Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

115 DELAFIELD STREET
WAUKESHA, WI 53188-3615

Telephone: (262) 521-5272 • Fax: (262) 521-5265 • E-mail: contactus@waukesha-water.com

March 23, 2018

Ben Callan
WDNR WEPA Coordinator
State of Wisconsin Department of Natural Resources
101 S. Webster Street
Box 7921
Madison, WI 53707-7921

Subject: Waukesha Great Lakes Water Supply Program Wisconsin Department of Natural Resources (WDNR) Supplemental Environmental Impact Report (EIR)

Dear Mr. Callan:

We are pleased to submit the attached document to address Wisconsin Environmental Policy Act (WEPA) requirements for the Waukesha Great Lakes Water Supply Program. This document provides updated environmental impact information to the 2013 Waukesha Lake Michigan Diversion with Return Flow Application, which was approved by the Great Lakes-St. Lawrence River Basin Water Resources Council (Compact Council) in 2016.

The document contains updated information on the water supply service area included in the June 2016 Compact Council approval and potential environmental impacts from the Program water supply pipeline, return flow pipeline, and associated facilities as determined through more detailed studies completed after the Compact Council diversion approval. A future Public Service Commission of Wisconsin (PSC) application submittal is planned consistent with the PSC's environmental review process.

The document outline, information, and figures are provided in the format requested in the WDNR/PSC June 26, 2017 letter to the City of Waukesha.

We look forward to continuing to work with you. If you have questions on this information, please contact me at (262) 409-4430.

Yours very truly,

Waukesha Water Utility

Kelly Zylstra, P.E.
Operations Manager

KZ/mm

Encl. (1): Deliverable GWA 3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental EIR Confidential Submittal, .pdf
Encl. (2): Deliverable GWA 3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental EIR Redacted Submittal, .pdf
Encl. (3): Deliverable GWA 3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental EIR Confidential Submittal, .docx, .xlsx
Encl. (4): Deliverable GWA 3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental EIR Redacted Submittal, .docx, .xlsx
Encl. (5): Deliverable GWA 3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental EIR Redacted Submittal, hard copy

Cc: Nicole Spieles – Greeley and Hansen
Megan Bender – CH2M
Adam Ingwell – PSC

Great Lakes Water Supply Program

GREAT WATER ALLIANCE

DRAFT

3-140 D2 Waukesha Great Lakes Water Supply Program WDNR Supplemental Environmental Impact Report — REDACTED

March 2018

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN

ch2m

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ACRONYMS AND ABBREVIATIONS

ADD	Average Day Demand
AIS	Agricultural Impact Statement
BMP	Best Management Practice
BPS	Booster Pump Station
CN	Canadian National Railway Company
Compact	Great Lakes-St. Lawrence River Basin Water Resources Compact
Compact Council	Great Lakes-St. Lawrence River Basin Water Resources Council
CWP	Clean Water Plant
DATCP	Department of Agriculture Trade and Consumer Protection
DIP	Ductile Iron Pipe
EIS	Environmental Impact Statement
EO	Elemental Occurrence
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GWA	Great Water Alliance
HDD	Horizontal Directional Drilling
KPI	Key Performance Indicator
Lake Michigan Application	City of Waukesha Application for a Lake Michigan Diversion with Return Flow
mgd	Million Gallons per Day
NHI	Natural Heritage Inventory
NRHP	National Register of Historic Places
Program	Great Lakes Water Supply Program
PSC	Public Service Commission of Wisconsin
psi	Pounds per Square Inch
Regional Body	Great Lakes-St. Lawrence Water Resources Regional Body
RFCB	Return Flow Control Building
RFDS	Return Flow Discharge Site
RFPS	Return Flow Pump Station
ROW	Right-of-Way
TRC	TRC Companies, Inc.
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WSPS	Water Supply Pump Station
WWI	Wisconsin Wetland Inventory
WWTP	Wastewater Treatment Plant
WWU	Waukesha Water Utility

EXECUTIVE SUMMARY

This document provides updated environmental impact information for the City of Waukesha Application for a Lake Michigan Diversion with Return Flow (Lake Michigan Diversion Application) most recently documented in Volume 5, Environmental Report (CH2M HILL 2013). The following information was provided in prior documents: an analysis of alternative water supply sources and pipeline routes, including environmental impact documentation of multiple Mississippi River basin and Lake Michigan basin water supply sources, Lake Michigan water supply pipeline routes, and return flow pipeline routes; impacts to the Fox River; and impacts to Lake Michigan tributaries and Lake Michigan. The prior documents also included a description of the public involvement process. The unanimous 2016 Great Lakes–St. Lawrence River Basin Water Resources Council (Compact Council) approval of the Lake Michigan Application concluded that Lake Michigan is the only reasonable water supply solution for the City of Waukesha (Compact Council 2016). The Compact Council conclusion thus renders Program alternatives unreasonable if they do not have a Lake Michigan water supply. In 2017, the City of Milwaukee provided an unsolicited proposal to supply water to the City of Waukesha that included significant costs savings. The City of Milwaukee was selected by the City of Waukesha to be the Lake Michigan water supplier and an agreement was signed to use the City of Milwaukee as the water supplier.

The focus of this document is not to review the diversion requirements, but rather to provide updated environmental impact information on the water supply service area defined in the June 2016 Compact Council approval (Compact Council 2016) and the potential environmental impacts from the Program water supply and return flow pipeline routes as determined through more detailed studies completed since the Compact Council diversion approval. Most of the additional information in this document is a more detailed evaluation of environmental impacts from pipeline route studies associated with obtaining treated drinking water from a Lake Michigan supplier and then returning the treated wastewater from the City of Waukesha's wastewater treatment plant (WWTP), called the Clean Water Plant (CWP) to the Root River, a Lake Michigan tributary. The document includes screening-level impacts for pipeline route alternatives and detailed impact documentation of the Program and associated support facilities. Additional information supporting the Program is currently in development, including final route alignments for the Milwaukee supply line, and associated environmental impact studies. This information will be made available to the necessary parties as part of regulatory reviews and approvals.

This document was prepared by the Great Water Alliance (GWA), which describes Waukesha Water Utility's (WWU's) regional cooperative program to access drinking water from Lake Michigan and return the same amount to the lake under terms unanimously approved by the Compact Council.

The Program-related changes that occurred after the Environmental Report was submitted as part of the Lake Michigan Diversion Application (CH2M HILL 2013) include the following:

1. The Compact Council approved, with conditions, the City of Waukesha Application for a Lake Michigan Diversion with Return Flow (Compact Council 2016).
2. The City of Waukesha's water supply service area was reduced by the Compact Council as part of its approval. This change in turn reduced the average-day water demand at full buildout from 10.1 million gallons per day (mgd) to 8.2 mgd (Compact Council 2016). The Compact Council-approved a water supply service area map, included in Section 2 of this document.
3. The evaluation of additional Lake Michigan water supply and return flow pipeline route alternatives is documented herein, including additional water supply pipeline route alternatives from the City of Oak Creek and the City of Milwaukee (Section 2.4). Route alignments, including the proposed water supply alignment, and environmental impact assessments will be further refined prior to final design.

4. In the Lake Michigan Application, the City of Oak Creek was the preferred Lake Michigan water supplier. In 2017, the City of Milwaukee provided an unsolicited proposal to supply water to the City of Waukesha. The City of Milwaukee was selected by the City of Waukesha to be the Lake Michigan water supplier due to the significant cost savings to WWU rate payers.
5. Fieldwork for the Program has proceeded for wetland delineations and archaeological resource screenings. The Program potential wetland impacts included in this document were obtained from field-verified wetland delineations. Additional work to document, avoid, minimize, and mitigate impacts of the Program will continue through the detailed design and permitting process.
6. Public involvement for the Program has continued, including extensive public involvement during the Compact Council regional review and locally within the Program area since the Compact Council approval. Multiple open houses on the pipeline route selection process occurred in 2017. Public involvement will continue as the Program progresses into detailed design and construction. Section 4 of this document summarizes public involvement efforts.
7. Impacts presented in prior documents were summarized by water supply and return flow separately to mix and match Lake Michigan water supply and return flow alternatives easily. Impacts presented in this document are for the entire Program, reflecting that the proposed Program is now more specific to a Lake Michigan water supplier and return flow to the Root River.

Summary of Compact Council Review and Approval Process

The State of Wisconsin provided detailed review of the Lake Michigan Application (CH2M HILL 2013). The interest of the State of Wisconsin was and remains that the Great Lakes-St. Lawrence Basin Water Resources Compact (Compact) requirements for a diversion in a straddling county are met.

Waukesha applied for Lake Michigan water with the Wisconsin Department of Natural Resources (WDNR) in 2010 (CH2M HILL 2010), submitted a revised application in 2013 (CH2M HILL 2013), and provided 27 additional technical memorandums during the WDNR review process between 2013 and 2015. WDNR believed that the diversion exception requirements had been met when WDNR advanced the Lake Michigan Application to the Great Lakes-St. Lawrence Water Resources Regional Body (Regional Body). The role of the Regional Body, comprised of eight Great Lakes states and two Canadian provinces, is to review an application for diversion of a community in a straddling county to determine if the application has met the Compact requirements. WDNR published a Technical Review and a Preliminary Final Environmental Impact Statement (EIS) in January 2016 (WDNR 2016a and 2016b). These publications documented that the Compact requirements had been met. Following the review of the Regional Body, the application review was completed by the Compact Council, which includes the eight Great Lakes states.

Michigan and Minnesota held their own public hearings during the application review process. Michigan and Ontario completed their own technical reviews of the application. The Compact Council held a public comment period for 2 months, and over 11,000 comments were received.

One change in the proposal advanced by WDNR through the Regional Body review and comment process was the size of the water supply service area that was proposed to receive Lake Michigan water. Through the Compact Council review process, the water supply service area was reduced to the City of Waukesha's current municipal boundaries and Town of Waukesha islands surrounded by the City of Waukesha, as well as small locations in the City of Pewaukee or the Town of Waukesha where water service has historically been provided. The reduced service area resulted in reducing the water supply request from 10.1 to 8.2 mgd.

The Compact Council voted in June 2016 to unanimously approve Waukesha's application with conditions. The review process, comments received, and final decision are documented on the Great Lakes and St. Lawrence Governors and Premiers website (http://www.cglslgp.org).

Reduced Water Supply Service Area Influence on Previously Documented Potential Environmental Impact Evaluations

The Compact Council-approved reduction in average day water demand from 10.1 mgd to 8.2 mgd results in changes to how environmental impacts are documented and summarized in the WDNR Preliminary Final EIS (WDNR 2016a). For some types of impacts, there is no change in environmental impact (for example, the pipeline trench construction width is substantially the same whether the water demand is 10.1 or 8.2 mgd). For other types of impacts, there are proportionally fewer impacts (for example, lower water demand results in a lower return flow rate and in turn lower flows in the Root River, with even lower erosion potential of riverbanks of the Root River). The expected influence of a water demand change from 10.1 to 8.2 mgd on environmental impacts is summarized in the following paragraphs.

One of the most significant potential environmental impacts documented in the WDNR's Preliminary Final EIS was not from any Lake Michigan water supply alternative, but instead from wetland impacts associated with Mississippi River basin groundwater-level drawdown from shallow aquifer water supply alternatives. WDNR's Preliminary Final EIS noted that 804 to 1,069 acres of wetlands could be adversely impacted from groundwater drawdown from a Mississippi River basin alternative (WDNR 2016a). WDNR had conservatively modeled groundwater drawdown using 8.5 mgd instead of the Lake Michigan Application-requested demand of 10.1 mgd, noting that if there were significant impacts at 8.5 mgd, more significant impacts would be expected at 10.1-mgd water supply demand. The Compact Council determined that even though the approved water supply service area resulted in lowering the average-day water demand from 10.1 to 8.2 mgd, the environmental impacts that WDNR analyzed with groundwater modeling using 8.5 mgd are within the margin of error for the groundwater model and would not change the expectation of significant adverse impacts to wetlands with the slightly lower 8.2-mgd water demand (Compact Council 2016). Furthermore, the unanimous 2016 Compact Council approval of the Lake Michigan Application concluded that Lake Michigan is the only reasonable water supply solution for the City of Waukesha (Compact Council 2016). The Compact Council conclusion thus renders Program alternatives unreasonable if they do not have a Lake Michigan water supply.

Table ES-1 summarizes the expected qualitative environmental impact changes for water supply and return flow alternatives evaluated in the Lake Michigan Application from a water demand reduction of 10.1 to 8.2 mgd.

Table ES-1. Anticipated Environmental Impact Change due to Reduction in the Water Supply Demand

Environmental Impact Category	Groundwater Alternatives Expected Change	Lake Michigan Alternatives Expected Change
Groundwater Resources	No change. Approved Lake Michigan withdrawal amount is within the margin of error of the groundwater model, as documented in the Compact Council approval (Compact Council 2016).	None
Geomorphology and Sediments	None	None or proportionally lower impacts
Flooding	None	Proportionally lower impact due to reduced return flow
Aquatic Habitat	None or proportional impact due to changes in baseflow from groundwater drawdown or changes in Fox River flow from CWP discharge.	Proportionally lower impact due to changes in baseflow from return flow

Table ES-1. Anticipated Environmental Impact Change due to Reduction in the Water Supply Demand

Environmental Impact Category	Groundwater Alternatives Expected Change	Lake Michigan Alternatives Expected Change
Water Quality	None	Minor proportionally lower changes in concentration and annual load with a flow change
Wetlands	No change. Approved withdrawal is within the margin of error of the groundwater model as documented in the Compact Council approval (Compact Council 2016).	None
Soils	None	None
Land Use	None	None

Reason for Preparing this Document

This document has been developed to provide updated information to WDNR's Preliminary Final EIS published in January 2016 (WDNR 2016a). The updated information contained in this document includes additional information on the development and selection of the Program to meet the Wisconsin Environmental Policy Act (WEPA) as required by WDNR and regulated under the *Wisconsin Administrative Code* Chapter NR 150, Environmental Analysis and Review Procedures for Department Actions. This document also follows the Environmental Impact Application Filing Requirement Outline for PSC Type 2 Water Projects, which WDNR and the Wisconsin Public Service Commission (PSC) provided in a letter to the City of Waukesha on June 26, 2017 (WDNR 2017).

Relationship with Other Documents

The WEPA process calls for interagency coordination, including federal agencies, and references developing reviews consistent with the National Environmental Policy Act (NEPA) where multiple agencies are involved. The additional information contained in this document is intended to support the WDNR WEPA process. This document will also support the NEPA process where it is required in the future. This document references other documents for background purposes, notably the various volumes of the Lake Michigan Application and the WDNR Preliminary Final EIS (CH2M HILL 2013 and WDNR 2016a).

Purpose and Need

The purpose of the Program is to provide a long-term water source that can meet the City of Waukesha's water supply needs, is protective of human health and the environment, and is sustainable.

The need for the Program is driven by a variety of water quantity and quality concerns. The City of Waukesha has long relied on a deep aquifer groundwater supply, but depressed water levels in the deep groundwater aquifer have compounded a problem of high radium concentrations (a naturally occurring carcinogen) in the groundwater that is higher than the U.S. Environmental Protection Agency's (EPA's) Safe Drinking Water Act water quality standard. As a result, the City's water supply is temporarily supplemented by water from the shallow groundwater aquifer, which helps to reduce the radium concentration.

A 2009 Wisconsin court judgment was issued in the form of a consent order to develop a permanent solution to the radium contamination problem by June 30, 2018. Based on extensive analysis, in October 2013, the City of Waukesha submitted a revised application for the use of Lake Michigan water under the Great Lakes Compact

(CH2M HILL 2013). A Lake Michigan water supply would allow the City of Waukesha to meet the radium water quality standard.

In June 2016, the Compact Council approved the use of Lake Michigan water for the City of Waukesha and affirmed this decision in August 2017 following an administrative challenge (Compact Council 2016 and 2017). Given that approval and the lead time to permit and install the necessary infrastructure for that water source, Waukesha and the State of Wisconsin agreed to an extension of the radium compliance deadline to September 2023, which was approved by the circuit court. The extension requires Waukesha to undertake certain additional steps in the interim to ensure radium compliance while the permanent Lake Michigan water supply Program is constructed.

The Lake Michigan water supply source will be used for public water supply and be constructed in accordance with WDNR water supply planning requirements. The design will be for the ultimate buildout water demand within the water supply service area approved by the Compact Council in June 2016 (Compact Council 2016). In 2016, the City of Waukesha used an average daily demand (ADD) of 6.0 mgd of water. The ultimate service area buildout water supply demand approved by the Compact Council is an ADD of 8.2 mgd (Compact Council 2016).

See Section 1.7 of this document for additional information on the Compact Council-approved water supply service.

Program Supply and Return Flow Alternatives Previously Evaluated

Water supply alternatives have been studied for the City of Waukesha for 15 years. Evaluations were previously described in the Lake Michigan Diversion Application, Volumes 1 through 5 (CH2M HILL 2013), the WDNR Preliminary Final Environmental Impact Statement City of Waukesha Proposed Great Lakes Diversion (WDNR 2016a), and the WDNR Technical Review for the City of Waukesha's Proposed Diversion of Great Lakes Water for Public Water Supply with Return Flow to Lake Michigan (WDNR 2016b).

Key Factors in Evaluating Lake Michigan Diversion and Return Flow Alternatives

In late 2016, six possible pipeline routes and facility locations were considered in a screening-level analysis for a City of Oak Creek water supply with return flow to the Root River. These routes were evaluated based on the availability of water from the City of Oak Creek. These routes are described throughout this document as Route Alternative 1 (Oak Creek), Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek), Route Alternative 4 (Oak Creek), Route Alternative 5 (Oak Creek), and Route Alternative 6 (Oak Creek), or collectively as the Oak Creek Route Alternatives. The six City of Oak Creek water supply with return flow pipeline routes were screened down to the three best alternatives using the process described in Section 2.4 of this document. The unanimous 2016 Compact Council approval of the Lake Michigan Application concluded that Lake Michigan is the only reasonable water supply solution for the City of Waukesha (Compact Council 2016). The Compact Council conclusion thus renders Program alternatives unreasonable if they do not have a Lake Michigan water supply. In 2017, the City of Milwaukee approached the City of Waukesha with an unsolicited offer to be the Lake Michigan water supplier. The City of Milwaukee was selected by the City of Waukesha to be the Lake Michigan water supplier and an agreement was signed to use the City of Milwaukee as the water supplier. The City of Milwaukee alternatives screening process is also described in Section 2.4 of this document.

