i>	Common Three-Square
<i>Scirpus validus</i>	Softstem Bulrush
<i>Scolochloa festucacea</i>	Common Rivergrass
<i>Sorghastrum nutans</i>	Indian Grass
<i>Spartina pectinata</i>	Prairie Cordgrass

\* Indicates species that are highly desired.

## **D2: Forested Wetland Mitigation Plan**

### **April 2016**

#### Objectives

The forested wetland mitigation plan addresses the compensatory mitigation requirement for impacts to forested wetlands associated with the non-federal portion of the Fargo-Moorhead Metropolitan Area Flood Risk Management Project. The non-federal portion of the project has been determined to result in unavoidable impacts to 26 acres of forested wetlands. In the FEIS, the U.S. Army Corps of Engineers, St. Paul District committed to providing compensatory mitigation for these unavoidable impacts at a ratio of 2:1 or 52 acres. In response, this plan has been developed to provide at least that amount of restored, created, or enhanced forested wetland. In the event that the sites described in this plan result in an amount of forested wetland that exceeds the requirement in the Clean Water Act Section 404 permit, the excess amount may be applied to compensatory mitigation requirements associated with federal project features that will be constructed by the St. Paul District.

The three sites described in this plan are estimated to result in the restoration of approximately 80 acres of forested wetlands. The functions of the wetlands at the mitigation site will be greater than those of the impact sites because the site selection process has prioritized larger sites, sites adjacent to waterways, sites where wetland hydrology could be restored or improved, and sites that are adjacent to other forested or natural areas. In addition, buffers comprised of native vegetation are a component of the plan for each site to further improve wetland function. The mitigation site will be located in the Red River of the North watershed which is the same watershed where the impacts will occur.

#### Site Selection

Site selection for forested wetland mitigation sites was conducted using the following hierarchical process. First sites must be located within the Red River watershed with a preference for mitigation sites as close as possible to the impacts sites. Second, lands currently owned by the non-federal sponsors were evaluated, and screened using the following criteria:

- (1) presence of hydric soils
- (2) potential to restore wetland hydrology through diversion of surface flows, manipulation of outlets, or grading
- (3) connectivity with other natural areas and degree of disturbance from adjacent land uses
- (4) potential acreage of restored forested wetlands

Approximately twenty sites were screened based on the criteria and eight were assessed in the field. The identification and evaluation process resulted in the identification of three sites: the Maple River Site, the Pincher Site, and the Rush River Site. Each site is briefly described in the following paragraphs. Additional details on the sites and the plan for restoring forested wetlands is provided in the Baseline Information and Mitigation Work Plan sections of this document. The locations of the sites are shown on Figure 1 and Figure 2.

*Maple River Site.* The Maple River site is located near the intersection of County Road 20 and 26<sup>th</sup> Street NW (46°55'49.71"N, 96°57'10.81"W) in Cass County, North Dakota.



The site encompasses approximately 47 acres and would be located on the protected side of the diversion channel (figure 1).

*Pincher Site.* The Pincher Site is located adjacent to the Red River of the North south of the City of Oxbow in Cass County, North Dakota. The site is located east of the recently constructed oxbow levee adjacent to an existing floodplain forest. The site encompasses approximately 13 acres and would be located on the unprotected side of the Oxbow Hickson Bakke Levee (Figure 2).

*Lower Rush River Site.* The Lower Rush River site is an approximate 60 acre parcel located southeast of the intersection of County Road 22 and 105<sup>th</sup> Street N (46°57'43.30"N, 96°57'10.81"W). The site borders the west bank of the Lower Rush River along its southeastern edge for approximately 3,000 feet. The Rush River inlet to the diversion channel would be located immediately east of the site (figure 1).

#### Site Protection Instrument

The sites are currently owned by one of the local governments that collectively make up the local sponsors for the project. A conservation easement or other protective mechanism will be established for each mitigation site. The mechanism will prohibit incompatible uses at the site including plowing, vegetation removal, grading, grazing, mining, and others that would directly or indirectly reduce the quality and quantity of forested wetlands at each site. There has been some interest from the North Dakota Game and Fish Department in holding an easement or other protective mechanism once the site is constructed and the protection established/recorded.