The City of Oak Creek pipeline routes and facility locations were evaluated in a two-step process. In the first phase, screening-level data was reviewed to identify route alternatives between Oak Creek and Waukesha and between the Return Flow Pump Station (RFPS) and the Root River. Six Oak Creek route alternatives were identified, which were evaluated based on the following criteria:

- Opportunities with other planned projects
- Bike trails
- Open space

- Route length
- Hydraulic efficiency
- Cost, restoration, and staging
- Operation and maintenance, access
- Difficult crossings, construction
- Compatibility with long-range planning

The number of route alternatives from Oak Creek was reduced from six to three using the above screening criteria. Once the number of alternatives was reduced to three, the three alternatives were further evaluated again using a more detailed set of non-economic and economic criteria, which included the following items to arrive at a preferred Oak Creek water supply route with return flow to the Root River.

- Hydraulic analysis
- Total pipeline length
- Trenchless requirements
- Geotechnical conditions
- Contaminated materials
- Maintenance of traffic requirements
- Wetlands
- Waterways
- Floodplain encroachment
- Special habitats
- Protected resources
- Agricultural resources
- Energy consumption
- Stakeholder feedback
- Real property and easement requirements
- Constructability
- Conceptual opinion of probable construction costs

With the City of Milwaukee's offer to supply water (Milwaukee water supply) at a significant cost savings to WWU rate payers, the route analysis also considered two Milwaukee water supply route alternatives. These routes are described throughout this document as the Milwaukee Supply Route Alternative and Milwaukee Supply Route Sub-Alternative. In earlier evaluations, the Milwaukee Supply Route Alternative compared favorably with the three highest-ranking Oak Creek alternatives. For each of the Milwaukee Supply Route Alternatives, the return flow pipeline route remained consistent with the recommended alternative from the Oak Creek route alternatives analysis. The Milwaukee Supply Route Alternatives were evaluated with similar economic and non-economic criteria to confirm its ranking compared to Oak Creek alternatives. A water supply had been previously considered between Milwaukee and Waukesha and was evaluated in the Lake Michigan Application and WDNR Preliminary Final EIS (CH2M HILL 2013 and WDNR 2016a).

The Program consists of the Milwaukee Supply Route Alternative, along with the return flow route included in Route Alternative 3 from the Oak Creek water supply route alternative evaluation. On October 30, 2017, the City of

Waukesha and City of Milwaukee announced they had reached a mutual agreement for the City of Milwaukee to be the Lake Michigan water supplier (GWA 2017).

Additional details on the Lake Michigan Diversion Alternatives with return flow considered in this document are provided in Section 2.4.

Updated Description of Proposed Construction

The Program requires the following facilities, which include the pipelines that will convey the water from the water supplier to the City of Waukesha and then from the City of Waukesha CWP to the Root River.

- Drinking Water Supply and Conditioning Features
  - Water Supply Pump Station
  - Water Supply Pipeline
  - Booster Pump Station Facility (BPS)
- Wastewater Treatment and Return Flow Features
  - RFPS
  - Return Flow Pipeline
  - Return Flow Discharge Site Facilities
    - Return Flow Control Building (RFCB)
    - Reaeration Structure
    - Conveyance and Outfall to the Root River
    - U.S. Geological Survey Gage

A detailed description of the proposed facilities is included in Section 1.2.

The Program route (see Figure ES-1) includes a connection to the City of Milwaukee water distribution system near the intersection of West Howard Avenue and South 60th Street. From this connection, the water supply pipeline would head west through the City of Milwaukee, City of Greenfield, and City of New Berlin to the BPS Facility.

The BPS Facility, at the intersection of South Racine Avenue and South Swartz Road in the City of New Berlin, will include aboveground reservoir water storage and chemical conditioning. From the BPS Facility, the water supply pipeline will run northwest through the City of New Berlin, Town of Waukesha, and City of Waukesha to a distribution connection point at the intersection of Les Paul Parkway and East Sunset Drive.

After the water is used, it will be collected in the City of Waukesha's existing sanitary sewer collection system and conveyed to the existing City of Waukesha CWP for treatment.

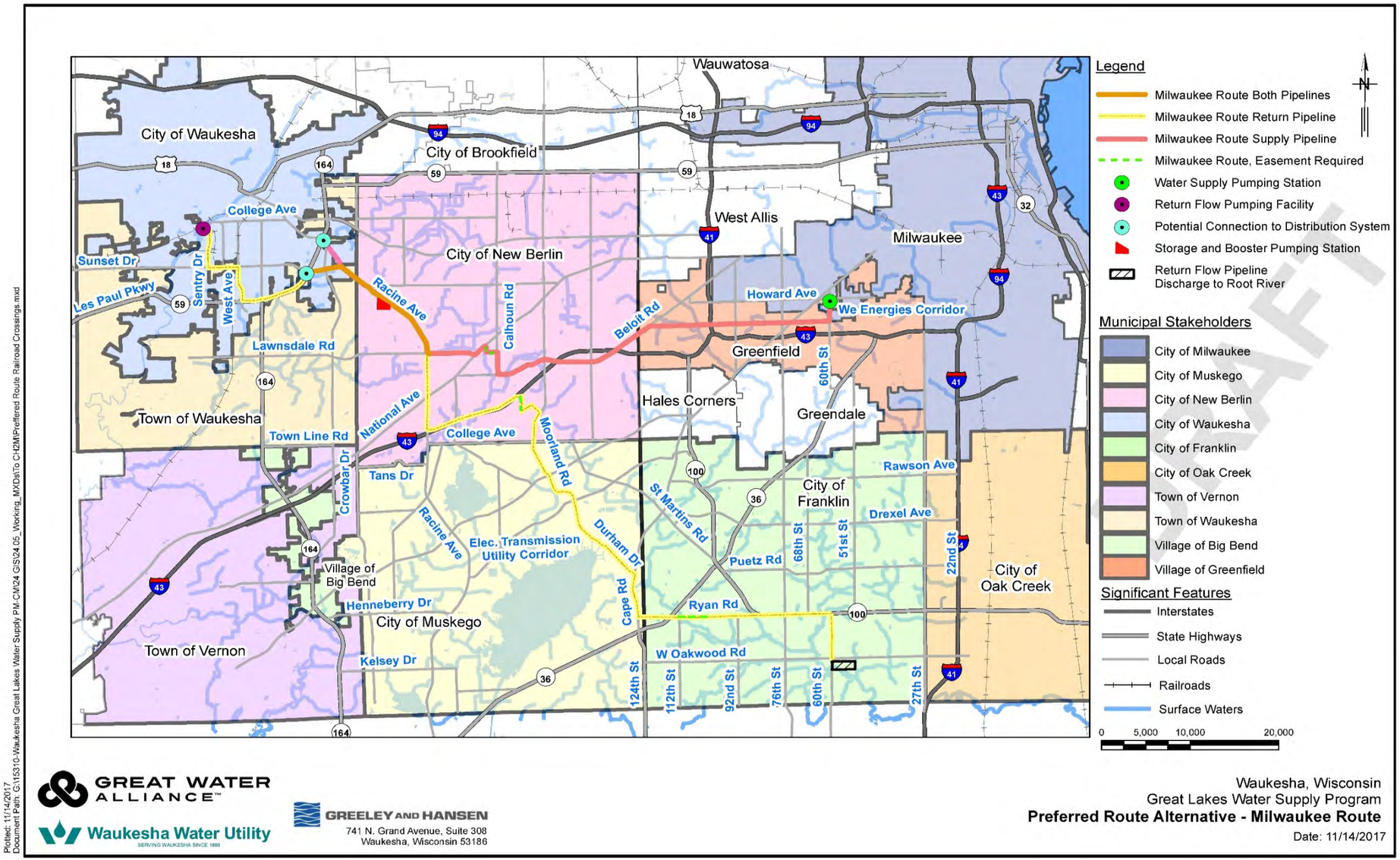
The return flow pipeline will be built at the CWP located off Sentry Drive. From the RFPS, the return flow pipeline will run south and east through the City of Waukesha, Town of Waukesha, City of New Berlin, City of Muskego, and City of Franklin to the return flow discharge facilities at the intersection of West Oakwood Road and South 60th Street. The return flow discharge facilities include an RFCB, reaeration structure, and conveyance facilities to one or more outfalls along the Root River. Approximately 97.4 percent of the Program supply and return flow pipeline route is within the existing road ROW.

Figure ES-1 provides an overall map of the Program.

As the Program progresses into detailed design, the City of Waukesha will continue to work with the regulatory agencies during final design to conduct necessary field surveys, refine siting, conduct mitigation planning, and obtain required construction permits. Field and database surveys are underway to refine information on potential impacts to

wetlands and waterways, archaeological resources, and Wisconsin natural heritage inventory species. Impacts to agricultural resources will also be evaluated.

Figure ES-1. Proposed Program Map



SECTION 1 Program Overview

The Great Lakes Water Supply Program (Program) is led by the Great Water Alliance (GWA), which describes Waukesha Water Utility's (WWU's) regional cooperative program to access drinking water from Lake Michigan and return the same amount to the lake under terms unanimously approved by the Great Lakes-St. Lawrence River Basin Water Resources Council (Compact Council).

1.1 List of Cities Crossed or Impacted by the Program

Table 1-1 summarizes the location of pipeline and related facilities associated with the Program in the Town of Waukesha; Cities of Milwaukee, Greenfield, New Berlin, Waukesha, Muskego, and Franklin; and Milwaukee and Waukesha Counties in Wisconsin. Construction activities will be contained within these communities.

Table 1-1. Potentially Affected Communities

Item	Municipality							Notes
	City of Milwaukee (Milwaukee County)	City of Greenfield (Milwaukee County	City of New Berlin (Waukesha County)	Town of Waukesha (Waukesha County)	City of Waukesha (Waukesha County)	City of Muskego (Waukesha County	City of Franklin (Milwaukee County)	
WSPS	X							Located in Milwaukee.
Water Supply Pipeline	X	X	X	X	X			
BPS Facility			X					Includes pump station, two water storage reservoirs, and water conditioning rooms.
RFPS					X			Located at existing Waukesha CWP.
Return Flow Pipeline			X	X	X	X	X	

Table 1-1. Potentially Affected Communities

Item	Municipality							Notes
	City of Milwaukee (Milwaukee County)	City of Greenfield (Milwaukee County	City of New Berlin (Waukesha County)	Town of Waukesha (Waukesha County)	City of Waukesha (Waukesha County)	City of Muskego (Waukesha County	City of Franklin (Milwaukee County)	
Return Flow Discharge Facilities							X	RFCB, USGS gage, passive reaeration structure, conveyance channel and pipe, and outfall.

BPS = Booster Pump Station
CWP = Clean Water Plant
RFCB = Return Flow Control Building
RFPS = Return Flow Pump Station
USGS = U.S. Geological Survey
WSPS = Water Supply Pump Station

1.2 Description of Proposed Construction

The Program includes obtaining treated Lake Michigan drinking water, treating the water after it is used at the Waukesha Wastewater Treatment Plant (WWTP), more commonly known as the CWP, and returning the water to the Root River, a tributary to Lake Michigan. The Program includes construction of drinking water supply and drinking water conditioning features, as well as wastewater treatment and treated effluent return flow features. The existing discharge to the Fox River from the CWP would also continue to be maintained. The major features of the infrastructure are described in the following subsections.

Drinking Water Supply and Conditioning Features

Water Supply Pump Station

The WSPS will convey potable water from the supplier to the BPS. The WSPS and other pump stations will include pumps, butterfly and ball valves, and a backup power generator building.

Water Supply Pipeline

A 30-inch nominal-diameter supply line will convey water from the water supplier to the BPS and to the connection point in the existing Waukesha water distribution system. Where both a water supply and return flow pipeline are along the same alignment, the two pipelines will be trenched in a common corridor.

Common Water Supply Pipeline and Return Flow Pipeline Features

There are three general types of valves essential to the water supply pipeline and return flow pipeline: isolation valves, air valves, and blow-off assemblies. Each valve will require a valve vault that will be built in accordance with the valve type. Butterfly valves will be used for isolation valves and installed at high points approximately every mile using direct bury whenever possible. There are four types of air valves that will be used—air release, air/vacuum, vacuum relief/air inlet, and combination air valves. Air valves will be located as needed along the pipeline as indicated by elevation and slope. Blow-off assemblies will have either a camlock coupling or hose bib inside of a curb

box. Each blow-off assembly will be designed specifically for its location and located at low points on the pipeline, approximately every mile.

The water supply pipeline and return flow pipeline have trenchless construction requirements in some segments. Horizontal directional drilling (HDD) and jack and bore construction methods will be used. The HDD construction method will be used when the pipelines need to cross some waterways and wetlands. The jack and bore construction method will be used under railroads and busy roadways where the need for increased structural capacity is required due to heavy loads traversing where the pipeline is installed and to minimize transportation impacts during construction. These techniques may also be used when crossing some existing utilities. The type of construction technique will be developed during detailed design in coordination with the roadway or utility owner and consistent with permitting requirements.

Booster Pump Station Facility

The BPS Facility will be located in Minooka Park. The BPS will include pumps, butterfly and ball valves, three chemical feed rooms, a backup power generator building, and two water storage reservoirs. The chemical feed rooms will require day storage tanks and bulk storage tanks for the chemicals. The chemical storage tank size will vary depending on the chemical. The preliminary reservoir storage volume is 18.2 million gallons together or 9.1 million gallons each.

Wastewater Treatment and Return Flow Features

The existing CWP produces a high-quality treated water effluent. No significant treatment modifications at the CWP, beyond what is already planned, are needed for treating the water and returning it to the Root River. The following construction is planned at the CWP and for return flow features to the Root River.

CWP Phosphorus Treatment

The CWP has already planned for construction of additional phosphorus removal equipment to meet planned phosphorus discharge requirements to the existing Fox River outfall. For the Program, no additional construction for phosphorus removal is anticipated, although optimizing chemical dosing of phosphorus removal chemicals to meet the expected Root River phosphorus discharge limit is expected.

Return Flow Pump Station

An RFPS will be constructed at the CWP to pump the return flow from the CWP to the Root River, a Lake Michigan tributary. The RFPS will include variable-speed pumps to adjust the pumping rate according to flow available at the CWP up to a maximum flow rate to the Root River. The return flow capacity will be consistent with the conditions required by the Compact Council approval for Waukesha obtaining Lake Michigan water (Compact Council 2016). The Program return flow to the Root River will meet return flow requirements and the remainder of the flow will be discharged to the Fox River, allowing the existing discharge to the Fox River from the CWP to be maintained. There may be times when there is no flow to the Fox River or Root River. These times are expected to be limited.

Return Flow Pipeline

A 30-inch nominal-diameter return flow pipeline will convey treated effluent from the CWP RFPS to the RFCB and Root River outfall. Where both a water supply and return flow pipeline are along the same alignment, the two pipelines will be trenched in a common corridor.

Return Flow Discharge Site Facilities

The return flow pipeline will be a pressure pipeline and will end at the Return Flow Discharge Site (RFDS), a property in the City of Franklin at the southeast corner of the intersection of South 60th Street and West Oakwood Road. WWU has an agreement to purchase the property. The RFDS Facilities will include the following:

- RFCB
- Reaeration Structure
- Conveyance and Outfall to the Root River
- USGS Gage

Return Flow Control Building

The RFCB will have a modulating valve to control pressure and flow in the return flow pipeline. Other features may also be included in the building, such as energy recovery.

Reaeration Structure

After the RFCB, a passive reaeration structure is planned to increase oxygen levels in the return flow prior to discharge to the Root River.

Conveyance System and Outfall

A conveyance system will be used to convey the water from the reaeration structure to the Root River outfall. The conveyance system could include a combination of pipes, channels, and natural infrastructure such as wetlands. One or more pipes will discharge the water to the Root River. An access road may be required for maintaining and accessing the outfall and USGS gage locations.

USGS Gage

Construction of a permanent USGS flow measurement gage is planned at the RFDS to measure flow and other Root River information.

1.3 Description of New Construction or Modifications to Existing Facilities

All of the construction planned is for new facilities. The CWP is an existing WWTP, which will add a newly constructed RFPS.

1.4 Capital Costs of the Program

The contract package construction schedule and cost are provided in Appendix 1-1.

1.5 Anticipated Construction Schedule

The Program schedule has been developed to meet the radium consent order deadline agreement that the City of Waukesha has with the State of Wisconsin. Radium is naturally found in the City of Waukesha's existing water source in the deep groundwater aquifer. A switch to a Lake Michigan water source will allow the City of Waukesha to meet the radium water quality standard.

A 2009 Wisconsin court judgment was issued in the form of a consent order to develop a permanent solution to the radium contamination problem by June 30, 2018. In June 2016, the Compact Council approved the use of Lake Michigan water and affirmed this decision in August 2017 following an administrative challenge (Compact Council 2016 and 2017). Given approval and the lead time to permit and install the necessary infrastructure for that water source, Waukesha and the State of Wisconsin agreed to an extension of the radium compliance deadline to September 2023, which was approved by the circuit court. The extension requires Waukesha to undertake certain additional steps in the interim to ensure radium compliance while the permanent Lake Michigan water supply Program is constructed.

Following Public Service Commission of Wisconsin (PSC) approval and receipt of necessary permits and easements, construction of the Program is tentatively scheduled to begin May 2020 and conclude by the September 2023 radium consent order deadline. The contract package construction schedule and cost are provided in Appendix 1-1. Construction activities will follow all applicable seasonal threatened and endangered species restrictions. Additional environmental factors and coordination with stakeholders may affect construction timing.

1.6 Utility Representative Contact Information

The following individuals are representatives who can answer questions about the Program:

Kelly Zylstra, PE
Operations Manager – Waukesha Water Utility
115 Delafield Street
Waukesha, WI 53188
(262) 409-4430
KZylstra@waukesha-water.com

Nicole Spieles, PE, ENV SP
Program Manager – Greeley & Hansen
100 S Wacker Drive
Suite 1400
Chicago, IL 60606
(312) 578-2467
nspieles@greeley-hansen.com

1.7 Purpose and Necessity of the Program

The purpose of the Program is to provide a long-term water source that can meet the City of Waukesha's water supply needs, is protective of human health and the environment, and is sustainable.

The need for the Program is driven by a variety of water quantity and quality concerns. The City of Waukesha has long relied on a deep aquifer groundwater supply, but depressed water levels in the deep groundwater aquifer have compounded a problem of high radium concentrations (a naturally occurring carcinogen) in the groundwater that is higher than the U.S. Environmental Protection Agency's (EPA's) Safe Drinking Water Act water quality standard. As a result, the City's water supply is temporarily supplemented by water from the shallow groundwater aquifer, which helps to reduce the radium concentration.

A 2009 Wisconsin court judgment was issued in the form of a consent order to develop a permanent solution to the radium contamination problem by June 30, 2018. Based on extensive analysis, in October 2013, the City of Waukesha submitted a revised application for the use of Lake Michigan water under the Great Lakes-St. Lawrence River Basin Water Resources Compact (Compact) (CH2M HILL 2013). A Lake Michigan water supply would allow the City of Waukesha to meet the radium water quality standard.

In June 2016, the Compact Council approved the use of Lake Michigan water for the City of Waukesha and affirmed this decision in August 2017 following an administrative challenge (Compact Council 2016 and 2017). Given that approval and the lead time to permit and install the necessary infrastructure for that water source, Waukesha and the State of Wisconsin agreed to an extension of the radium compliance deadline to September 2023, which was approved by the circuit court. The extension requires Waukesha to undertake certain additional steps in the interim to ensure radium compliance while the permanent Lake Michigan water supply Program is constructed.

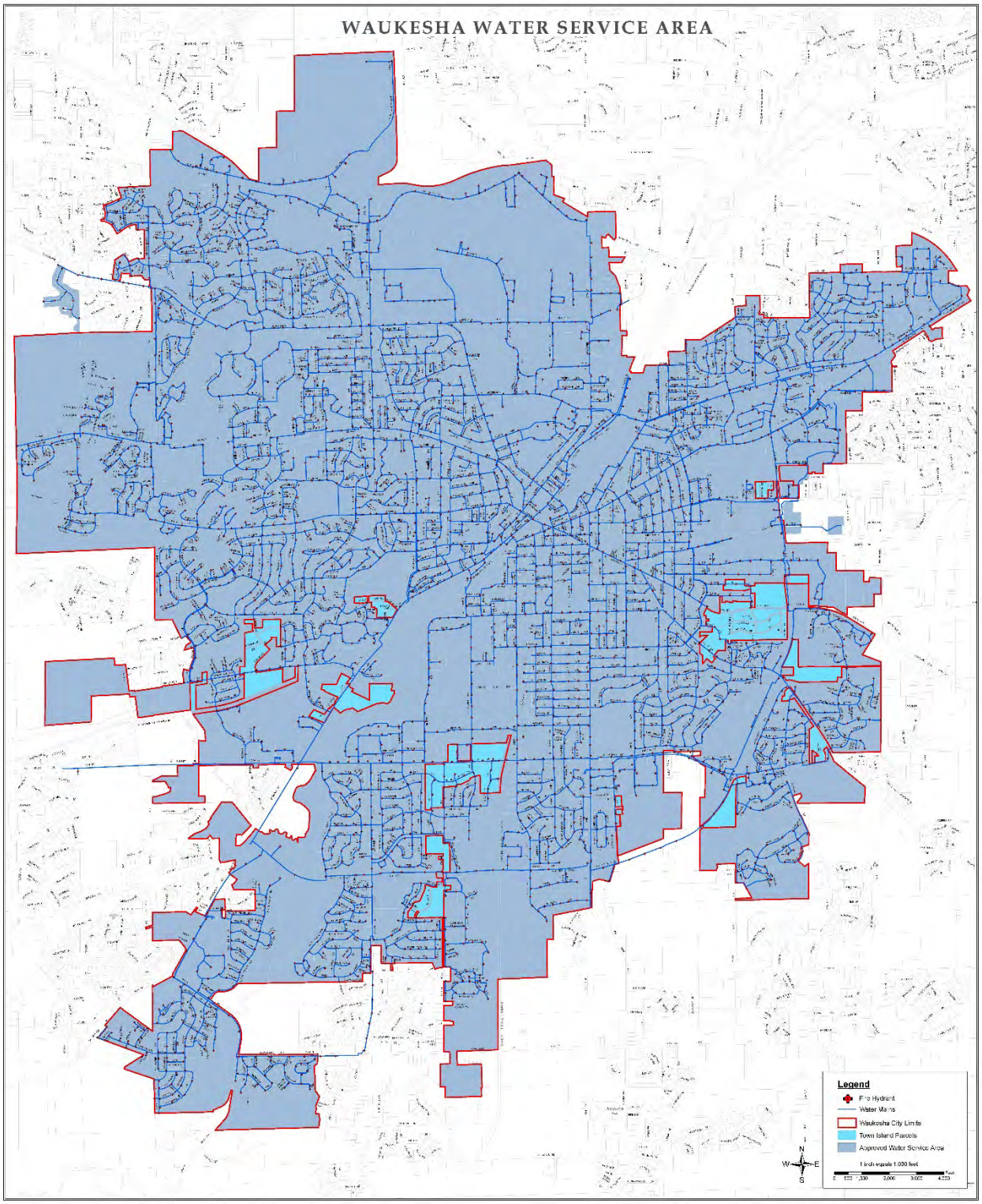
In 2017, the City of Milwaukee approached the City of Waukesha with an unsolicited offer to be the Lake Michigan water supplier. The City of Milwaukee was selected by the City of Waukesha to be the Lake Michigan water supplier and an agreement was signed to use the City of Milwaukee as the water supplier.

The Lake Michigan water supply source will be used for public water supply and be constructed in accordance with the Wisconsin Department of Natural Resources (WDNR) water supply planning requirements. The design will be for the ultimate buildout water demand within the water supply service area approved by the Compact Council in June 2016 (Compact Council 2016). In 2016, the City used 6.0 million gallons per day (mgd) of water. The ultimate service area build-out water supply demand approved by the Compact Council is an average day demand (ADD) of 8.2 mgd (Compact Council 2016).

Figure 1-1 shows the water supply service area approved by the Compact Council in 2016. The water supply service area includes the existing City of Waukesha, Town of Waukesha "islands" essentially surrounded by the City, and small locations in the City of Pewaukee or the Town of Waukesha where water service has historically been provided.

Wisconsin State Law recognizes that a water supply service area approved by the Compact Council is the water supply service area for a public water supply system with an approved diversion (State of Wisconsin 2017).

Figure 1-1. Compact Council-Approved Water Supply Service Area



1.8 Effect of the Program on the Quality and Reliability of Service

This Program is driven by a consent order for Waukesha to meet EPA Safe Drinking Water Act radium standards. Once implemented, the reliability of meeting the Safe Drinking Water Act radium standard will be improved and should be met at all times based upon the characteristics of the Lake Michigan water supply source.

The Program includes drinking water reservoirs to further promote reliability and quality of service. Existing wells will be kept on standby to maintain emergency service in the event of a break in the water supply pipeline.

1.9 Other Agency Correspondence/Permits/Approvals

1.9.1 Concerns or Issues Raised by Agencies

The Waukesha water supply Program attracted significant interest from the public during the application stage for Lake Michigan water from Great Lakes states and other governments. Since approval of the City of Waukesha Application for a Lake Michigan Diversion with Return Flow (Lake Michigan Application) by the Compact Council, the Program has shifted to focus on the implementation requirements to permit the Program with the State of Wisconsin, the federal agencies involved in permitting the Program, and local government affected by the Program while also meeting the conditions of the diversion approval imposed by the Compact Council and implemented by WDNR. A summary of interests from other agencies during the Lake Michigan Application phase and the post-diversion approval phase are summarized in the following sections.

1.9.2 Interest of Agencies During the Lake Michigan Diversion Application Process

State of Wisconsin

The State of Wisconsin provided detailed review of the Lake Michigan Application. The interest of the State of Wisconsin was that the Compact Council requirements for exception to diversions in a straddling county were met. Waukesha applied to WDNR for Lake Michigan water in 2010, submitted a revised application in 2013 (CH2M HILL 2013), and provided 27 additional technical memorandums during the WDNR review process between 2013 and 2015. WDNR completed a thorough and comprehensive review when WDNR advanced the Lake Michigan Application to the Compact Council and published a Technical Review and a Preliminary Final Environmental Impact Statement (EIS) in January 2016 documenting that the requirements had been met (WDNR 2016a and 2016b).

Local Governments

In Wisconsin, Waukesha communicated with local governments affected by the Program during the Lake Michigan Application process. The municipalities of the City of Oak Creek, City of Milwaukee, and City of Racine were approached for providing Lake Michigan water. Communities potentially affected by the Program in the Lake Michigan Application were met with and informed about the potential pipeline routes at that time. Waukesha and WDNR held public meetings in the City of Waukesha, City of Milwaukee, City of Oak Creek, and City of Racine to obtain feedback from these communities.

Outside of these communities potentially directly affected by the Program, WDNR and the Compact Council received comments from communities throughout the Great Lakes regarding the Compact requirements and involvement in the process (Compact Council 2005). Interested communities focused their attention on meeting the Compact requirements, which were addressed in the Compact Council approval.

Federal

No significant direct communication between federal agencies and Waukesha occurred during the Lake Michigan Application process.

Great Lakes States and Canadian Provinces

In January 2016, WDNR advanced the Lake Michigan Application to the Great Lakes-St. Lawrence Water Resources Regional Body (Regional Body) for review. Eight Great Lakes states and two Canadian provinces make up the Regional Body. The role of the Regional Body is to consider proposals and relevant information to issue findings of fact in the form of a Declaration of Finding. The Compact review is completed by the Compact Council, which includes the eight Great Lakes states.

Michigan and Minnesota held their own public hearings during the application review process. Michigan and Ontario completed their own technical reviews of Waukesha's application. The Compact Council held a public comment period for 2 months, and over 11,000 comments were received.

One change in the proposal advanced by WDNR through the Regional Body review and comment process was the size of the water supply service area that was proposed to receive Lake Michigan water. Through the Compact Council review process, the water supply service area was reduced to the City of Waukesha's current municipal boundaries and Town of Waukesha islands surrounded by the City of Waukesha, as well as small locations in the City of Pewaukee or the Town of Waukesha where water service has historically been provided. The reduced service area resulted in reducing the water supply request from 10.1 to 8.2 mgd.

The Compact Council voted in June 2016 to unanimously approve the Lake Michigan Application with conditions. The review process, comments received, and final decision are documented on the Great Lakes and St. Lawrence Governors and Premiers website (http://gsgp.org/).

1.9.3 Interest of Agencies after the Compact Council Diversion Approval

A variety of agency coordination and pre-application meetings have been held to introduce the Program, review coordination activities and schedules, discuss construction permit considerations, and identify issues or concerns that agencies would like to be addressed. These initial meetings were held with the PSC, WDNR, Wisconsin Department of Transportation (WisDOT), Department of Agriculture Trade and Consumer Protection (DATCP), City of Franklin, City of New Berlin, City of Muskego, and the U.S. Army Corps of Engineers (USACE).

The issues and guidance that were raised include the following:

- Subject: Recommendations to minimize impacts to forested wetlands (PSC and WDNR).
  Response: Wetland impacts are being minimized by developing alternative routes that avoid wetlands to the extent practicable, and refining alignments and considering construction techniques that minimize impacts.
- Subject: Guidance that an exception will be needed to use the WisDOT Interstate 43 right-of-way (ROW) (WisDOT).
  Response: An exception will be requested.
- Subject: Concerns with the location of pipeline routes near the Franklin Department of Public Works Facility at 7979 Ryan Road (City of Franklin). The City would like trenchless construction to be considered at this area, which includes public access for waste disposal and a fueling station for city vehicles.
  Response: Trenchless construction will be considered in this area.

- Subject: 60th Street was reconstructed in 2016. The City would like to restrict construction access along the roadway or it would like the Program to consider trenchless construction. (City of Franklin)
  Response: Trenchless construction will be considered in this area.
- Subject: Request to minimize traffic impacts in the Franklin Business Park area near 51st and Ryan Road, where many businesses run multiple shifts. (City of Franklin)
  Response: Options to minimize traffic impact to these businesses will be considered.
- Subject: Concerns that the proposed pipeline route would interfere with the City of New Berlin's proposed road improvement projects on Moorland Road and Calhoun Road, which are scheduled for construction in 2019 (City of New Berlin). Moorland Road will be widened from two to four lanes, and Calhoun Road will be reconstructed to lower an existing hill north of Beloit Road. In addition, there will be ongoing construction of two subdivisions along Moorland Road. The City asked that Calhoun Road be avoided. A follow-up meeting was held the following month to continue discussions on the City's concerns with interference resulting from the pipeline construction.
  Response: Impacts to Calhoun Road will be avoided if the Program route, is accepted by WDNR. The Calhoun Road reconstruction was one of the factors that led to the selection of the proposed Route Alternative 3 (Oak Creek) return flow alignment instead of Route Alternative 2 (Oak Creek) return flow alignment. Changes to the horizontal alignment and construction methods of the pipe on Moorland Road are being considered to minimize conflicts with the City's planned improvements.
- Subject: The City of Muskego raised the issue that North Cape Road is the main hauling route for two large waste landfills along 124th Street. Extensive construction along the roadway could be intrusive to the waste hauling operations. (City of Muskego)
  Response: Options to minimize impacts to the hauling routes are being considered.
- Subject: A recommendation from the staff at WDNR during a follow-up meeting that Waukesha should take advantage of opportunities to enhance wetlands where practicable due to the high public profile of the Program. (WDNR, USACE, PSC)
  Response: Wetland enhancement opportunities will be considered as design activities are performed.

1.9.4 List of Permits Required for the Program

Table 1-2 lists potential permits required for the Program.

Table 1-2. Program Potential Permit List

Agency	Potential Permit Name
Federal	
USACE	Section 404 Wetland and Waterway Individual Permit
Federal Emergency Management Agency (FEMA)	FEMA Letter of Map Revision
U.S. Fish and Wildlife Service (USFWS)	Incidental Take Permit
State	
PSC	Certificate of Public Convenience and Necessity
PSC	Water Systems Construction Plan Review (Type 2 Certificate of Authority)
WDNR	Incidental Take Permit

Table 1-2. Program Potential Permit List

Agency	Potential Permit Name
WDNR, Bureau of Watershed Management	Wetland and Waterway Impact Individual Permit (Ch 30 Waterway, and Ch 281.36 Wetland Permit)
WDNR	Soil Management Plan (Notifications and Reporting) (NR-718)
WDNR	Contaminated Water Management Plan (Notifications and Reporting)
WDNR	Wastewater Facilities Plan Amendment
WDNR	Water Use
WDNR	Lead and Copper Corrosion Control
WDNR	Disinfection Byproduct Sampling Plan Review
WDNR	Total Coliform Rule Sampling Plan Review
WDNR	Water Supply Service Area update
WDNR	Wastewater Systems Construction Plan Review
WDNR	Wisconsin Pollutant Discharge Elimination System (WPDES) Construction Site Stormwater Runoff General Permit
WDNR	Hydrant Flushing Discharge General Permit
WDNR	Pit/Trench Dewatering General Permit
WDNR	Chemical Storage Facilities Construction Permit
WDNR	Hydrostatic Test Discharge General Permit
WDNR	Water Systems Construction Plan Review
WisDOT	Noxious Substances
WDNR and Wisconsin Department of Agriculture, Trade, and Consumer Protection	Agricultural Impact Statement (AIS)
Wisconsin State Historic Preservation Office and WisDOT	Cultural Resources Review
Wisconsin Historical Society	Permit to work in a Burial Site
Wisconsin Historical Society – Office of the State Archaeologist	Public Lands Field Archaeological Permits
WDNR	Final EIS
WDNR	CWP WPDES Permit Renewal with a Root River Discharge
WDNR and City of Franklin	Wisconsin Floodplain Management Program
WisDOT	Utility Permit
WisDOT	Traffic Management Plan
WisDOT/EPA	Air Quality
Regional, Local, and Other	
Milwaukee County Department of Transportation	Construction Permit
Milwaukee County	Shoreland Construction Permit
Milwaukee County	Work or Encroachment in County Highway ROW
Milwaukee County	Park District Permits

Table 1-2. Program Potential Permit List

Agency	Potential Permit Name
Waukesha County	Shoreland Construction Permit
Waukesha County	Stormwater Management and Erosion Control Plan
Waukesha County	Permit to Construct, Maintain or Repair Utilities within the ROW
City of Franklin	Stormwater Management Plan (Support Document for Construction Permit)
City of Franklin	Natural Resource Special Exemption (Support Document for Construction Permit)
City of Franklin	Permit to Construct, Maintain or Repair Utilities within the ROW
City of Greenfield	Occupancy of ROW Permit
City of Milwaukee	Permit for Work in Public ROW
City of Muskego	ROW Permits
City of Muskego	Street Excavation Permit
City of Muskego	Land Disturbance Permit
City of Muskego	Curb Permit
City of New Berlin	Grading and Erosion Control Permit
City of New Berlin	Stormwater Management Permit
City of New Berlin	Road cut/work within ROW Permit
City of New Berlin	Possibly a presentation to City Council
City of Waukesha	Traffic Management Plan
City of Waukesha	Building Permits
City of Waukesha	Plan Commission Approval (needed for any building)
City of Waukesha	Stormwater Management and Erosion Control Permit
City of Waukesha	Utility
City of Waukesha	Construction Permit
City of Waukesha	Public Works, Street & Alley Opening Permit
City of Waukesha	Public Works, Street Occupancy Permit
City of Waukesha	Historic District/Landmarks Commission Review
Town of Vernon	Utility Permit, would also likely review route
Waukesha County	Shoreland Construction Permit
Waukesha County	Stormwater Management and Erosion Control Plan
Waukesha County	Permit to Construct, Maintain or Repair Utilities within the ROW
Milwaukee Metropolitan Sewerage District	Chapter 13 Surface Water and Stormwater (might not be required)
Canadian National Railway Company (CN)	Railroad Permit

1.10 Mailing Lists

Mailing list information will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by the WDNR.

1.11 Program Maps

1.11.1 Aerial Photographs

Program maps, which include aerial imagery, are included in Appendix 1-3.

1.11.2 Program Data

Program maps are provided in Appendices 1-2 and 1-3.

The Program maps in Appendices 1-2, 2-2, and 2-6 depict the City of Waukesha water supply connection point at the intersection of Les Paul Parkway and East Sunset Drive. This location is the Program connection point to the existing Waukesha water distribution system, and is preferred based on water distribution modeling results. A connection point at the intersection of Les Paul Parkway and East Racine Avenue was also considered and was used for resource impact calculations during the alternatives analysis. The Les Paul Parkway and East Racine location includes approximately 0.72 mile of additional water supply pipeline corridor compared to the connection point at Les Paul Parkway and East Sunset Drive. The pipeline corridor along Sunset Drive between Les Paul Parkway and East Racine Avenue will also contain the return flow pipeline. Consequently, resource impact calculations presented in this document have been calculated conservatively because they include the extra 0.72 mile of water supply pipeline corridor along Racine Avenue to Les Paul Parkway, which will not be used, and impacts along Sunset Drive between Les Paul Parkway and East Racine Avenue have already been accounted for in the return flow pipeline corridor. Only the Les Paul Parkway and East Racine Avenue location is shown on the maps in Appendices 2-1 and 2-3 through 2-5 because they are associated with the alternatives analysis.