#### Baseline Information

*Maple River Site.* The site is currently used in the production of agricultural row crops. Based on a review of air photographs, the site has been in agricultural use since at least 1990. The soils at the site consist of Fargo silty clay (I229A), Fargo-Nutley silty clays (I234A), Wahpeton silty clay (I248A), and Cashel silty clay (I293B). The Fargo silty clay and the Fargo-Nutley silty clays are hydric soils (although the Fargo-Nutley silty clays have non-hydric components). The other two map units at the site are predominantly non-hydric but do contain approximately 10% hydric components. The National Wetland Inventory does not identify any wetlands at the site. However, a wetland delineation was completed as part of the wetland determination for the diversion project and a few small areas were identified as wetlands.

The site is bordered on the south by the Maple River and a riparian area of varying widths between the agricultural fields and the Maple River. The east side of the site is bordered by a residential property containing a narrow wooded area along the field edge. The areas north and west are used for agricultural row crops.

There are three defined outlets along the southern edge of the site that allow water to drain from the agricultural field through the riparian buffer and into the Maple River. The outlets are associated with swales and collection areas at the site that display wet signatures on air photographs. The outlets appear to have been maintained or improved to improve drainage from the fields.

*Pincher Site.* The Pincher site was in use for agricultural row crops from at least 1990 until 2014 when a levee was constructed immediately west of the site and agricultural activities ceased. The site is currently dominated by cocklebur, box elder seedlings, and brome grass. The soils at the site consist of

Fargo silty clay (I235A), Cashel silty clay (I293B), and Sinai silty clay (1475B). The Fargo silty clay is a hydric soil (all components) while the other two map units are predominantly non-hydric but do contain hydric components (8-13%). The National Wetland Inventory does not identify any wetlands at the site. However, a wetland delineation was completed as part of the permitting process for the levee construction in 2014 and wetlands were mapped along two drainages that collected surface water runoff from the agricultural fields and funneled through outlets into the riparian area west of the site towards the Red River of the North. These wetlands are presumed to have been impacted by the levee construction and elimination of surface flows to this area.

The site is bordered on the south by a residential property, on the east and north by a floodplain forest adjacent to the Red River of the North, and to the west by the recently constructed levee.

As previously mentioned, there are two defined outlets along the eastern edge of the site that allow water to drain from the site towards the Red River of the North. The outlets are associated with swales and collection areas that existed in the agricultural field before the levee was constructed. The outlets appear to have been maintained or improved to improve drainage from the fields. Currently surface drainage from areas south and west enters the site through two surface ditches. The first follows the exterior toe of the levee and carries surface water directly into the site until the constructed ditch matches the natural slope of the land and the flow become diffuse. The second ditch is located along the southern boundary of the site and carries flow directly to the Red River of the North.

*Lower Rush River Site.* The site is currently used in the production of agricultural row crops. Based on a review of air photographs, the site has been in agricultural use since at least 1990. The soils at the site consist of Fargo silty clays (I229A and I235A) and Fargo-Ryan silty clays (I241A). All of the mapped soil units at the site identified as hydric. The National Wetland Inventory does not identify any wetlands at the site. However, a wetland delineation was completed as part of the wetland determination for the diversion project and a few small areas were identified as wetlands. Only a portion of this site was delineated.

The site is bordered on the southeast by a berm along the Lower Rush River, on the north by County Road 22, and on the east by 105<sup>th</sup> Street N. Ditches along the roads that border the site convey water towards the Lower Rush River. Air photographs indicate that surface flows from the site carry water north through culverts under County Road 22 to an adjacent agricultural field. A culvert at the northeastern corner of the site allows water that collects at this location to enter the Lower Rush River.

#### Determination of Credits

The analyses in the FEIS indicated that forested wetland impacts would be mitigated at a ratio of 2:1. The total forested wetland impact for the diversion portion of the Project is 26 acres resulting in a mitigation requirement of 52 acres. Since the proposed activities at each of the mitigation sites involve measures that would generally be credited at least at a 2:1 ratio (restoration of a completely drained wetland and/or creation of a new wetland) the ratio established in the FEIS will be sufficient to offset the impacts consistent with NDRO guidance. Additional information regarding the mitigation method to be used and amount of credit provided for each site in the Mitigation Work Plan section of this document.