1.11.3 Environmental Data

Potential resource impact maps for wetlands and waterways are provided in Appendix 1-3. Additional environmental resource maps will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

1.11.4 Parcel Data

Locations of private parcels crossed by the Program with easements are included in maps provided in Appendix 1-3. Additional parcel data will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

1.11.5 Land Use

Land-use maps will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

1.11.6 Utility/Infrastructure

Construction techniques that can be used not only to avoid wetlands and waterways but also to avoid existing utilities are provided in Section 3.9.2. Utility and infrastructure data will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

1.11.7 DNR-Required Information

Information including maps of possible Chapter 30 activities, temporary clear-span bridges, Wisconsin Wetland Inventory (WWI), and wetland/waterway field data will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

1.12 ESRI ArcGIS Data Files

Geographic information system (GIS) information will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

SECTION 2 Program Development and Alternatives

2.1 Purpose and Necessity of the Program

The purpose and necessity of the Program are described in Section 1.7. The purpose and necessity provide the framework for alternatives that were considered in developing the Program.

2.2 Program Relationship to Future Projects

WWU will make improvements to the water distribution system and modify water quality sampling point locations in the coming years to adapt to the water supply source change from one where water enters the distribution system from multiple wells to one where water enters the distribution system from only one point of entry for a Lake Michigan water supply. The Program will also lead to abandoning many existing wells and only maintaining radium-compliant wells in service for emergency backup purposes.

2.3 Source and System Level Alternatives Considered

2.3.1 Previous Evaluations Documented Elsewhere

Previous evaluations of water supply alternatives documented 14 individual surface and groundwater supply sources, combinations of sources, conservation, zero discharge, and no action alternatives. Based on these evaluations, the Program initially considered water supply sources in the Mississippi River basin and the Lake Michigan basin. These evaluations were previously described in the following:

- *City of Waukesha Application for a Lake Michigan Diversion with Return Flow* (Lake Michigan Diversion Application) most recently documented in Volume 5, Environmental Report (CH2M HILL 2013)
- WDNR *Preliminary Final Environmental Impact Statement City of Waukesha Proposed Great Lakes Diversion* (WDNR 2016a)
- WDNR *Technical Review for the City of Waukesha's Proposed Diversion of Great Lakes Water for Public Water Supply with Return Flow to Lake Michigan* (WDNR 2016b)

In the case of the Lake Michigan basin water supply alternatives, the City of Waukesha is required to comply with the Compact and Wisconsin implementation statute requirements by returning the flow to the Lake Michigan basin. The water supply sources outside of the Lake Michigan basin would have wastewater treatment and discharge to the Mississippi River basin at the existing City of Waukesha CWP. For water supply alternatives in the Lake Michigan basin, return flow alternatives to satisfy the Compact requirements were developed.

In the Lake Michigan Application, the City of Oak Creek was the preferred Lake Michigan water supplier. Route alternatives for the supply and return flow were identified and evaluated as described below in Section 2.4.

In 2017, the City of Milwaukee provided an unsolicited proposal to supply water to the City of Waukesha. As a result of the offer and significant cost savings to WWU rate payers, the City of Milwaukee was selected by the City of Waukesha as the preferred Lake Michigan water supplier. A City of Milwaukee alternative supply route evaluation was performed, which was similar to the evaluation performed for the City of Oak Creek supply route and included the same return flow evaluated previously as part of the Oak Creek Route Alternative 3.

2.3.2 Lake Michigan Water Supply Alternatives Considered Further in this Document

The unanimous 2016 Compact Council approval of the Lake Michigan Application concluded that Lake Michigan is the only reasonable water supply solution for the City of Waukesha (Compact Council 2016). The Compact Council conclusion thus renders Program alternatives unreasonable if they do not include a Lake Michigan water supply. This section describes Lake Michigan water supply route alternative evaluations previously conducted and no longer under consideration for the City of Oak Creek water supply and return flow Route Alternatives and for the preferred City of Milwaukee water supply Route Alternative. Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek) and Route Alternative 4 (Oak Creek) are included and discussed in this document because the return flow portions of these routes remain relevant to the Program.

In late 2016, six possible pipeline routes and facility locations were considered at a screening-level analysis for a City of Oak Creek water supply with return flow to the Root River. These routes were evaluated based on the availability of water from the City of Oak Creek. They were described as Route Alternative 1 (Oak Creek), Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek), Route Alternative 4 (Oak Creek), Route Alternative 5 (Oak Creek), and Route Alternative 6 (Oak Creek), or collectively as the Oak Creek Route Alternatives. The six City of Oak Creek water supply with return flow pipeline routes were screened down to the three best alternatives using the process described in Section 2.4 of this document.

In 2017, the City of Milwaukee approached the City of Waukesha with an unsolicited offer to be the Lake Michigan water supplier. Two pipeline routes (an alternative and a sub-alternative) to supply Lake Michigan water from the City of Milwaukee to Waukesha were evaluated for further consideration, but the sub-alternative was eliminated. These routes are described as the Milwaukee Supply Route Alternative, and Milwaukee Supply Route Sub-Alternative and are also detailed in Section 2.4 of this document.

The four remaining alternatives evaluated in detail in this report include:

- Route Alternative 2 (Oak Creek)
- Route Alternative 3 (Oak Creek)
- Route Alternative 4 (Oak Creek)
- Milwaukee Supply Route Alternative

The pipeline alignments for these alternatives are included in Appendices 2-1 through 2-6.

The capital costs for the four remaining alternatives are provided in Appendix 1-1. Other cost information for these alternatives, such as annual operational costs and present worth costs, will be provided in a future PSC application submittal and WDNR wetland and waterway permit application, or as requested by the WDNR.

2.4 Factors Considered when Evaluating Possible Routes and Locations for Pipelines and Facilities

Possible pipeline routes and facility locations for the City of Oak Creek and City of Milwaukee alternatives were evaluated in a two-step process. In the first phase, screening level data were reviewed in the Route Study Area to identify route alternatives between Oak Creek and Waukesha and between the Waukesha CWP and the Root River discharge parcel. The second phase involved a more detailed evaluation of routes that remained after the phase one evaluation.

During phase one, route alternatives were developed to limit overlapping corridors so that alternatives were distinctly different. Some potential corridors were eliminated to avoid new or planned regional transportation projects, areas in proximity of high risk contaminated sites (i.e. National Priorities List Superfund sites), and segments of routes with

significant lengths outside of existing rights-of-way that would result in excessive impacts to the environment and wetland areas. These initial criteria reduced the potential environmental impacts associated with each of the routes being considered.

Potential water supply connection locations and route alternatives were discussed with WWU during a workshop. Following this workshop, an additional evaluation was conducted by gathering GIS data from communities where the route may pass, reviewing aerial surveys, and performing desktop evaluations. Six route alternatives between Oak Creek and Waukesha were identified, which were evaluated based on the following criteria:

- Opportunities with other planned projects
- Bike trails
- Open space
- Route length
- Hydraulic efficiency
- Cost, restoration, and staging
- Operation and maintenance access
- Difficult construction crossings
- Compatibility with long-range planning

After further analysis and discussions with municipalities, potential corridors were eliminated to avoid new or planned construction projects to the extent possible. The original Program of an Oak Creek water supply pipeline route included in the Lake Michigan Application (CH2M HILL 2013), was removed from evaluation as it includes corridors identified with new or planned roadway construction. After the analysis, six route alternatives remained for further consideration (see Appendix 2-1). These route alternatives were numbered from Route Alternative 1 (Oak Creek), representing the most northeast route alternative, to Route Alternative 6 (Oak Creek), representing the most southwest route alternative. In each case, the requirements for associated facilities were the same. Consequently, facilities did not become a distinguishing factor between alternative routes.

To reduce the number of route alternatives from six to three, each route was evaluated and compared based on economic and non-economic criteria.

Capital cost opinions were developed to provide a means for comparing route alternatives on an economic basis. These costs were prepared in accordance with the AACE International's Recommended Practice No. 18R-97 for a Class 5 Opinion of Probable Construction Cost with an accuracy of -50 to +100 percent and contingency of 30 percent. The Preliminary Alternatives Report Workshop (W-01) was held with WWU on February 2, 2017 and the cost opinions for the six route alternatives were reviewed. The cost difference between route alternatives was within the 30 percent contingency and within the accuracy of the AACE International's Class 5 Opinion of Probable Construction Cost of -50 to +100 percent.

Route alternatives were also compared using non-economic criteria. Non-economic criteria address characteristics or special requirements associated with each route alternative and consider factors of importance for each route alternative. The non-economic criteria evaluated are presented in Table 2-1 and include infrastructure, hydraulics and energy, accessibility, and environmental (as measured by desktop analysis) factors. These factors were further detailed through specific criteria. For example, infrastructure criteria included pipeline length, effects of special crossings, and traffic and roadway conditions.

Table 2-1. Non-Economic Criteria and Weighting to Evaluate Six Routes

Criteria	Weighting	Impacts
Infrastructure Criteria		
1. Pipeline Length	• 5	• Length of pipe • Duration of construction; date of initial operation; duration of public inconvenience • Number of pipe joints and potential latent defects (e.g. future leaks) • Number of appurtenances requiring operations and maintenance
2. Special Crossings	• 3	• Length of crossing • Duration of construction • Time and risk of potential problems
3. Traffic and Roadway Conditions	• 3	• Pavement condition • Traffic count • Time and risk of potential problems
Hydraulics and Energy Criteria		
4. Energy Usage	• 4	• Power required to deliver flow and operational costs
5. Topographic Considerations	• 1	• Additional infrastructure required • Duration of construction • Additional maintenance requirements
6. Hydraulic Considerations	• 1	• Pressure considerations • Material availability • Risk of ruptures from hydraulic transients
Accessibility Criteria		
7. Accessibility	• 5	• Accessibility for emergency vehicles • Accessibility for maintenance • Proximity to major highways • Overhead clearance • Site congestion

Table 2-1. Non-Economic Criteria and Weighting to Evaluate Six Routes

Criteria	Weighting	Impacts
8. Public Impact during Construction	• 3	• Community relations • Business operations and profits • Tranquility of life (e.g. noise, dust, vibration) • Traffic backups; public and business commuting time and cost
9. Opportunities with Other Planned Projects	• 3	• Cooperative efforts with municipalities • Use of identified lands or properties • Synergy with other planned projects
Environmental (Desktop Assessment) Criteria		
10. Contaminated Materials	• 2	• High risk sites • Risk of construction delays • Risk of additional costs during construction
11. Protected Resources	• 3	• Historic preservation districts • Construction delays
12. Wetlands	• 3	• Potential disturbance and mitigation • Design and construction complexity • Quality of environment, flora, and fauna
13. River and Floodplain	• 3	• Number of potential crossings • Complexity of design • Construction related risks • Government and public perception

The criteria were applied to the routes through a two-step process. WWU assigned weighting to the criteria based on their criticality to the Program. Program team members then reviewed route alternatives for each non-economic criterion and scored the route alternatives based on each team member's expertise in the collaborative team environment. The scoring also considered whether the given route alternative would require additional facilities such as pumping stations, that could result in larger capital costs or greater environmental impacts. WWU also weighted the non-economic criteria during the meeting based on their vision for how they wish to operate their new water supply. Weighting ranged from one (least importance to the Program) to 5 (greatest importance to the Program). Route scores were presented to WWU in a workshop. The resulting products of the weighting and scores were compiled to produce a total score for each route. The route with the lowest total score represented the least favorable

combination of criteria weighting and alternative scoring. The route with the highest total score represented the most favorable combination of criteria weighting and alternative scoring.

The findings from the economic and non-economic evaluation were reviewed with WWU as part of the Preliminary Route Alternatives Report Workshop held on February 2, 2017. Based on the economic and non-economic evaluation, Oak Creek Route Alternatives 2, 3, and 4 (see Appendix 2-2) were selected for further evaluation during the Route Study in Phase 2 of the Program.

Comparison of Oak Creek Route Alternatives 2, 3, and 4

The remaining Oak Creek Route Alternatives 2, 3, and 4 were further refined in several east-west portions of the corridors to minimize pipeline length, public impact, and easement requirements, as well as to improve accessibility and avoid wetlands and areas of suspected high-risk contaminated material sites. These included study areas between Moorland Road and Racine Avenue for Oak Creek Route Alternatives 2 and 3 and between Racine Avenue and Route 164 for Route Alternative 4 (Oak Creek). Route sub-alternatives were identified in each study area and evaluated based on economic and non-economic criteria. Findings from the economic and non-economic evaluation were reviewed with WWU and preferred route sub-alternatives were selected as part of the Route Study – Alternative Routes Review Meeting (Task 4-100 M-01) held on March 2, 2017.

An array of economic and non-economic criteria was developed specifically for this phase of the Program to compare Oak Creek Route Alternatives 2, 3, and 4. Using the criteria, the alternatives were evaluated based on desktop assessments, field reconnaissance, and public open house meetings in which the public provided input on route alternatives. Preliminary horizontal alignments, trenchless requirements, and steady state hydraulics were developed to compare the route alternatives. The non-economic and economic criteria included the following items.

- Hydraulic analysis
- Total pipeline length
- Trenchless requirements
- Geotechnical conditions
- Contaminated materials
- Maintenance of traffic requirements
- Wetlands
- Waterways
- Floodplain encroachment
- Special habitats
- Protected resources
- Agricultural resources
- Energy consumption
- Stakeholder feedback
- Real property and easement requirements
- Constructability
- Conceptual opinion of probable construction costs

As in the earlier phase, economic and non-economic criteria were used to develop route scoring to identify a preferred route. The evaluation process was guided by the Envision Rating System for Sustainable Infrastructure (Institute for Sustainable Infrastructure 2017). Key Performance Indicators (KPIs) were developed to integrate

WWU's values into the design process and provide a basis for developing metrics to evaluate and compare route alternatives. KPIs are criteria that remain constant, but the alternatives and the metrics for each KPI change based on the decision that is being evaluated. Although they are not all assigned a cost value, the KPIs are of critical importance in determining the preferred route alternative.

Table 2-2 presents the KPI definitions using language from the Envision Rating System for Sustainable Infrastructure. The KPI definitions were developed to be broad enough to apply to all aspects of the Program and act as universal weighing criteria.

Table 2-2. Definitions of Key Performance Indicators

Key Performance Indicator	Definition	Weight
System Reliability	Using robust design strategies, preventive maintenance and intuitive configurations, Program elements are dependable and resilient.	19
Life Cycle Cost	Pursue strategies that reduce long-term operational and maintenance costs.	15.5
Schedule	Complete the Program in a timeframe that mitigates negative impacts on the community's quality of life.	14
Ease of Construction	Avoid sites that require intensive efforts to preserve or restore, integrate infrastructure, or access with construction equipment.	11
Public Acceptability	The Program vision and goals align with those of the affected communities, and the implementation of the Program expands the skills, capacity, mobility, and health of a community while mitigating negative impacts.	6.5
Capital Cost	Minimize financial impact on the community with consideration of factors such as resource conservation, ease of infrastructure integration, and avoiding site development that requires additional efforts to preserve.	6
Effects on Ability to Finance	Through triple-bottom line analysis, Program elements have been de-risked and future-proofed, helping attract infrastructure investment.	6
Future Expansion	Implement designs and other measures that allow for the expansion of the Program to incorporate future connections and increased flow.	6
Operational Flexibility	Reduce vulnerabilities by creating an adaptable design that can function in a variety of social, economic, and environmental conditions with monitored systems that allow ease and consistency of operation.	6
Environmental Impact	Measures are taken to preserve the natural world through avoidance, monitoring, restoration, and negative impact mitigation; resources are conserved during the construction and operation of the Program; there is a concerted effort to preserve the ambient conditions that affect quality of life of the community like noise, light, and air quality.	5

Table 2-2. Definitions of Key Performance Indicators

Key Performance Indicator	Definition	Weight
Cost Sharing Potential	Thorough infrastructure integration and commitment to synergistic opportunities, the cost of Program elements is shared by a broader community.	5

The metrics delineated into KPIs are listed in Table 2-3.

Table 2-3. Key Performance Indicator Metrics

Key Performance Indicator	Metrics
System Reliability	Length of Pipe (linear feet), Accessibility (Number of Special Crossings, Number of Easements), Maximum Pressure (pounds per square inch [psi])
Life Cycle Cost	Capital Cost (U.S. Dollars), Energy Cost (U.S. Dollars)
Schedule	Days (Determined by Linear Feet of Pipe / Day)
Ease of Construction	Depth to Bedrock (Linear Feet of Pipe < 50 feet deep), Dense Soils (Linear Feet of Pipe), Organic Soils (Linear Feet of Pipe), Shallow Groundwater, Soils Corrosive to Steel/Ductile Iron (Linear Feet of Pipe), Soils Corrosive to Portland Cement Concrete Pipe (Linear Feet of Pipe), Contaminated Materials (Total Ranking Score on each Route)
Public Acceptability	Protected Resources (No. of Archaeological, Burial, and Historic Sites), Transportation (Linear Feet of Roadway Impacts, Square Footage of Pavement Area, Additional Driving Hours), Number of Easements, Agriculture (Acreage in the Easements), Coordination with Planned Regional Transportation Projects
Capital Cost	Capital Cost (U.S. Dollars)
Effects on Ability to Finance	Envision Score
Future Expansion	Number of Municipalities Traversed, ADD of Municipalities Traversed (mgd)
Operational Flexibility	Number of Pressure Sustaining Valves, Number of Connections to the Distribution System, Distribution System Pressure (psi)
Environmental Impact	Acreage of WWI Mapped and Photo-Interpreted Wetlands, Number of Waterways Crossed
Cost Sharing Potential	Number of Municipalities Traversed, Simultaneous Planned Regional Transportation Projects

WWU staff independently weighted the KPIs from 1 (to represent a less significant or lower perceived impact to the Program) to 10 (to represent a more significant or higher perceived impact to the Program). The weights were linearly scaled such that the sum of all weights totaled 100. This resulted in some criteria having weights greater than 10. After weighting was complete, Program team members performed desktop analyses and compared route alternatives for the non-economic criteria within their discipline or area of expertise. These comparisons were used to develop route scoring.

The Triple Bottom Line evaluation for the three Oak Creek Route Alternatives is presented in Table 2-4.

Table 2-4. Triple Bottom Line Evaluation Scoring for Oak Creek Route Alternatives

Criteria		Weighting	Maximum Possible Score	Oak Creek Route Alternatives		
				2	3	4
1	Social and Community Goals					
1.1	Schedule	14.0	5	3	3	2
1.2	Public Acceptability	6.5	5	2	3	2
1.3	Operational Flexibility	6.0	5	3	3	4
1.4	Future Expansion	6.0	5	4	4	3
2	Economic Goals					
2.1	System Reliability	19.0	5	4	5	3
2.2	Life Cycle Cost	15.5	5	4	4	3
2.3	Ease of Construction	11.0	5	3	3	2
2.4	Capital Cost	6.0	5	4	3	2
2.5	Effects on Ability to Finance	6.0	5	3	4	2
2.6	Cost Sharing Potential	5.0	5	4	4	3
3	Environmental Goals					
3.1	Environmental Impact	5.0	5	4	3	2
Net Triple Bottom Line Score[a]		100	500	350	371	258
Percent of Max Possible Score			NA	70%	74%	52%

[a] Net Triple Bottom Line Score = Sum of each sub-criteria score x each Weighting for each Alternative

Results from the non-economic evaluation and a hydraulics analysis were used to support development of Conceptual Opinions of Probable Construction Cost for comparing route alternatives on an economic basis. The costs were prepared in accordance with the AACE International's Recommended Practice No. 18R-97 for a Class 4 Opinion of Probable Construction Cost with an accuracy of -20 to +50 percent of cost. A contingency of 25 percent was also used per a Class 4 Opinion of Probable Construction Costs. Opinion of Probable Construction Costs were developed per Division at an Engineering News-Record Construction Cost Indices value of 10,942. The cost differences between route alternatives are within the 25 percent contingency and -20 to +50 percent accuracy of the AACE International's Class 4 Opinion of Probable Construction Cost. As a result, the preferred route alternative was identified based on predominantly non-economic considerations.

Milwaukee Supply Route Alternatives Development

With the City of Milwaukee's offer to supply water (Milwaukee water supply) at a significant cost savings to WWU rate payers, the route analysis also considers two Milwaukee Supply Route Alternatives. These routes are described throughout this document as the Milwaukee Supply Route Alternative and Milwaukee Supply Route Sub-Alternative, or collectively as the Milwaukee Supply Route Alternatives. In earlier evaluations, the Milwaukee Supply Route Alternative compared favorably with the three highest-ranking Oak Creek alternatives.

For each of the Milwaukee Supply Route Alternatives, the return flow pipeline route remained consistent with the recommended alternative from the Oak Creek Supply Route Alternatives analysis. The Milwaukee Supply Route Alternatives are evaluated with similar economic and non-economic criteria to confirm its ranking compared to Oak Creek alternatives. A water supply had been previously considered between Milwaukee and Waukesha and was evaluated in the Lake Michigan Application and WDNR Preliminary Final EIS (CH2M HILL 2013 and WDNR 2016a).

As described in Section 1.11.2, the pipeline length includes a portion of ROW from the intersection of Racine Avenue and East Sunset Drive to the intersection of Racine Avenue and Les Paul Parkway that is not a part of the Program due to a preferred distribution system connection point at the intersection of Les Paul Parkway and East Sunset Drive. Consequently, resource impact calculations presented in this document have been calculated conservatively because they include an extra 0.72 mile of ROW.

In addition, the area of environmental resources in the entire ROW was determined during the alternatives analysis. However, it is likely that resources along only one side of the road ROW will be impacted as the disturbance area will not extend across the entire ROW. Thus, resource impact calculations in this document, again, have been calculated conservatively.

To identify the Milwaukee Supply Route Alternatives, potential corridors were identified. Route alternatives were developed to limit duplication of overlapping corridors and to minimize pipeline length, public impact, and easement requirements. Potential corridors were eliminated to avoid new or planned regional transportation projects to the extent feasible. Several of the potential corridors were also eliminated due to less preferable environmental crossings associated with the Root River, special crossings associated with interstates, and dense urban developments in Milwaukee. After the evaluation, the Milwaukee Supply Route Alternative was identified for further evaluation.

A second sub-alternative water supply route was identified to follow an existing electrical transmission utility corridor that could be used to avoid construction beneath roads and minimize traffic disturbance for a portion of the overall water supply pipeline route. The Milwaukee Supply Route Sub-Alternative was reviewed with WWU and discussed with the City of Milwaukee. After receiving confirmation of the route for evaluation, preliminary horizontal alignments for the Milwaukee Supply Route Alternative and the Milwaukee Supply Route Sub-Alternative were developed.

Milwaukee Supply Route Alternatives Evaluation

A hydraulic analysis was conducted to identify necessary infrastructure and confirm operating conditions. Opinions of probable cost were generated and were similar for both Milwaukee Supply Route Alternatives.

The Milwaukee Supply Route Alternatives were also evaluated based on non-economic criteria. The non-economic criteria were kept consistent with those utilized in evaluating the six Oak Creek route alternatives. The purpose of the non-economic scores was to assist in identifying a preferable route between Milwaukee and Waukesha. Route scores were developed and are shown in Table 2-5. The route with the highest total score represents the more favorable combination of criteria weighting and alternative scoring.

Table 2-5. Non-Economic Scores for Milwaukee Supply Route Alternatives

Item	Route Scores	
	Milwaukee Supply Route Alternative	Milwaukee Supply Route Sub-Alternative
Total Non-Economic Score	110	118

Milwaukee Supply Route Alternative Comparison, Conclusions, and Recommendations

The Milwaukee Supply Route Sub-Alternative is preferred on a non-economic basis due to lower public impact and improved accessibility through the electrical transmission utility corridor. However, in discussions with the electrical utility, an easement through this corridor may be difficult to obtain. For this reason, the Milwaukee Supply Route Sub-Alternative was eliminated from consideration and the Milwaukee Supply Route Alternative was selected as the preferred route to convey water between Milwaukee and Waukesha.

The Milwaukee Supply Route Alternative with the Oak Creek Route Alternative 3 return flow is the Program based on non-economic and economic criteria. On October 30, 2017, the City of Waukesha and City of Milwaukee announced

that they had reached a mutual agreement for the City of Milwaukee to be the Lake Michigan water supplier (GWA 2017). Route alignments will be further refined prior to final design.

2.4.1 Resource Screening Information for Pipeline Route Alternatives

Initially, the three Oak Creek route alternatives, which are no longer being considered as options, were screened in more detail for the following resources:

- Wetlands and Waterways
- Archaeological Resources
- Agricultural Resources
- Wisconsin Natural Heritage Inventory (NHI)

A summary of the resources identified within each of the three Oak Creek pipeline route alternative corridors is provided in the following sections. Route Alternatives 2, 3, and 4 in the following sections refers to the respective routes with an Oak Creek supply. The Milwaukee Alternative in the following sections refers to the Milwaukee Supply Route Alternative with a Route Alternative 3 (Oak Creek) return flow pipeline alignment, which is the Program. The Milwaukee Sub-Alternative in the following sections refers to the Milwaukee Supply Route Sub-Alternative with a Route Alternative 3 (Oak Creek) return flow pipeline alignment. Comparable studies were completed for the two identified Milwaukee Supply alternatives and have been included where the data are available. The analysis also identifies resources present in buffer areas to allow for impacts to be quickly determined if the alignments change during detailed design. However, impacts in buffer areas generally are expected to be minor. As currently sited, approximately 97.4 percent of the Milwaukee Alternative is within existing ROW.

2.4.1.1 Wetlands and Waterways Screening Information for Pipeline Route Alternatives

As part of the second phase of the alternative analysis and selection process, a desktop evaluation of wetlands and waterways was conducted for the three City of Oak Creek water supply and return flow Route Alternatives, the Milwaukee Supply Route Alternative and the Milwaukee Supply Route Sub-Alternative. Route Alternatives 2, 3, and 4 (Oak Creek) and the Milwaukee Supply Route Sub-Alternative are no longer being considered as options. Route Alternative 3 (Oak Creek) information is relevant to the Program as the return flow portion of this route is identical to the return flow of the proposed Program return flow route.

Analysis methodology and results are documented in Appendix 2-7. The evaluation was conducted by reviewing maps and aerial imagery including WDNR WWI maps, USGS topographic maps, Natural Resources Conservation Service soils maps and recent and historical aerial photographs. Potential wetlands and waterways were identified, classified, and mapped on recent aerial photographs. The study area included the road ROW for each of the proposed pipeline routes, several easements outside the ROW, and a We Energies corridor. This summary describes the amount of wetland acreage associated with WWI-mapped and additional photo-interpreted wetland (not included in the WWI) for ROW and non-ROW easements, and the number of waterway crossings in the ROW.

In general, the pipeline route with the fewest acres of WWI-mapped wetlands and mapped waterways, and photo-interpreted wetlands may result in the least amount of impacts to wetlands and waterways.

Table 2-6 summarizes the results of the WWI wetland analysis and photo-interpretation wetland analysis to determine the potential acreage of wetland within each route.

Table 2-6. Route Alternatives WWI and Photo-interpreted Potential Wetlands Summary

Route	Route Length (miles)	WWI Wetland Area (acres)	Photo-interpreted Wetland Area (acres)	Total Wetlands (acres)	Total Wetlands per Route (acres)	Total Wetland (acres/mile)
Oak Creek Route Alternative 2						
ROW	25.69	13.27	8.78	22.05	23.04	*0.90*
Easement	25.69	0.94	0.05	0.99		
Oak Creek Route Alternative 3						
ROW	26.94	13.55	9.64	23.19	23.48	*0.87*
Easement	26.94	0.25	0.04	0.29		
Oak Creek Route Alternative 4						
ROW	26.54	15.08	10.14	25.22	29.53	*1.11*
Easement	26.54	0.55	0.06	0.61		
We Energies Easement	26.54	1.5	2.2	3.70		
Milwaukee Route Alternative[a]						
ROW	34.3	13.98	12.78	26.76	27.75	*0.81*
Easement	34.3	0.94	0.05	0.99		
Milwaukee Route Sub-Alternative						
ROW	34.3	13.98	12.78	26.76	28.65	*0.84*
Easement	34.3	0.94	0.05	0.99		
We Energies Easement	34.3	0.20	0.70	0.90		

[a]The Milwaukee Route Alternative is the Program pipeline route.

Route Alternative 2 (Oak Creek) and Route Alternative 3 (Oak Creek) have the least wetland acreage in the ROW and easements (23.04 acres and 23.48 acres, respectively). Wetland acreage in the non-ROW easements for both routes are comparably nominal. Considering the potential margin of error in a desktop review, Route Alternative 2 (Oak Creek) and Route Alternative 3 (Oak Creek) are similar from a wetland acreage perspective. The Milwaukee Route Alternative potentially would impact 27.75 acres of wetland within the ROW and easement. Route Alternative 4 (Oak Creek), and the Milwaukee Route Sub-Alternative have the most Wetland acreage in the ROW and easements (29.53 acres and 28.65 acres, respectively). The Milwaukee Route Alternative has the least impact on the basis of wetland acres per mile of pipeline. Screening level impacts by wetland type classifications are documented in Appendix 2-6. Route Alternative 2 (Oak Creek) contains the fewest waterway crossings, at 12 in the ROW; Route Alternative 3 (Oak Creek) has 16; Route Alternative 4 (Oak Creek) has 19; the Milwaukee Route Alternative and the Milwaukee Route Sub-Alternative have 23. Based on the desktop review, Route Alternative 2 (Oak Creek) is expected to have fewer impacts to wetlands and fewer waterway crossings.

Using the factors discussed above, Route Alternative 2 (Oak Creek) is the most favorable, followed by Route Alternative 3 (Oak Creek). The Milwaukee Route Sub-Alternative is the least favorable. Actual impacts will depend on detailed design considerations. The Program pipeline route was selected based upon non-economic and economic criteria described in Section 2.4.

2.4.1.2 Archaeological Resources Screening Information for Pipeline Route Alternatives

Archaeological resources were reviewed as part of the pipeline alternatives evaluation process. As part of the pipeline route alternative analysis and selection process, a literature and archives review of cultural resources was conducted for the three City of Oak Creek water supply and return flow Route Alternatives and the Milwaukee Supply Route Alternative, and the Milwaukee Supply Route Sub-Alternative.. Route Alternatives 2, 3, and 4 (Oak Creek) and the Milwaukee Supply Route Sub-Alternative are no longer being considered as options. Route Alternative 3 (Oak Creek) information is relevant to the Program as the return flow portion of this route is identical to the return flow of the proposed Program return flow route.

Each pipeline alternative was reviewed separately except where the alternatives had overlapping common segments. Literature and archives research included the following sources: the Wisconsin Historic Preservation Database, the Archaeological Report Inventory, the Archaeological Site Inventory, the Architecture History Inventory, the C.E. Brown Atlas, the C.E. Brown Manuscripts, county historical society publications, county site files, 1937-38 aerial photographs, old topographic maps, the General Land Office survey maps, the Wisconsin Land Economic Inventory maps, the National Register of Historic Places (NRHP), and public and university libraries. The methodology and results are documented in confidential Appendix 2-8. Due to the sensitive nature of the information, this appendix is included separately as a confidential document.

The evaluation describes where cultural sites overlap the alternative corridors, provides relevant information on the importance of each site as it relates to the alternative(s), and recommends ways to minimize effects that planned construction may have on cultural resource sites. In addition to the resources that overlap the proposed alternative corridors, cultural resources within 50 feet and 100 feet of the corridor, and proposed easements were also reviewed. While these resources will not be affected by the footprint of Program alternatives as it is currently designed, adjustments of the preliminary alternative corridors and design of access roads may affect them.

Table 2-7 summarizes the results of the cultural resource evaluation and lists the number of archaeological sites, burial sites, historic structures, and NRHP sites within the alternative corridors and buffers for each of the alternative corridors, as well as the We Energies transmission line easement for Route Alternative 4 (Oak Creek) and the Milwaukee Route Sub-Alternative.

Table 2-7. Route Alternatives Summary of the Quantity and Type of Archaeological Resources Along Each Pipeline Corridor

Alternative	Number of Archaeological Sites	Number of Burial Sites	Number of Historic Structures	Number of NRHP-listed Sites
Oak Creek Route Alternative 2				
Overlapping Corridor	5	8	6	1
Within 50 feet of Corridor	-	1	14	-
Within 50 to 100 feet of Corridor	2	-	6	-
Oak Creek Route Alternative 3				
Overlapping Corridor	5	8	6	1
Within 50 feet of Corridor	-	1	13	-
Within 50 to 100 feet of Corridor	-	-	6	-

Table 2-7. Route Alternatives Summary of the Quantity and Type of Archaeological Resources Along Each Pipeline Corridor

Alternative	Number of Archaeological Sites	Number of Burial Sites	Number of Historic Structures	Number of NRHP-listed Sites
Oak Creek Route Alternative 4				
Overlapping Corridor	5	5	4	1
Within 50 feet of Corridor	-	1	11	-
Within 50 to 100 feet of Corridor	2	-	3	-
Within We Energies Transmission Line Easement	2	3	-	-
Milwaukee Route Alternative[a]				
Overlapping Corridor	6	10	5	1
Within 50 feet of Corridor	1	1	13	-
Within 50 to 100 feet of Corridor	0	0	12	-
Milwaukee Route Sub-Alternative[b]				
Overlapping Corridor	6	10	5	1
Within 50 feet of Corridor	1	1	13	-
Within 50 to 100 feet of Corridor	0	-	11	-
Within We Energies Transmission Line Easement	-	-	-	-

[a]The Milwaukee Route Alternative is the Program pipeline route.
[b]Source: Giese 2018

Based on the results of the review, Route Alternatives 2, 3, and 4 (Oak Creek) have the fewest impacts with respect to cultural resources within the overlapping corridor and easements. The Milwaukee Route Alternative and the Milwaukee Route Sub-Alternative have greater impacts with respect to cultural resources within the overlapping corridor and easements. Route Alternatives 2, 3, and 4 (Oak Creek) holds the fewest burial sites (eight), whereas the Milwaukee Route Alternative and Milwaukee Route Sub-Alternative both overlap ten burial sites. Oak Creek Routes Alternatives 2 and 3 are very similar and cover many of the same archaeological and historic resources. Route Alternative 4 (Oak Creek) might affect the fewest historic structures compared to other route alternatives. The Program pipeline route was selected based upon non-economic and economic criteria described in Section 2.4. A Phase I survey of the Program is required and is being undertaken to comply with Section 106 of the National Historic Preservation Act.

Resource impacts of the Program will be avoided and minimized through the pipeline detailed design process. Where avoiding an impact is not practical, the resources will be treated consistent with the requirements contained within Section 106 of the National Historic Preservation Act and will be followed in coordination with the Wisconsin State Historic Preservation Office.

2.4.1.3 Agricultural Resources Screening Information for Pipeline Route Alternatives

As part of the second phase of the alternative analysis and selection process, a desktop review of agricultural resources was conducted for three City of Oak Creek water supply and return flow Route Alternatives, the Milwaukee Supply Route Alternative, and the Milwaukee Supply Route Sub-Alternative. Route Alternatives 2, 3, and 4 (Oak Creek) and the Milwaukee Supply Route Sub-Alternative are no longer being considered as options. Route

Alternative 3 (Oak Creek) information is relevant to the Program as the return flow portion of this route is identical to the return flow of the proposed Program return flow route.

The desktop review included the locations and quantity of agricultural lands using the following sources: Waukesha County Open Data Portal Website (Land Use 2010), the Milwaukee County Land Information Office Geospatial data (Land Use 2010), the U.S. Department of Agriculture Organic Integrity Database, and the Organic Agriculture in Wisconsin 2017 Status Report and 2015 Status Report. The evaluation describes where agricultural sites overlap existing ROW, a We Energies Corridor (Oak Creek Route Alternative 4 only), a 50-foot buffer beyond the edge of those features, and Program-related easements for the routes. The methodology and results are documented in Appendix 2-9.

Table 2-8 summarizes the results of the agricultural resource evaluation and lists the number of acres of agricultural land within the existing ROW, We Energies Corridor (Oak Creek Route Alternative 4 only), the 50-foot buffer, and Program-related easements.

Table 2-8. Route Alternatives Summary of the Quantity of Agricultural Resources Along Each Pipeline Corridor

Route	Total Agricultural Area (Acres)
Oak Creek Route Alternative 2	
ROW	0
50-foot Buffer	71.8
Easements	9.0
Oak Creek Route Alternative 3	
ROW	0
50-foot Buffer	76.3
Easements	5.0
Oak Creek Route Alternative 4	
ROW	0
50-foot Buffer	64.9
Easements	7.2
We Energies Transmission Line Easement	1.5
Milwaukee Route Alternative[a]	
ROW	1.5
50-foot Buffer	113.0
Easements	7.0
Milwaukee Route Sub-Alternative	
ROW	1.5
50-foot Buffer	113.0
Easements	7.0
We Energies Transmission Line Easement	0

[a]The Milwaukee Route Alternative is the Program pipeline route.