## Mitigation Work Plan

*Maple River Site.* Forested wetlands will be restored at the site by blocking the three outlets that currently allow surface water to drain from the site towards the Maple River (additional investigations into the need for a low berm in the southeast corner of the site will also be conducted during more detailed design). Based on existing topography, wetland hydrology will be restored to approximately 34 acres of drained hydric soils by modifying the outlets from the fields. Minor grading and earth moving will occur as part of the outlet modification and to establish contours across the site that spread surface flows parallel to the river. Upland buffers composed of native species will be established around the restored wetlands.

Vegetation will be reestablished at the site by planting within the boundaries shown on Figure 1. Planting the site by direct seeding species that are readily available and planting bare-root seedlings of species that are not readily available has been found to be the most effective way to restore floodplain forest. The work would include woody debris removal, disking, herbicide treatment, and direct seeding with seeds of cottonwood (*Populus deltoids*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), bur oak (*Quercus macrocarpa*), American elm (*Ulmus Americana*), silver maple (*Acer sacharinum*), black walnut (*Juglans nigra*), and American basswood (*Tilia americana*). If seeds for any of these tree species are not available, those tree species would be planted as bare-root seedlings. Monitoring would be conducted and additional seedlings would be planted if the tree density targets are not attained.

The following initial work would be conducted (for these sites some of this work has already been done or is ongoing):

1. Delineate tree planting areas to cover at least 80 percent of total area. The remaining 20 percent of the mitigation area would be allowed to grow in with native forbs, shrubs, trees and germinated from locally grown propagules. These areas of local vegetation would be interspersed between the tree planting areas.
2. Clear and grub the tree planting area and properly dispose of significant woody debris if necessary.
3. Treat the site with glyphosate after spring green-up and again in early fall.
4. The following spring, disc the site to expose mineral soil and treat with the pre-emergent herbicide Oust or other approved herbicide.
5. Direct seed the entire tree planting acreage with cottonwood (*Populus deltoids*), American elm (*Ulmus americana*), silver maple (*Acer sacharinum*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), bur oak (*Quercus macrocarpa*), quaking aspen (*Populus tremuloides*), black walnut (*Juglans nigra*), and American basswood (*Tilia americana*). The site should then be lightly dragged to ensure good soil/seed contact. If large quantities of seed from any of the selected species are not available, the Corps would plant these species as bare-root seedlings. The bare-root seedlings would be planted by machine, and seedlings would be planted in meandering rows to better imitate a natural forest.
6. Assuming good germination and growth, apply Oust XP or another approved and appropriate herbicide in the fall after the seedlings go dormant to help ensure that there would be minimal weed problems during the following growing season.
7. If the direct seeding is not successful per performance standards listed in this document, plant seedling trees using power auger or tractor mounted tree planter. Install grow-tubes to protect against deer and beaver browsing and weed barrier mats to limit weed competition. Water the



planted trees at planting and three more times within the next month if rainfall is less than 1 inch each week.

8. Monitor tree survival and composition at 10 years. Replant as needed to attain target average of 300 trees per acre over the planted area with at least 10 percent hackberry and bur oak at 10 years after the initial planting.
9. If necessary, remove and properly dispose of the grow tubes when the trees reach 8 feet tall and more than 1 inch DBH.

*Lower Rush River Site.* Forested wetlands will be restored at the site by blocking the two outlets that currently allow surface water to drain from the site towards the north. Based on existing topography, wetland hydrology will be restored to approximately 43 acres of drained hydric soils by modifying the outlets from the fields. Minor grading and earth moving will occur as part of the outlet modification and to establish contours across the site that spread surface flows parallel to the diversion channel.

The methods for planting will be the same as those described for the Maple River site.

*Pincher Site.* Surface hydrology at the Pincher Site was altered as a result of the construction of the Oxbow levee project. Forested wetlands will be restored at the site by blocking two to three outlets that currently allow surface water to drain from the site towards the Red River (additional investigations of the need to plug an additional outlet to the north of the site will also be conducted during more detailed design). Based on existing topography, wetland hydrology will be restored to approximately 4 acres of drained hydric soils by modifying the outlets from the area. Upland buffers composed of native species is already established around the majority of the restored wetlands.