None of the three City of Oak Creek route alternatives have agricultural land in the existing ROW, while the Milwaukee Route Alternative and Milwaukee Route Sub-Alternative have 1.5 acres within the ROW. Based on the amount of agricultural land mapped in the ROW, Program-related easements, and the We Energies Corridor, and assuming that there are no proposed activities in the 50-foot buffers, Route Alternative 3 (Oak Creek) overlaps with the fewest amount of agricultural lands, 5.0 acres. The Milwaukee Route Alternative and the Milwaukee Route Sub-

Alternative (8.5 acres), followed by Route Alternative 4 (Oak Creek) (8.7 acres) would impact the next fewest amount of agricultural lands. Route Alternative 2 (Oak Creek) (9.0 acres) would overlap the most agricultural land. However, if the quantity of agricultural land within the 50-foot buffers is taken into consideration as a worst case, assuming those areas would be disturbed, along with the existing ROW, Program-related easements and We Energies Corridors; Route Alternative 4 (Oak Creek) (73.6 acres) would be the preferred route, Route Alternative 2 (Oak Creek) (80.8 acres) would be the second preferred route and Route Alternative 3 (Oak Creek) would have very similar impacts (81.3 acres) (which is less than 1 acre difference) to Route Alternative 2 (Oak Creek). The Milwaukee Route Alternative and Milwaukee Route Sub-Alternative would be the least favorable route (121.5 acres). The Program pipeline route was selected based upon non-economic and economic criteria described in Section 2.4.

2.4.1.4 Endangered Resources Screening Information for Pipeline Route Alternatives

As part of the second phase of the alternative analysis and selection process a desktop review of endangered biological resources was conducted for the three City of Oak Creek Route Alternatives, the Milwaukee Supply Route Alternative and the Milwaukee Supply Route Sub-Alternative. Route Alternatives 2, 3, and 4 (Oak Creek) are no longer being considered as options. Route Alternative 3 (Oak Creek) information is relevant to the Program as the return flow portion of this route is identical to the return flow of the proposed Program return flow route.

The desktop review included spatially locating the number of elemental occurrences (EOs) for terrestrial resources within 1 mile of each pipeline route and aquatic resources within 2 miles of each pipeline route. EOs are defined as the rare, threatened, and endangered species and natural communities included in the State of Wisconsin's NHI database. EOs were further broken down into whether the EO would likely be impacted or not, and if impacted, if a measure is required or recommended to avoid, minimize or mitigate effects on the EO. Measures were classified as: required measures for state-listed endangered and threatened animal species, and recommended measures for state listed plant, natural communities, and state special concern animals. The evaluation process is included in confidential Appendix 2-10. This appendix is included separately due to the confidential nature of its contents.

Table 2-9 summarizes the results of the NHI evaluation and lists the number of EOs for each route.

Table 2-9. Route Alternative Summary of Endangered Resources Along Each Pipeline Corridor

Route Alternative	EOs with No Impact	EOs with Required Measures	EOs with Recommended Measures
Oak Creek Route Alternative 2	13	6	17
Oak Creek Route Alternative 3	9	6	17
Oak Creek Route Alternative 4	12	8	22
Milwaukee Route Alternative[a]	10	6	17
Milwaukee Route Sub-Alternative	10	6	17

[a]The Milwaukee Route Alternative is the Program pipeline route.

Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek), and the Milwaukee Route Alternative and the Milwaukee Route Sub-Alternative have the fewest number of EOs with required and recommended measures.

The desktop review also included review of the USFWS's IPaC database, which tracks federal threatened and endangered species, critical habitats, migratory birds, federal wildlife management facilities (e.g. wildlife refuges, fish hatcheries), and wetlands in the National Wetland Inventory. The results of that evaluation were that Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek), the Milwaukee Route Alternative, and the Milwaukee Route Sub-Alternative each have three federally protected biological resources within their buffers (Poweshiek

skipperling, northern long-eared bat, and eastern prairie-fringed orchid), and Route Alternative 4 (Oak Creek) has four federally protected biological resources within its buffer (the previously listed three plus the rusty patched bumble bee). The USFWS's endangered species county-level data were also evaluated and that data showed that each route alternative is within the rusty patched bumble bee low potential zones; Route Alternative 4 (Oak Creek) also bisects a rusty patched bumble bee high potential zone.

Using the factors discussed above the routes were ranked in order of favorability as follows: most favorable, Route Alternative 2 (Oak Creek), Route Alternative 3 (Oak Creek), Milwaukee Route Alternative, and Milwaukee Route Sub-Alternative; least favorable, Route Alternative 4 (Oak Creek). Actual impacts will be determined based upon detailed design of the routes and avoidance and mitigation measures to address these potential resources. The Program pipeline route was selected based upon non-economic and economic criteria described in Section 2.4.

2.5 Route Corridors Considered

As described in Section 2.4, potential route corridors were identified that maximized use of existing ROWs and minimized conflicts with adjacent or planned land uses or road construction. Some potential corridors were eliminated to avoid new or planned regional transportation projects, areas near high risk contaminated sites, and segments of routes with significant lengths outside of existing ROWs that would result in excessive impacts to the environment and wetlands areas. In each phase of the route evaluation process, criteria were included to address potential land use conflicts and stakeholder concerns.

2.6 Issues and Concerns Raised with Agency Staff

A PSC and WDNR Pre-Application Meeting was held on January 24, 2017. The Program was introduced and review coordination and schedules between the agencies was discussed.

A workshop was held with PSC and WDNR on June 5, 2017 to discuss organization and the required construction permit considerations. PSC and WDNR recommended that impacts to forested wetlands be minimized.

A meeting was held with WisDOT on July 20, 2017. An exception will be needed to use the WisDOT Interstate 43 ROW.

2.7 Contacts and Consultations with Government Entities, Landowners, and Interested Parties

City of Franklin

On June 27, 2017, an open house meeting was held to acquire stakeholder feedback. The open house occurred at the Hunger Task Force Farm in Franklin. The open house allowed GWA representatives to meet with the public, residents, business owners and landowners. The feedback helped identify public perception of the pipeline route alternative alignments.

On August 23, 2017, representatives from the GWA met with staff members from the City of Franklin to discuss permits required of the Program from the City of Franklin.

The staff of the City of Franklin voiced several concerns with the pipeline route alternatives proposed by GWA.

The Franklin Department of Public Works Facility is located at 7979 Ryan Road and includes public access from waste disposal as well as the fueling station for city vehicles. The City of Franklin would like trenchless construction considered for this area. The Program is considering trenchless construction in this area.

60th Street was reconstructed in 2016. The City would like to restrict construction access along the roadway or they would like the Program to consider trenchless construction. The Program is considering trenchless construction in this area.

Franklin Business Park near 51st and Ryan Road has many businesses that run multiple shifts. Traffic impact in the area should be minimized. The Program is considering options to minimize traffic impact to these businesses.

City of New Berlin

On June 29, 2017, an open house meeting was held to acquire stakeholder feedback. The open house occurred at the New Berlin Public Library. The open house allowed GWA representatives to meet with the public, residents, business owners, and landowners. The feedback helped identify public perception of the route alignments.

On July 18, 2017, representatives from the GWA met with staff members from the City of New Berlin to review local permitting requirements for the construction of the water transmission main and return flow line.

The staff of the City of New Berlin voiced concerns that the proposed pipeline route would interfere with their future road improvement projects on Moorland and Calhoun roads scheduled for construction in 2019. Moorland Road will be widened to four lanes from the current two, and Calhoun Road will be reconstructed to lower an existing hill north of Beloit. In addition, there will be ongoing construction of two subdivisions along Moorland Road. The Calhoun Road reconstruction was included in the factors that led to the selection of the proposed Route Alternative 3 (Oak Creek) instead of Route Alternative 2 (Oak Creek).

Representatives from the GWA and staff members from the City of New Berlin met again on August 30, 2017 to continue discussions on the City's concerns with the pipeline construction interfering with their future Moorland Road and Calhoun Road improvement projects. Changes to the horizontal alignment and construction methods of the pipe on Moorland are being considered by the Program.

City of Muskego

On June 28, 2017, an open house meeting was held to acquire stakeholder feedback. The open house occurred at the Muskego High School. The open house allowed GWA representatives to meet with the public, residents, business owners and landowners. The feedback helped identify public perception of the route alignments.

On August 24, 2017, representatives from the GWA met with staff members from the City of Muskego to review the anticipated permits required of the Program from the City of Muskego.

The staff of the City of Muskego raised the issue that North Cape Road is the main hauling route for two large waste landfills located along 124th Street. Extensive construction along the roadway could be intrusive to the waste hauling operations. The Program is considering options to minimize impact to the hauling routes.

City of Greenfield and City of Milwaukee

Open house meetings will likely be held in the City of Greenfield and the City of Milwaukee to acquire stakeholder feedback.

U.S. Army Corps of Engineers/Wisconsin Department of Natural Resources

On June 23, 2017, representatives of GWA met with staff from USACE, WDNR, and PSC to introduce the Program to USACE and obtain initial feedback of their concerns, permitting strategy, and schedule.

The staff from WDNR commented that the Program team should take advantage of opportunities to enhance wetlands where practicable due to the high public profile of the Program.

SECTION 3 Route Information

3.1 Route Description

The Program route (see Appendix 1-2) includes a connection to the City of Milwaukee water distribution system near the intersection of West Howard Avenue and South 60th Street. From this connection, the water supply pipeline will head west through the City of Milwaukee, City of Greenfield, and City of New Berlin to the BPS Facility.

The BPS Facility, located at the intersection of South Racine Avenue and South Swartz Road in the City of New Berlin, will include a BPS with ground reservoir water storage and chemical conditioning. From the BPS Facility, the water supply pipeline will run northwest through the City of New Berlin, Town of Waukesha, and City of Waukesha to a distribution connection point at the intersection of Les Paul Parkway and East Sunset Drive.

Two connection points to the City of Waukesha distribution system are shown in Appendix 1-2. The City of Waukesha water supply connection point located at the intersection of Les Paul Parkway and East Sunset Drive is the proposed connection point. This location is preferred based on water distribution modeling results. A connection point at the intersection of Les Paul Parkway and East Racine Avenue was also considered and was used for resource impact calculations during the alternatives analysis and wetland and waterway impacts documented in Appendix 6. The Les Paul Parkway and East Racine location includes approximately 0.72 mile of additional water supply pipeline corridor compared to the connection point at Les Paul Parkway and East Sunset Drive. The pipeline corridor along Sunset Drive between Les Paul Parkway and East Racine Avenue will also contain the return flow pipeline. Consequently, resource impact calculations presented in this document have been calculated conservatively because they include the extra 0.72 mile of water supply pipeline corridor along Racine Avenue to Les Paul Parkway, which will not be used, and impacts along Sunset Drive between Les Paul Parkway and East Racine Avenue have already been accounted for in the return flow pipeline corridor. The Les Paul Parkway and East Racine Avenue location is shown on the maps in Appendices 2-1 and 2-3 through 2-6 because they are associated with the alternatives analysis.

Once the water is used, water will be collected in the City of Waukesha's existing sanitary sewer collection system and conveyed to the existing City of Waukesha CWP for treatment.

The RFPS and the start of the return flow pipeline will be built at the CWP located off Sentry Drive. From the RFPS, the return flow pipeline will run south and east through the City of Waukesha, Town of Waukesha, City of New Berlin, City of Muskego, and City of Franklin to the return flow discharge facilities at the southeast corner of the intersection of West Oakwood Road and South 60th Street. The return flow discharge facilities include the RFCB, the reaeration structure, and conveyance facilities to the outfall at the Root River.

The proposed pipeline ROW is within existing road ROW along approximately 97.4 percent of the route.

3.2 Route Segment Information

Pipeline diameter and expected materials are described in the following subsections for both the water supply and return flow pipelines.

3.2.1 Pipeline Diameters

The approximate diameters for the water supply and return flow pipelines have been preliminary sized as follows:

- Water Supply Pipeline: 30 inches
- Return Flow Pipeline: 30 inches

The preliminary sizing was developed assuming all pipelines are constructed of ductile iron pipe (DIP) based on steady-state hydraulic modeling to maintain pressures between 35 and 225 psi and at velocities at or below 7 feet per second. The pipeline size will be confirmed in the design process that will consider factors such as preferred pipeline materials and life cycle.

3.2.2 Pipeline Materials

The preferred materials for the water supply and return flow pipelines are summarized as follows:

- Water Supply Pipeline: DIP or steel pipe
- Return Flow Pipeline: DIP, steel pipe, or Portland cement concrete pipe

3.2.3 Number of Hydrants

The number of hydrants will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.3 Associated Facilities

3.3.1 Location of Facilities

Water Supply Pump Station: The exact WSPS location is undetermined at this time. The location is expected to be near the intersection of West Howard Avenue and South 60th Street. Please refer to Appendix 3-1 for expected building dimensions and preliminary building layout.

Booster Pump Station Facility: Parcel 1224994 (Waukesha County). Parcel near South Racine Avenue and Swartz Road. The BPS is on the southeast side of the parcel. The area required is approximately 196,000 square feet (4.49 acres). For a preliminary site layout, please refer to Appendix 3-2. All supporting infrastructure for the operation of the BPS, including two aboveground storage reservoirs and chemical feed facilities, will be co-located on the site.

Return Flow Pump Station: Parcel WAKC 1329989 (Waukesha County). Parcel near Sentry Drive and College Avenue. The RFPS will most likely be located in the northwest portion of the parcel containing the existing Waukesha CWP. The area required is approximately 79,000 square feet (1.81 acres). The exact site layout on the parcel is undetermined at this time. Please refer to Appendix 3-3 for preliminary layout information.

Return Flow Discharge Site Facilities: Parcel 9489998001 (Milwaukee County). Parcel on the southeast corner of West Oakwood Road and South 60th Street. The RFCB is on the northern boundary of the parcel. The area required is approximately 9,500 square feet (0.22 acre). Additional facilities such as a reaeration, pipe conveyance, USGS gage structure and the outfall will also be onsite. The outfall is near the southern boundary of the parcel, just north of the Root River. See Section 1.2 for additional information. For the preliminary site layout, see Appendix 3-4.

3.3.2 Land Purchased for Facilities

The Program facility maps are provided in Appendices 3-1 through 3-4. Information about Program facilities is provided in Section 3.3.1.

3.3.3 Locations of Pipelines Entering Facilities

See Section 3.3.1 for a description of the facilities and references to preliminary facility layout maps.

3.3.4 Location of Waterways or Wetlands on Facilities Property

Facility locations for pump stations and the return flow discharge were sited to avoid wetlands to the extent practicable, with wetland impacts associated with facility construction limited to the return flow discharge facility. See facility location maps in Appendices 3-1 through 3-4 for wetland locations at facilities where applicable.

Wetlands impacts at the return flow discharge facilities will be limited to the extent practicable, with possible wetland enhancement planned in the future for wetlands that have historically been converted to agricultural use and continue to be farmed.

Wetlands on facility sites are shown in the site plans referenced in Section 3.3.1 and preliminary impacts are summarized in Table 3-1.

Table 3-1. Preliminary Wetland Impact Summary for Facilities

Associated Facilities	Location	Wetlands	Notes
WSPS	City of Milwaukee (Milwaukee County)	Undetermined at this time.	No additional available information at this time.
BPS Facility	City of New Berlin (Waukesha County)	Onsite wetlands being avoided.	Includes generator room, BPS, chemical conditioning rooms, and two water storage reservoirs.
RFPS	City of Waukesha (Waukesha County)	No wetlands near the preliminary RFPS site layout.	Already owned by the City of Waukesha.
RFDS Facilities	City of Franklin (Milwaukee County)	Onsite wetlands that could be affected by the Program are mostly farmed wetlands and will be avoided to the extent practicable. Required mitigation will occur offsite.	RFCB, reaeration structure, and USGS gage structure, also to include conveyance piping with one or more outfalls.

3.3.5 Access Roads Required

Permanent access roads will be located at the Program facilities. Program facility maps are provided in Appendices 3-1 through 3-4. Access roads will be approximately 25 feet wide and will vary in length depending upon facility siting constraints and needs. Access roads will be either paved or gravel depending upon location and facility being accessed.

3.3.6 Facility Landscaping

Landscaping at the proposed facilities will conform to the surrounding area and will comply with local and municipal guidelines. Native species will be used where possible.

3.4 Staging Areas and Temporary Workspace Required

All staging areas will strive to minimize impacts to natural resources, include erosion control, and be placed to minimize impacts to flood prone areas. Staging areas for pipeline construction will be predominantly within the road ROW. Staging areas for facility construction will be within the facility property. The contractor will be required to provide additional construction staging area, if the contractor desires to have additional construction staging area beyond what is available within the existing road ROW affected by construction, new easements, and at facility locations.

3.5 Impact Tables

The pipeline routes follow existing road and interstate ROW for the vast majority of the alignments. For the Program, approximately 97.4 percent of the pipeline alignment is within existing road ROW. The maps in Appendix 1-3 show the existing ROW and the very limited area needed for new pipeline easements. The remainder of the pipeline alignments, except for where they enter properties where facilities are located, are within existing road ROW.

3.5.1 General Route Impacts (Table 1)

General Route Impacts (Table 1) will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.5.2 Land Cover Impacts (Table 2)

Few overall land use changes are expected with the Program because approximately 97.4 percent of the pipeline alignment is within existing road ROW. Some land use changes will occur along the pipeline route where new easements are obtained and where facilities and associated new access roads are planned. Land use impacts will be known in greater detail as detailed design is completed. Land Cover Impacts (Table 2) will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

The following subsections summarize expected land use changes for each major pipeline and facility construction element.

Water Supply Pump Station

The location of the WSPS is undetermined at this time. An access drive will be required and a building layout of the proposed facility are shown in Appendix 3-1. The location is expected to be within the City of Milwaukee near South 60th Street and West Howard Avenue.

Water Supply and Return Flow Pipelines in Existing Road ROW

Land use changes associated with pipelines in existing road ROW will be minimal. Current land use at pipelines in existing road ROW consists primarily of maintained turf or vegetated roadway buffer. Other land uses within the vicinity of these areas that will not be affected include commercial, residential, industrial, and agricultural lands. After

construction, the land within existing road ROW will continue to be maintained as turf or vegetated roadway buffer (see Sections 3.9 and 5.10). The location of the water supply and return flow pipelines is shown in Appendix 1-3.

Water Supply and Return Flow Pipelines in New Easements

Current land use at proposed water supply and return flow pipelines in new easements consists of agricultural lands, maintained lawns, driveways, and residential landscaping. After construction, the land in new ROW easement will be maintained vegetation that supports occasional access. Maintenance requirements are described in more detail in Sections 3.9 and 5.10. Disturbed driveway or sidewalk pavement will be replaced in-kind. The location of the water supply and return flow pipelines is shown in Appendix 1-3.

Booster Pump Station Facility

Current land use at the proposed BPS Facility consists of agricultural land and a wetland. After construction, the facility and a paved access road would partially replace agricultural land. Facilities and access roads have been sited to avoid wetland impacts at this site. The location description of the BPS is provided in Section 3.3.1, and a layout of the proposed facility is in Appendix 3-2.

Return Flow Pump Station

The RFPS will be at the existing Waukesha CWP. Current land use at the proposed RFPS consists of paved access roads, maintained turf, and industrial land, including the existing wastewater treatment facility. After construction, the RFPS and additional paved access road would partially replace maintained turf, existing paved access roads, and some trees onsite. The location of the RFPS is described in Section 3.3.1, and a preliminary layout of the proposed facility is shown in Appendix 3-3.

Return Flow Discharge Site

Current land use at the proposed RFDS consists of upland row crops, farmed wetland, and other existing wetlands. After construction, the facility and additional access roads would partially replace the farmed wetland onsite. Impacts to agricultural land are described in more detail in Section 4.3. Farmed wetlands onsite will continue to be farmed 5 or more years after construction of the Program. Within the next 10 years, the site is planned to be used for a naturally vegetated area onsite, which would include enhancement of the existing farmed wetlands. The location of the RFDS is provided in Section 3.3.1, and a preliminary layout of the proposed facility is shown in Appendix 3-4.

3.5.3 Federal, State, Local, and Tribal Lands Excluding Right-of-Way Impacts (Table 3)

Federal, State, Local, and Tribal Lands Excluding Right-of-Way Impacts (Table 3) will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.6 Coordination with Wisconsin Department of Transportation Right-of-Way

WisDOT traffic and access impacts, as well as mitigation methods, are discussed in Section 4.2.1. Coordination is occurring with WisDOT for requirements for work within WisDOT ROW and also to generate traffic detours where necessary to handle the diverted traffic during pipeline construction. Permanent impacts will be determined during the design phase and will generally be mitigated by replacement with new pavement, or other mitigation improvements yet to be determined.

3.7 Coordination on Impacts to Roadway Right-of-Way in Other Municipalities

Municipal roadway traffic and access impacts, as well as mitigation methods, are discussed in Section 4.2.1. Coordination is occurring with local municipalities for requirements for work within local municipal road ROW and also to generate detours where necessary to handle the diverted traffic during pipeline construction. Permanent impacts will be determined during the design phase and will generally be mitigated by replacement with new pavement, or other mitigation improvements yet to be determined.

3.8 Coordination with Railroad Right-of-Ways

3.8.1 Owners of the Railroad

The Program will require crossing three railroads. One railroad is owned by CN, and is approximately 480 feet west of the intersection of South West Avenue and West Sunset Drive. The second railroad is abandoned, and is approximately 390 feet north of the intersection of Chapman Drive and Sentry Drive. Both locations are within the City of Waukesha. The third railroad is also abandoned and is approximately 350 feet south of the intersection of Philip Drive and Sentry Drive. The railroad locations can be seen on the maps in Appendix 1-3.

3.8.2 Whether the Railroad is Active or Abandoned

The CN railroad is active and the abandoned railroads are inactive.

3.8.3 Whether the Owner of the Railroad Agrees to Corridor Sharing

Applicable railroad crossing permits will be obtained, and construction activities will be coordinated with CN.

3.9 Construction Impacts

During the planning phases of the Program, the proposed routes and workspace were carefully evaluated and adjusted when possible in areas of significant resources to minimize the Program's overall environmental footprint and reduce impacts to sensitive stream crossing locations and high-quality wetland areas. Approximately 97.4 percent of the pipeline alignment is within existing road ROWs. Using roadway ROWs results in lower overall environmental resource impact. Where impacts are not avoidable, a variety of methods, each with their appropriate uses, are available to minimize the duration of exposure and overall disturbance. The methods are summarized in the following subsections.

3.9.1 Proposed Facility Construction Sequence

Following PSC approval and receipt of necessary permits and easements, construction of the Program facilities is tentatively scheduled to begin May 2020 and conclude September 2022. Construction activities will follow all applicable seasonal threatened and endangered species restrictions. Additional environmental factors and coordination with stakeholders may affect construction timing.

Additional information on the pipeline construction schedule is included in Appendix 1-1.

3.9.2 Proposed Construction Methods

Construction will require several different activities at any given location. Construction equipment may include bulldozers, excavators, backhoes, cranes, pick-up trucks, dump trucks, skid steers, and other light-duty equipment.

Major construction activities will include clearing and marking of the construction area, temporary staging of materials in the road ROW, installation of erosion control best management practices (BMPs), construction of facilities, excavation and construction of pipeline, and site restoration. Standard precautions will be taken to identify and avoid disturbances to existing utilities. Construction techniques are expected to include open trench, HDD, and jack and bore techniques as described in Section 3.9.4. The exact construction techniques to be used near existing utilities will be determined during detailed design in coordination with the utility owner. Proper clearance distances from existing utilities will be maintained where applicable. Additional construction method information is provided in Section 3.9.4, and additional site restoration information is provided in Section 5.10.

3.9.3 Construction Disturbance Zone and Impacts Outside of the Right-of-Way

The construction disturbance zone will consist of areas within the existing road ROW, areas where related facilities are sited, and the RFDS. Approximately 97.4 percent of the pipeline disturbance zone is within existing road ROW. Construction disturbance zones outside of existing road ROW will consist of easements along the pipeline route, associated facilities, and the RFDS.

An approximately 2.4-acre easement outside of existing road ROW will be obtained for pipeline construction 1,330 feet southwest of the intersection of West Small Road and South Westridge Drive. This area is on the south side of the I-43 crossing between West Small Road north to the south side of the I-43 crossing.

An approximately 0.55-acre easement outside of the existing road ROW will be obtained for pipeline construction 300 feet south of the intersection of West Salentine Drive and South Calhoun Road.

Six easements totaling 4.3 acres will be obtained outside of existing road ROW east of the intersection of West Ryan Road and South 112th Street.

Construction impacts will occur at each of the facility locations listed in Section 3.5.2.

3.9.4 Special Construction Methods

The construction disturbance zone will consist of areas within the road ROW, staging and access areas that may be outside of the typical pipeline ROW, and areas where related facilities like pump stations, storage tanks, and discharge pipe and related pipeline flow control structures are sited. The typical pipeline construction will be maintained within the existing road ROW to the extent practicable. The pipeline alignment has been sited to minimize additional easement needs outside of the existing road ROW.

Prior to beginning construction activities or any disturbance, the construction boundaries will be clearly delineated. Sensitive resources such as wetlands, streams, and cultural resource boundaries will be clearly marked so that Program personnel know where these sensitive resources are and where specialized mitigation measures and techniques must be implemented in those areas.

Existing roads and highways would be used by construction crews to access workspaces along the pipeline routes and for delivery of materials and equipment. As work progresses, equipment would be moved across public roads that intersect workspaces. This would be done in accordance with applicable safety requirements, with roadway pavement impacts addressed through a pavement rehabilitation and reconstruction plan. Use of

access roads during the construction period would have an effect similar to other construction activities on adjacent land uses.

Agricultural Lands

Construction on agricultural land, that is not being transitioned to a new land use, will be carefully managed to minimize impacts to the productive capacity of the land after construction by using appropriate construction and restoration techniques. The typical sequence of construction steps is clearing and grubbing (digging up roots and stumps), grading, trenching, assembling and placing the pipe in the trench, backfilling, re-grading, cleanup, hydrostatic testing, and restoration. While most of the construction on agricultural land is expected to be open-trench construction, in some locations, HDD or jack and bore construction techniques may be used to minimize impacts to roads, driveways, or natural resources. If it becomes necessary to pump water from an open-trenched area, the pumping will comply with the existing drainage laws, local ordinances, and provisions of the Clean Water Act, and will occur in a way that avoids damage to adjacent agricultural lands.

The following types of BMPs would be used during construction in agricultural areas, as appropriate, to minimize impacts and maintain agricultural productivity:

- Segregating topsoil by stripping it from the construction work area and storing it near the trench in a way that prevents it from becoming intermixed with subsoil materials.
- Storing subsoil materials separately and removing larger rocks that may become exposed during excavation activities.
- Implementing soil erosion and sediment controls to minimize the transport of topsoil during disturbing conditions. These may include leaving crops such as small grains with limited biomass in place to minimize soil transport, minimizing the duration of disturbance, restoring the ROW to its preconstruction elevation, stabilizing exposed soils, and revegetating areas as soon as possible. Temporarily suspending construction during wet weather conditions to reduce the potential for soil compaction. Alternatively, corrective deep tillage measures may be used to restore the productivity of compacted soils.
- During backfilling, compact subsoil in the trench before placing the topsoil to prevent crowning.
- Removing construction debris to avoid it being dispersed into agricultural fields.
- If field drainage tiles are encountered during pipeline trench construction, they will be marked and damaged tiles repaired by replacing damaged drain tile pipes with the same size replacement pipe prior to trench backfilling.
- Minimizing interruptions to field access during construction and restoring access areas between roads and fields that are disturbed during construction.

Forest Lands

Construction will be managed to minimize adverse impacts to forested land. Prior to beginning forest clearing activities, the construction boundaries (for example, workspace limits) will be clearly delineated. The typical sequence of construction steps is similar to that described on agricultural lands. All wetland, stream, and cultural resource boundaries will be clearly marked prior to clearing so that all Program personnel and inspectors will know where these sensitive resources are located and where specialized mitigation measures and techniques must be implemented. Any trees that are to be saved shall be sufficiently marked (flagging, construction, and fencing) before clearing begins.

Erosion-control devices will be installed at all stream, wetland, and road crossings in forested areas before grading. The construction corridor will be cleared and graded to remove brush, trees, roots, and other

obstructions such as large rocks and stumps. In upland areas, stumps can be removed across the entire width of the construction ROW if required for pipeline safety reasons or for worker safety concerns. This work typically requires the use of a bulldozer with a flat blade and/or plow and other standard grading equipment. Trees and brush will be disposed of in accordance with local restrictions and/or applicable permit stipulations.

Rock construction entrances shall be installed where required before or in association with grading.

Low-impact tree clearing is the preferred method for clearing. This method incorporates a variety of approaches, techniques, and equipment to minimize site disturbance and to protect residual forests, wetlands, watercourses, soils, and cultural resources.

The generally accepted tenets of low-impact tree clearing include:

- Employing directional tree felling—both hand felling and mechanical felling.
- Selecting tree-clearing contractors that are experienced in low-impact tree clearing.
- Using a variety of tree-clearing equipment to minimize impacts, such as forwarders, feller bunchers (cut to length systems), cable and grapple skidders, high-flotation tires, portable bridges, and temporary culverts. At this time, portable bridges and temporary culverts are not anticipated, but will be included in the permitting process if expected as a construction technique. Equipment crossings of waterways will be restricted to bridges that are authorized under WDNR's permit required under Chapter 30 Wisconsin statutes. Equipment will be matched to specific site conditions.
- Maximizing use of upland portions of the existing cleared construction area for landing areas and using existing access ways.
- Removing all brush, cuttings, and tops from the construction area.

When pruning or side trimming is necessary, pruning cuts will be made to protect the health of the vegetation. This includes measures such as smooth cuts, and precutting large, heavy branches on the underside to prevent splitting or peeling of bark.

Timber cleared from the construction area may be stacked at the edge of the construction area, as requested by individual landowners and specified in landowner agreements. Where there is an agreement, the cut timber will be stacked in an already cleared upland area that will be accessible to the landowner without disturbing the restored areas. Timber will not be stacked in drainageways or left in wetlands.

Permanent conversion of forest to herbaceous cover is required over the pipeline for operation and maintenance of the pipeline. Long-term vegetation management will occur over the pipeline to allow access and prevent regeneration of tree and shrub cover that could damage the pipeline. Vegetation maintenance in forest areas could include herbicide/pesticide applications and mechanical methods such as cutting and mowing. Vegetation management will be performed in a way that minimizes disturbance to adjacent areas.

Surface Waters

Waterway crossings for the proposed pipelines may be accomplished using the following five distinct construction methods:

- Open trench
- HDD
- Jack and bore
- Dam and pump
- Flume

The specific construction method at a given location will be selected to achieve the most practical solution that minimizes impacts to waterways and wetlands. The majority of waterway crossing construction is expected to occur using HDD or jack and bore methods. Regardless of the method, disturbed areas will be restored and revegetated. Temporary bridges may be installed across waterways to allow the passage of construction equipment and materials. Temporary bridges are not planned at this time, but if they are selected for use, they will be placed with the lower temporary bridge elements above the ordinary high-water mark. Whenever possible, temporary bridges will be positioned to allow flows above the ordinary high-water mark to pass under the bridge before reaching the height of the low chord on the temporary bridge elements. Equipment crossings of waterways will be restricted to bridges that are authorized under WDNR's permit required under Chapter 30 Wisconsin statutes.

Horizontal Directional Drilling

This technique is useful for wide stream crossings, where navigation traffic is high, bottom sediments are contaminated, or there are sensitive habitats or cultural resources near the banks. Directional drilling minimizes the environmental effects of pipeline construction on a waterbody or waterway by going beneath its bed and avoiding direct disturbance of the bed and banks. Many of the potential concerns described for other methods of crossing waterways, including sedimentation and turbidity, habitat alteration, disrupting breeding and movement patterns, and the introduction of pollutants into the water column, do not occur.

The HDD method involves using a special drill rig to drill a gently curved borehole below the surface of the ground and the bed of the waterway. After it exits on the opposite side of the stream, the drilling machine pulls a long, pre-welded pipeline section back through the drilled hole. Temporary workspaces are needed on the entry side of the crossing for drilling equipment. A slant drill unit would be placed on one bank or edge of wetland, and a small-diameter pilot hole would be drilled under the stream or wetland. After the pilot hole has been completed, it would be enlarged by pulling a barrel reamer back and forth through the bore hole. Drilling mud would be continuously pumped into the hole to remove cuttings and maintain the integrity of the enlarged hole. After the hole has been reamed, a prefabricated pipeline section long enough for the crossing would be pulled through the hole by the drilling rig. During the crossing, drilling mud used to lubricate the drill pipe is stored away from the river in an earthen berm containment structure or fabricated containment tanks sized to accommodate the volume of mud necessary for the drill. Following completion of directional drilling, mud is disposed of in accordance with applicable state and local requirements.

During drilling, pressurized drilling mud may leak to the surface, or "frac-out." The likelihood of leaks can be reduced by monitoring mud pressure and drilling head location, inspecting the surface during the drill process, and by increasing the depth of the drill path below the bed of the river or wetland. In most cases, the volume of sediment resulting from seepage of drilling mud would be far less than the amount produced by a conventional open-cut crossing. If an unanticipated frac-out were to occur in an upland location, the drilling mud would be contained to the extent possible with standard erosion control measures such as silt fences and/or hay bales, then disposed of properly by removing and spreading over an upland area or hauled offsite to an approved location. If an in-stream frac-out occurred, the drilling would stop to develop an appropriate response. If proceeding with the HDD crossing would cause significant adverse impacts to waterbodies and fisheries resources, an alternative crossing method would be used. For a wetland frac-out, the slurry at the surface would be isolated using silt fence and/or hay bales, then removed by vacuum truck, machinery, or by hand, and disposed of in an acceptable upland location.

The minimum length of an HDD is a function of the pipe diameter and material, and often far exceeds the necessary crossing length if the area to be avoided is relatively small. The depth may be quite deep due to the minimum radius of curvature required to complete the drill. This could make the pipe difficult to reach if future maintenance is required. For this reason, the use of HDD will be carefully evaluated and used only where other crossing methods are not desirable.

Jack and Bore

This method, also called auger boring or pipe jacking, is used primarily to install pipe under a surface or shallow obstructions such as roads, railroads, and other existing utilities. It may also be used to install a pipeline under waterways. The use of this method to install a pipeline avoids most of the potential impacts that are a concern with underground pipeline crossings of waterways. With the jack and bore method, there is no disturbance or change to either the waterway's bed or water column. With this method, two construction pits are dug (a jacking pit and a receiving pit). A rotating boring machine is used to create a hole, starting from the jacking pit and ending in the receiving pit. A casing pipe is pushed into the hole following the boring machine, and then the water pipe is slid into the casing pipe. The void area between the casing pipe and the bored soils is filled with grout, and the area between the casing pipe and the water pipe is filled with pea gravel or sand. There is little potential for a frac-out condition occurring during jack and bore installation, because the bentonite drilling slurry is not pressurized. However, control of groundwater and the stability of the construction pits must be closely managed.

Open-Trench Crossing

For an open-trench crossing, a trench would be excavated in the stream using draglines or backhoes operating from one or both banks. Excavated material would be temporarily stockpiled in upland areas. Use of this method for stream crossings is expected to be limited to crossings of intermittent waterways with no flowing water at the time of construction. Restricting open trenching to periods of no flow eliminates the direct construction impacts to the stream's water column, avoiding the associated sedimentation of habitat for fish and aquatic invertebrates, water quality degradation, and reduced light for aquatic plants and algae. This dry construction method limits disturbance-related impacts during placement of the utility crossing.

Construction would be completed as quickly as possible to minimize waterway disruption, and would minimize the removal of shoreline vegetation above the ordinary high water mark. After waterway work is completed, the streambed would be restored to preconstruction conditions, including preconstruction contours, and the banks will be restored to preconstruction or stable conditions. Construction methods would comply with all applicable state rules and regulations, including WDNR Chapter 30 Wisconsin statutes and *Wisconsin Administrative Code* Chapter NR 345.

Dam and Pump Stream Crossing

This method is preferred for small streams that are sensitive to sediment loading but without concerns about sensitive species passage. It involves the use of pumps to bypass stream flow around the work area, then damming the stream on either side of the construction area using sand bags or other methods to minimize the addition of sediment to the stream. Energy dissipation devices would be used as necessary at the downstream pump discharge to prevent scouring of the stream bed and minimize sediment suspension. Once water is diverted from the construction area, trenching would occur as described above. Trenching, installation of the pipeline, restoration of the banks and ROW, and removal of the temporary dams would be completed following construction.

Flume Method

The flume method is suitable for small to intermediate streams with straight channels at the crossing area. It involves placing a large pipe section in a stream and aligning it parallel to the water flow. The stream would then be dammed with a diversion bulkhead to direct stream flow through the flumes. A similar bulkhead would be installed at the downstream end of the flumes to prevent backwash from entering the construction area. Energy dissipation devices would be installed as needed to prevent scouring at the discharge location. After the stream flow is diverted to the flume, a trench would be excavated under the flume in the exposed section of stream bed, a section of pipeline long enough to span the stream would be welded together and pulled beneath the flume. The flume would be removed after the installation of the pipeline. Backfilling and bank restoration would be completed as described for the open-trench method. Fluming, like the dam and pump method, creates a relatively dry area that allows construction to be conducted without significant displacement of sediments.