Forested wetlands will be restored adjacent to an existing floodplain forest (Figure 2). This area has not been farmed for one season and is already regenerating naturally from propagules provided by the adjacent floodplain forest. The majority of the seedlings are box elder (*Acer negundo*) so the proposal for this site is to inner plant bare root stock of the following species; American elm (*Ulmus americana*), silver maple (*Acer sacharinum*), black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis occidentalis*), bur oak (*Quercus macrocarpa*), quaking aspen (*Populus tremuloides*), black walnut (*Juglans nigra*), and American basswood (*Tilia americana*). As well as cuttings of Eastern Cottonwood (*Populus deltoids*) and red-osier dogwood (*Cornus sericea*).

### Maintenance Plan

After initial construction the mitigation sites will be monitored annually to assess the success in restoring and creating forested wetlands. Periodic mowing, burning, and spot treating with herbicide will be required to control the establishment of non-desirable species and increase the successful establishment of planted species. Once seeded, it is anticipated that native species will take approximately three to five years to become established under favorable growing conditions.

Other adaptive management measures may be employed to address vegetative or hydrologic concerns identified during and after the initial establishment period. Maintenance needs will be identified as part of the annual monitoring conducted to determine compliance with the mitigation performance standards for the site and as part of the periodic inspections conducted in accordance with the operation and maintenance plan for the project.

## Performance Standards

The following performance standards have been established for the forested wetland mitigation sites:

1. There shall be an average of 300 native, non-invasive trees per acre with diameter at breast height (DBH) of 2 inches or more over 80 percent of the mitigation site within ten years of establishment of the site.
2. More than 50 percent of vegetative areal cover within the wetland communities of the mitigation site shall be composed of FAC, FACW or OBL species.
3. Hydrology shall consist of inundation by a few inches to 36 inches of water for a minimum of 14 consecutive days during the growing season under normal to wetter than normal conditions (70 percent of years based on most recent 30-year record of precipitation). Inundation shall be typically absent following the first 6 weeks of the growing season and the water table typically drops below 12 inches from the surface for the majority of the growing season in most years.
4. Upland buffers must have at least 75 percent areal cover of perennial species, but can have more than 25 percent vegetative areal cover by invasive and/or non-native species.
5. Control of invasive and/or non-native plant species shall be carried out for ten full growing seasons. Control shall consist of mowing, burning, disking, mulching, biocontrol and/or herbicide treatments as appropriate for the site. By the third growing season, any areas one-quarter acre in size or larger that have greater than 50 percent areal cover of invasive and/or non-native species shall be treated (e.g., herbicide) and/or cleared (e.g., disked) and then reseeded. At the end of the tenth growing season, the vegetative community shall not contain greater than twenty-five percent vegetative areal cover of invasive and/or non-native species including but not limited to: reed canary grass (*Phalaris arundinacea*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), smooth brome grass (*Bromus inermis*), giant ragweed (*Ambrosia trifida*), common ragweed (*Ambrosia artemisiifolia*), quack grass (*Elytrigia repens*), black locust (*Robinia pseudoacacia*), sweet clovers (*Melilotus alba* and *M. officinalis*), non-native honeysuckles (e.g., *Lonicera x bella*), and non-native buckthorns (*Rhamnus cathartica* and *R. frangula*). The mitigation site shall have no purple loosestrife (*Lythrum salicaria*) present at the end of the monitoring period.

## Monitoring Requirements

Post-construction monitoring shall be conducted to determine the quality and amount of forested wetlands created as compensatory mitigation for the unavoidable impacts of the Project. The purpose of the monitoring is to provide information to determine if the site is successful in meeting its performance standards. The monitoring period for forested wetlands shall be ten years. This period may be shortened if the monitoring reports demonstrate that the mitigation site(s) has met its performance standard(s) in two consecutive reports and the regulatory agencies and the Corps of Engineers concur that additional monitoring is not required.

Monitoring reports shall be concise and effectively provide the information necessary to assess the status of the compensatory mitigation project. Monitoring shall commence the first full growing season following completion of construction (construction includes earth moving, excavation and other physical

work as well as planting and seeding). The first monitoring report shall be submitted on or before December 31st of the first monitoring year. Subsequent reports shall be submitted on or before December 31st for years three, five, seven, and ten (total of five reports).

Monitoring reports shall contain the following information and any additional information necessary to evaluate the performance of the mitigation site:

1. Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted;
2. A brief paragraph describing the mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts;
3. Written description of the location of the compensatory mitigation project including information to locate the site perimeter(s), and coordinates of the mitigation site (expressed as latitude, longitudes, UTM's, state plane coordinate system, etc.);
4. Dates the compensatory mitigation project commenced and/or was completed;
5. Short statement on whether the performance standards are being met;
6. Summary data, including photo documentation, to substantiate the success and/or potential challenges associated with the compensatory mitigation project;
7. Maps showing the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, monitoring well locations, and/or other features pertinent to the mitigation plan;
8. A summary of the amounts and type of wetlands restored, enhanced, and created at the mitigation site identified by wetland plant community types based on Wetland Plants and Plant Communities of Minnesota and Wisconsin (Eggers and Reed).
9. Dates of any recent corrective or maintenance activities conducted since the previous report submission;
10. Specific recommendations for any additional corrective or remedial actions.

The final monitoring report shall also include a wetland delineation completed in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*.

#### Long-term Management Plan

As part of the Federal flood damage reduction project for the Fargo-Moorhead metropolitan area the forested wetland mitigation sites will be turned over to the non-federal Sponsor (the Diversion Authority) once construction of the project is completed. The non-federal sponsor would then assume responsibility for maintenance and management of the mitigation sites in accordance with the project partnering agreement. The agreement will be consistent with the goals and objectives for the site summarized in the FWMP.

#### Adaptive Management Plan

An adaptive management plan for compensatory mitigation sites was prepared by the U.S. Army Corps of Engineers, St. Paul District as part of the Final Feasibility Report and Environmental Impact Statement for the Fargo-Moorhead Metropolitan Area Flood Risk Management Project dated July 2011. The adaptive management plan was provided as Attachment 6 to that report.



### Financial Assurance

A financial assurance is not proposed for these mitigation sites since it is part of a Federal project undertaken by the U.S. Army Corps of Engineers. The Corps will ensure that the mitigation site are constructed in accordance with the mitigation plan and meets the established performance standards.

### **D3: Mitigation Proposal for Aquatic Habitat Impacts July 2016**

#### Objectives

The Aquatic Habitat Mitigation Plan (AHMP) addresses the mitigation requirement for impacts to the aquatic habitat impacted from the federal portion and the non-federal portion of the project. The aquatic habitat impacts occur from channel abandonment associated with project features including; the Maple River and Sheyenne River aqueducts, and the Red River and Wild Rice River control structures. The structures will all be built “in the dry” with the rivers re-routed through them. The result of this is the loss of river channel habitat. The non-federal portion of the project includes impacts to approximately 10 acres of riverine habitat on the Maple River, and 8 acres of riverine habitat on the Sheyenne River. The federal portion of the project includes impacts to approximately 11 acres of riverine habitat on the Wild Rice River (North Dakota), and 14 acres of riverine habitat on the Red River. In the FEIS attachment 6, the U.S. Army Corps of Engineers, St. Paul District (USACE) committed to providing mitigation for these impacts.

As outlined in FEIS attachment 6, USACE must factor in habitat quality within its determination of mitigation needs. Habitat quality has been quantified through the use of Index of Biotic Integrity (IBI) scores. As outlined in attachment 6, habitat quantity and quality are combined to generate a quantitative “habitat unit” to estimate both the level of impact and level of mitigation.

Impacts to aquatic riverine habitat have been updated since the FEIS based on field data collection and more detailed project design information. These numbers will continue to be revised based on additional data collection and final project designs. Based on current information, the project would impact approximately 23 “habitat units” of aquatic riverine habitat. The new channels created leading into and out of project structures (i.e., water control structures and aqueducts) would create approximately 16 habitat units. This resulted in a mitigation need of approximately 7 habitat units.

Table 1. Habitat losses, gains and remaining mitigation needs for project impacts on each river within the study area.

River	Habitat Lost	Habitat Gained	Net Difference
Red (ND and MN)	7 Habitat Units (14 acres)	4.5 Habitat Units (9 acres);	2.5 Habitat Units
Maple (ND)	5 Habitat Units (10 acres)	3.5 Habitat Units (7 acres)	1.5 Habitat Units
Sheyenne (ND)	5.6 habitat units (8 acres)	4.2 Habitat Units (6 acres)	1.4 Habitat Units
Wild Rice (ND)	5.5 Habitat Units (11 acres)	4 Habitat Units (8 acres)	1.5 Habitat Units
Total:	23.1 Habitat Units	16.2 Habitat Units	6.9 Habitat Units

The mitigation project described in this plan will provide approximately 7.5 habitat units of aquatic river habitat, which is slightly larger than the required 7 habitat units that will be lost as a result of the project.

### Site Selection

Site selection for aquatic habitat mitigation considered several factors. First, to the fullest extent practicable, sites must be located within the Red River watershed with a preference for mitigation sites as close as possible to the impacts sites. Second, all agency partners were included within the discussion and selection process for mitigation project(s). Third, although mitigation needs to be done within a watershed context, there was strong agency preference that mitigation be done within the State where the impact occurred. Because the majority of impacts to aquatic habitat would occur within North Dakota, and because remaining impacts within Minnesota would be on the Red River which is shared between Minnesota and North Dakota, the result was a strong agency preference for the majority of mitigation to be within North Dakota.

Measures considered for aquatic habitat mitigation include performing full stream restoration, stream improvement via riparian corridor restoration, and construction of fish passage. Stream and riparian corridor restoration are direct, site-specific tools that offset project impacts by restoring a specific amount of habitat to replace a specific amount of habitat lost or impaired. It is the best mitigation option in terms of measuring specific habitat replacement, and monitoring to evaluate success of the mitigation. Conversely, fish passage provides benefits to the aquatic community by restoring migratory pathways that are otherwise limited. Benefits can be significant and substantial. However, it can be more difficult to identify exactly the amount of improved fish passage needed to offset footprint impacts. It also may be more difficult to evaluate whether the mitigation is completely offsetting the identified impact, although monitoring how well fish can navigate through a fish passage structure is possible.

Lengthy coordination with the state and federal natural resource agencies identified differences of opinion in the preferred methods for mitigation. Minnesota Department of Natural Resources (DNR) stated that site-specific mitigation was needed to offset habitat losses and measure success. North Dakota Game and Fish (NDGF) identified that fish passage was generally preferred for offsetting the aquatic impacts identified above. NDGF would support an approach that used both site-specific habitat restoration and fish passage for mitigation. Though stream restoration could provide definite, and more easily quantifiable aquatic habitat benefits, NDGF had significant concern whether an adequate number of sites could be identified for stream restoration. The USFWS stated that an approach that used multiple mitigation techniques (i.e., habitat restoration and fish passage) could be a reasonable approach to offsetting identified impacts.

During the process of selecting mitigation projects many locations were considered in detail and included locations on the Wild Rice, Maple, and Sheyenne Rivers in North Dakota; the Red and the Bois de Sioux rivers (ND and MN); and the Buffalo and Lower Ottertail Rivers, as well as Wolverton Creek in MN.

These sites were screened by the agency team including many field site assessments and agency discussions. After lengthy consideration USACE has elected to pursue the Bois de Sioux Re-meander project (south of Wahpeton, ND and Breckenridge, MN) for river aquatic habitat mitigation. This location would allow for river restoration via reconnect meanders abandoned during channelization.



The project would be within the watershed and located within both North Dakota and Minnesota. Additional details on the sites and a draft plan are described in the Baseline Information and Mitigation Work Plan sections of this document. The locations of the sites is shown on Figure 1.

#### Site Protection Instrument

The land is currently owned by 9 or more different individuals along the River Channel both in Minnesota and North Dakota. The lands necessary for the project would be acquired from willing land owners. The amount of land to be acquired will be determined after further study and site visits with the land owners. The land acquisition will prohibit incompatible uses at the site including plowing, vegetation removal, grading, grazing, mining, and others that would directly or indirectly reduce the quality of the aquatic habitat for the site.

#### Baseline Information

A proposal to restore aquatic habitat on the Bois de Sioux River located approximately 6 river miles south of Wahpeton, ND to compensate for impacts to lost riverine habitat caused by the project has been prepared by the Corps with input from state and federal agencies. This proposal includes restoring flow to historic meander bends that were cut off several years ago when this portion of the Bois de Sioux River was straightened. The preliminary goal is to return the base flow to approximately 13,000 feet of original river channel meanders with capacity for higher flows to continue through the existing channel.

#### Determination of Needs

As outlined above, the AHMP project would result in a total of about 23 habitat units (HUs) lost through footprint impacts. These numbers assumed no benefit from the constructed channel that passes through the structures. When taking into account the habitat that will be provided by the new channels, approximately 16 HU's, mitigation for the loss of seven aquatic habitat units is required.

#### Mitigation Work Plan

*Bois de Sioux:* Over 13,000 feet of riverine habitat will be restored by excavating sections of abandoned river channel to the elevation where the river will flow through these areas. Four oxbows have been selected for restoration with consideration of additional oxbows, if necessary (Figure 1). Activities would include earthwork to facilitate flow restoration in the historic channels. Excavation may be needed within the historic channels to account for any incision of the flood channel over time. The AHMP mitigation project would need to allow higher flood flows to flow through the existing flood channel. This is necessary to maintain the authorized purpose of the flood project. Grading and vegetative planting will also be done where necessary to help improve habitat.

#### Maintenance Plan

After initial construction the mitigation sites will be monitored to assess the success in restoring the flow to the original channels.

The project will be designed to minimize project maintenance. Adaptive management measures may be employed to address vegetative, aquatic or hydrologic concerns identified during and after the initial

establishment period. Maintenance needs will be identified as part of the annual monitoring conducted to determine compliance with the mitigation performance standards for the site and as part of the periodic inspections conducted in accordance with the operation and maintenance plan for the project.

#### Performance Standards

The following performance standards are being considered for the site:

1. All flow will be diverted into the old channel up until approximately 2 year event, at which time additional flow will pass over a low flow restoration structure and through the flood channel.
2. The mitigation project will generate the approximately seven habitat units necessary to offset project impacts. Mitigation effectiveness will be determined by an Index of Biotic Integrity score that will measure general habitat health of mitigation sites. This will be multiplied by the area of habitat created to generate the number of habitat units for the mitigation site.

#### Monitoring Requirements

Post-construction monitoring shall be conducted to determine the quality of the restored channels created as mitigation for the unavoidable impacts of the Project. The purpose of the monitoring is to provide information to determine if the site is successful in meeting its performance standards.

Monitoring reports shall be concise and effectively provide the information necessary to assess the status of the mitigation project. Monitoring would likely commence the first full growing season following completion of construction (construction includes earth moving, flow restoration, excavation and other physical work as well as planting and seeding).

Monitoring reports shall contain the following information and any additional information necessary to evaluate the performance of the mitigation site:

1. Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted;
2. A brief paragraph describing the mitigation acreage and type of aquatic resources authorized to mitigate for the aquatic impacts;
3. Written description of the location of the mitigation project including information to locate the site perimeter(s), and coordinates of the mitigation site (expressed as latitude, longitudes, UTM's, state plane coordinate system, etc.);
4. Dates the mitigation project commenced and/or was completed;
5. Short statement on whether the performance standards are being met;
6. Summary data, including photo documentation, to substantiate the success and/or potential challenges associated with the mitigation project;
7. Maps showing the location of the mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan;
8. Dates of any recent corrective or maintenance activities conducted since the previous report submission;
9. Specific recommendations for any additional corrective or remedial actions.

### Long-term Management Plan

As part of the Federal flood damage reduction project for the Fargo-Moorhead metropolitan area the biotic mitigation sites will be turned over to the non-federal Sponsor (the Diversion Authority) once construction of the project is completed. The non-federal sponsor would then assume responsibility for maintenance and management of the mitigation sites in accordance with the project partnering agreement. The agreement will be consistent with the goals and objectives for the site summarized in the FWMP.

### Adaptive Management Plan

An adaptive management plan for mitigation sites was prepared by the U.S. Army Corps of Engineers, St. Paul District as part of the Final Feasibility Report and Environmental Impact Statement for the Fargo-Moorhead Metropolitan Area Flood Risk Management Project dated July 2011. The adaptive management plan was provided as Attachment 6 to that report.

### Financial Assurance

This mitigation is part of the broader Federal project undertaken by the U.S. Army Corps of Engineers. The Corps will ensure that the mitigation site is constructed in accordance with the mitigation plan and assess whether the mitigation is meeting the established performance standards.



Figure 1. Proposed re-meander on the Bois de Sioux River south of Wahpeton, ND and Breckenridge, MN.