Wetlands

In areas where wetland impacts cannot be avoided, open-trench excavation, HDD, or jack and bore methods would generally be used. In addition, push/pull methods, or winter construction may be used for Program construction. Construction methods would be similar for wetlands as those described for waterway crossings.

The typical width of the workspace is often reduced through a wetland area to minimize impacts. Impacts will also be minimized by using matting in travel areas in wetland workspaces to prevent soil mixing. Additional temporary workspace may be required in the adjacent uplands.

Temporary erosion control devices would be installed at the base of cleared slopes leading to wetlands. If there is no slope, erosion control devices would be installed as necessary to prevent exposed soils from flowing off the ROW into the wetland or to prevent sediment from flowing from adjacent uplands into the wetlands.

During clearing, woody wetland vegetation would be cut at ground level and removed from the wetland, leaving the root systems intact. In most areas, stump and root removal would be limited to the area directly over the trench. Stumps from areas outside of the trench line would be removed, if necessary to provide a safe work surface.

Grading activities in wetlands would be limited to the areas directly over the trench line, except where topography requires additional grading for safety purposes. To facilitate revegetation of wetlands, topsoil would be stripped over the trench, except in areas where standing water, saturated, or frozen soils make it impracticable, where no topsoil layer is evident, or where the topsoil layer exceeds the depth of the trench. In areas that require topsoil segregation, topsoil and subsoil will be segregated during ditching and stockpiled separately. Topsoil will be removed to its actual depth or to a maximum depth of 12 inches, and will not be used for padding, backfill, or trench breakers. This work typically requires the use of a tracked excavator.

Staging areas and extra workspace would be needed on both sides of larger wetlands. These areas would be at least 50 feet away from the wetland boundaries where topographic conditions permit, and would be limited to the minimum area needed for assembling the pipeline. Storage of hazardous materials, chemicals, fuels, and lubricating oils would generally be prohibited within 100 feet of wetland boundaries.

If the open-trench crossing method is not practical because of saturation or standing water, either a push/pull method or winter construction might be used. Use of the push/pull method is generally limited to large wetlands with standing water and/or saturated soils that have adequate access for pipeline assembly and equipment operation on either side of the wetland. If this method is used, a long section of pipeline would be assembled on an upland area of the ROW adjacent to the wetland. Usually this requires use of extra temporary workspace

adjacent to the ROW. The trench would be dug by a backhoe supported on timber mats. The prefabricated section of pipeline would then be floated across the wetland. When the pipeline is in position, the floats would be removed and the pipeline would sink into position. The trench would then be backfilled and the original contours would be restored by a backhoe working from construction mats.

With winter construction, the pipe would be installed in wetlands under frozen conditions using methods like conventional upland construction. Because equipment is supported by frozen soil and ice, temporary mats would not be required. The success of winter construction depends on prolonged periods of subfreezing temperatures, which produce sufficient frost depth. Because these conditions are not always predictable, the ability to use the winter construction method is generally not assured.

Ice roads may also be used to decrease impacts. Ice roads are created by plowing the snow from the wetland surface, and driving sequentially heavier pieces of equipment across the wetland surface to facilitate the penetration of the frost deeper in the ground, creating a stable working surface.

In areas where invasive species such as reed canary grass are present, construction mitigation measures will be used to protect unaffected areas from its introduction.

Temporarily disturbed wetlands will be restored by replacing the soil in kind and restoring the approximate former grades. Wetlands in roadway ROWs that had previously been maintained by mowing will be revegetated using a standard WisDOT seed mix. Wetlands that were not in artificially constructed and maintained features, such as roadside ditches, will be reseeded using a mixture of native plants.

3.9.5 Construction Methods other than Open-Trench Construction

Section 3.9.4 lists construction methods other than open-trench construction that are being considered or part of the planned construction.

HDD, as well as jack and bore techniques, may also be used around sensitive utilities, such as larger-diameter gas mains or other sensitive infrastructure, construction of which would be done in coordination with the utility owner.

3.10 Off-Right-of-Way Access Roads

3.10.1 Areas where Off-Right-of-Way Access may be Required

The use of permanent access roads outside of an existing ROW will be avoided where possible. The design of the pipeline appurtenances will be laid out to avoid placement outside of existing ROW (or in new easements) to reduce the need for frequent access within new easement areas and to reduce the need for permanent access roads.

Despite these efforts, the Program may require permanent off-ROW access in several locations that will require new easements or property purchases. One location is approximately 1,330 feet southwest of the intersection of West Small Road and South Westridge Drive. Another easement location is 300 feet south of the intersection of West Salentine Drive and South Calhoun Road. The proposed RFDS Facilities and outfall at the RFDS may also require permanent off-ROW access.

The other easements being acquired for the Program along West Ryan Road are immediately adjacent to Ryan Road; consequently, a permanent access road within the easements is not anticipated.

The need for permanent off-ROW access routes will be determined based on negotiations with local landowners and/or contractor requirements. The addition of off-ROW access roads will be reviewed for impacts to environmental and cultural resources.

Areas used for temporary access roads outside of existing road ROW are expected to be restored to the prior land use conditions, except where pipeline maintenance needs require vegetation management.

Additional information on temporary and permanent off-ROW access roads will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.10.2 Access Road Description

The potential permanent access road on the south side of the I-43 crossing where an easement is being obtained for the pipeline between West Small Road north to the south side of the I-43 crossing could be approximately 2,230 feet long, 12 feet wide, and consist of natural vegetation (see Section 5.10).

The potential permanent access road at the easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road could be approximately 2,010 feet long and 12 feet wide, and consist of natural vegetation (see Section 5.10).

The potential permanent access road at the proposed RFDS could be approximately 1,200 feet long, with a 4-foot-high embankment with a 12-foot-high top width. The total embankment width could be approximately 36 feet. The roadway would consist of either gravel or bare ground. This access road could originate from South 60th Street near the Root River and run along the north side of the Root River.

Additional information on temporary and permanent off-ROW access roads will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.10.3 Necessity of Off-Right-of-Way Access Roads

The potential permanent access roads on easements south of the I-43 crossing and 300 feet south of the intersection of West Salentine Drive and South Calhoun Road are necessary to ensure routine and emergency access to the pipeline. These portions of the pipeline run along the edge of agricultural fields without adjacent existing ROWs to access the pipeline.

The potential permanent access road at the proposed RFDS is necessary to ensure routine and emergency access to the outfall and USGS gage structure.

Additional information on temporary and permanent off-ROW access roads will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.10.4 Impacts to Land Cover from Off-Right-of-Way Access Roads

The potential access road on the easement between West Small Road north to the south side of I-43 will impact approximately 0.61 acre of agricultural and forested land.

The potential access road on the easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road will impact approximately 0.55 acre of agricultural and forested land.

The potential access road at the proposed RFDS will impact approximately 0.99 acre of farmed wetland.

Additional information on temporary and permanent off-ROW access roads, including those at the Program facilities (see Section 3.3), will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

3.10.5 Post-Construction Off-Right-of-Way Access Road Modifications

There are no plans after construction to modify the potential off-ROW access roads on the south side of the I-43 crossing, at the easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road, or at the RFDS.

Additional information on temporary and permanent off-ROW access roads will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

SECTION 4 Community Impacts

4.1 Communication with Potentially Affected Public

Communication with the public has been occurring for this Program for many years. A summary of communications and opportunities for the public to provide input is included in the following subsections for both public communication prior to the Compact Council approval and since that time.

4.1.1 Public Communication Efforts

4.1.1.1 Public Communication Prior to Compact Council Approval

The City of Waukesha, WDNR, and the Compact Council provided communication opportunities for the Program prior to the Compact Council approval.

City of Waukesha Communications

The public has been kept informed of this Program through multiple City-led, WDNR-led, and Compact Council-led efforts over the years. The Lake Michigan Diversion Application provided a summary of public meetings about the Program that had occurred up to that point (CH2M HILL 2013). The City of Waukesha has continued to inform the public about this Program since this time, some of which is described for 2017 Program communications in Section 4.1.1.2.

Waukesha also gave many press interviews and issued many press releases and opinion columns for publication in Wisconsin and other Great Lakes states and provinces during the review process, and is continuing to do so in Southeastern Wisconsin during the implementation process. Extensive samples of media stories, opinion columns, and press releases can be found at the following links:

- http://www.waukesha-water.com/pa.html (Accessed October 7, 2017)
- http://www.waukesha-water.com/pr.html (Accessed October 7, 2017)
- http://greatwateralliance.com/press-room (Accessed October 7, 2017)

WDNR Communications

WDNR conducted two sets of public hearings and two public comment periods prior to submitting the Lake Michigan Diversion Application to the Compact Council in January 2016. WDNR held three public scoping meetings on July 26, 27, and 28 in 2011 in Pewaukee, Wauwatosa, and Sturtevant. WDNR received 102 public scoping comments. WDNR prepared a draft EIS and invited the public to comment on it between June 25 and August 28, 2015. WDNR received 3,634 written comments from individuals and groups. Additionally, comments were received at three public hearings on August 17 and 18, 2015, in Waukesha, Milwaukee, and Racine. Of the 404 people who registered at the hearings, 128 provided oral testimony (WDNR 2016a).

Compact Council

The Compact Council conducted additional public communication on the Program. The Compact Council received the Lake Michigan Diversion Application on January 7, 2016, and held a public comment period from January 12, 2016, to March 14, 2016. The Compact Council also notified the U.S. Tribes and Canadian First Nations of the diversion application and requested their comments (Compact Council 2016). A public meeting and hearing was held on February 18, 2016. In all, over 11,000 public comments were received.

The Compact Council created a website (www.waukeshadiversion.org) to keep the public informed of meetings, documents received, and findings of the Compact Council. The website served as a repository of all information received by the Compact Council regarding the diversion application. In September 2017, the www.waukeshadiversion.org website was moved to the Regional Body website:

- http://www.glslregionalbody.org/Resolutions.aspx#Waukesha (Accessed September 23, 2017)

The review process, opportunities for the public to comment on the Program, supporting documents, and the Final Decision of the Compact Council are all also available at Regional Body website.

4.1.1.2 City of Waukesha Public Communication in 2017

The Program has solicited public feedback on the Program at a series of open houses in 2017. These open houses were advertised through various media, including the press releases included in Appendix 4.

Additional open houses will likely be held for the Milwaukee supply route portion of the Program, to keep the public informed, and to solicit feedback as the Program progresses.

4.1.1.3 Future Communication with the Public

The City of Waukesha maintains a website to continue to keep the public informed. This website has been used in 2017 and will continue to be used as the Program progresses, along with other means of communication. All open houses will be listed on the Program website. The website is available at the following address:

- http://greatwateralliance.com/ (Accessed September 23, 2017)

4.1.2 Public Information Meetings

Public information meetings in 2017 are described in Section 4.1.1.2. Additional public information meetings will occur as the Program progresses.

4.1.3 Public Outreach Materials

Public information meetings in 2017 are described in Section 4.1.1.2. Additional materials will be provided if requested by WDNR.

4.1.4 Electronic Copies of Written Public Comments

WDNR has previously collected over 3,000 comments on the Program prior to the Compact Council approval.

Electronic copies of over 11,000 comments received during the review conducted by the Compact Council are available at their website:

- http://www.glslregionalbody.org/Resolutions.aspx#Waukesha (Accessed September 23, 2017)

The public has continued to have the opportunity to provide public comment at the public meetings as listed in Section 4.1.1. The public can also continue to comment on the Program at the Program's website:

- http://greatwateralliance.com/contact-us (Accessed September 23, 2017)

4.2 Construction Impacts to Property Owners

Construction impacts to those affected by the Program are described in the following subsections. The City of Waukesha has established a website to keep the public informed about the Program and will work with local municipalities to keep local officials and the public informed about the Program. Expected impacts to property owners along the pipeline route and methods to mitigate these impacts are described in the following subsections.

4.2.1 Method to Mitigate Property Owner Inconveniences

Direct Program impacts to residential and commercial landowners may include temporary localized noise increases, construction equipment diesel emissions, disruption to property access, removal of vegetation, and soil disturbance which may lead to fugitive dust, soil tracking, soil compaction, and/or soil erosion. These potential impacts will be temporary, as construction will move sequentially along the proposed route. Pipeline construction duration is expected to be approximately 60 feet per day in urban areas and 80 feet per day in rural areas.

Indirect Program impacts to residential and commercial property owners may include additional road congestion and/or disruptions to normal traffic flow patterns. The potential for permanent visual impacts will be limited to areas where aboveground facilities are sited; the majority of the Program will be below the ground surface.

Overall Program impacts will be minimized as much as practicable. Access impacts will be minimized by coordinating the timing of disruptions with local officials. Detours and other traffic control provisions will be made to permit the flow of traffic and to comply with all applicable federal, state, and local transportation departments and authorities. Access to all residences, businesses, and traffic routes will be maintained throughout the duration of the Program. Noise impacts will be limited to those near the Program, and will further be mitigated by limiting working hours of construction.

Vegetation along the pipeline will be restored as described in Section 5.10. A Stormwater Pollution Prevention Plan will be implemented to address stormwater management and erosion and sediment control issues. No significant erosion, tracking, or fugitive dust issues are expected. Indirect impacts, including road congestion, will be monitored and detours adjusted as necessary. Construction equipment delivery routes and timing will be coordinated to minimize the potential for traffic disruption. Permanent aesthetic impacts will be limited to the proposed above-ground facilities.

Impacts to residential and commercial properties associated with noise, access, and soil disturbances will primarily be temporary and can be mitigated with construction site BMPs as described above. Potential impacts will also be minimized by conforming to site safety measures and communicating with residential and commercial landowners regarding the construction schedule and planned activities.

There is one bike trail, owned and maintained by the City of Muskego, that is parallel or overlapping the ROW along the Program return flow pipeline route. The trail and pipeline alignments coincide on Durham Drive, which changes names to Moorland Road and continues for a total length of approximately 19,553 feet. The bike trail and Program return flow pipeline route cross the roadway multiple times, resulting in them being on opposite sides of the road in some areas in and overlapping in others.

The bike trail could be affected by pipeline construction or disturbances where the Program return flow pipeline route is within 25 feet. This distance would account for any disturbance of grade, as well as any construction equipment necessary. Where the bike path and Program return flow pipeline route overlap, the bike path would be removed and replaced in-kind. The Program return flow pipeline alignment is less than 25 feet away from the bike path for approximately 12,350 feet.

4.2.2 Construction Schedule Communication to Property Owners

Construction activities will take place sequentially along the proposed route and are Programed to be completed by September of 2022. Some construction along the pipeline will be completed prior to this time, and some construction could be extended after this date, depending on circumstances encountered at the time of the Program.

Property owners will be notified in advance of construction activities via written notice and kept informed of the Program schedule in their area. The Program website (http://www.greatwateralliance.com, accessed September 30, 2017) will be available to the public with Program information and schedule updates. Potential construction methods and sequence are described in Section 3.9.

4.3 Potential Impacts to Agricultural Lands

4.3.1 Type of Farming

Agricultural lands were initially identified using aerial imagery during the Agricultural Resources Desktop Review (see Section 2.4.1.3). The Program may potentially affect row crops located near the I-43 crossing in a proposed new easement 1,330 feet southwest of the intersection of West Small Road and South Westridge Drive, in proposed easements east of the intersection of 112th Street and Ryan Road, and in an easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road. The proposed BPS Facility at the intersection of South Racine Avenue and South Swartz Road in Minooka Park is currently used for row crop farming. The RFDS at the intersection of South 60th Street and West Oakwood Road will impact row crop farming.

4.3.2 Agricultural Practices Affected by the Program

Potential adverse impacts to agricultural lands could include mixing of topsoil and subsoil, soil erosion and runoff, reduced productivity, damages to drain tile, crop loss, and loss of farming acreage.

During construction, easements east of the intersection of 112th Street and Ryan Road may experience crop loss and loss of acreage. Construction may also temporarily impact drain tiles. Drain tiles have not been identified in the ROW area, but if affected, they will be replaced with similarly sized drain pipes.

Permanent loss of acreage will occur in the easement near the I-43 crossing 1,330 feet southwest of the intersection of West Small Road and South Westridge Drive, and the easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road. Row crop and forested land would be converted for pipeline access along these easements. These potential access routes are described in Section 3.10.

Permanent loss of acreage will occur at the proposed BPS Facility site at the intersection of South Racine Avenue and South Swartz Road in Minooka Park where facilities are constructed.

The Program will also result in loss of acreage at the RFDS where the proposed RFCB and outfall structures will be constructed.

4.3.3 Farmland Enrolled in Preservation Programs

The Program does not intersect agricultural lands enrolled in Farmland Preservation Programs.

4.3.4 Methods to Minimize and Mitigate Impacts to Agricultural Lands

Impacts to agricultural lands described in Section 4.3.2 will be minimized and mitigated as much as practicable. Construction site BMPs for agricultural lands will be implemented to minimize impacts and maintain agricultural productivity (see Section 3.9.4). Agricultural lands will be revegetated using the methods provided in Section 5.10, or as requested by the landowner.

4.3.5 DATCP Agricultural Impact Statement Requirements

Wisconsin DATCP AISs are required under Wisconsin Statute 32.035(4)(a) "if the project involves the actual or potential exercise of the powers of eminent domain and if any interest in more than 5 acres of any farm operation may be taken. The department may prepare an AIS on a project located entirely within the boundaries of a city, village, or town or involving any interest in 5 or fewer acres of any farm operation if the condemnation would have a significant effect on any farm operation as a whole."

An AIS will be required as the City of Waukesha has authority to exercise eminent domain, and the Program will impact greater than 5 acres of farm operations. Obtaining the areas currently farmed for use in pipeline easements and facility sites described in Section 4.3 are not expected at this time to require the use of eminent domain.

SECTION 5 Natural Resource Impacts

5.1 Forest Land Impacts

No significant tracts of forested area are anticipated to be impacted by the Program. Trees will be removed in the Program footprint along existing road ROW. Areas where trees are present in the proposed Program construction corridor can be seen in the Program aerial mapping provided in Appendix 1-3.

Some tree removal will be required where pipeline easements are obtained, although the predominant land use in the easements is agricultural row crops. Some tree removal will be required for the pipeline easement near the I-43 crossing located on the easement 1,330 feet southwest of the intersection of West Small Road and South Westridge Drive, easements east of the intersection of West Ryan Road and 112th Street, and the easement 300 feet south of the intersection of West Salentine Drive and South Calhoun Road.

Some tree removal will be required at the proposed facility sites, including the WSPS, BPS, RFPS, and RFDS. These sites are predominately not forested, though some tree removal will be required. Aerial maps for the Program facilities are provided in Appendices 3-1 through 3-4.

Additional forested land impacts are not anticipated.

5.2 Conservation Easement Impacts

Three conservation easements were identified near the Program site using the National Conservation Easement Database. Results for the search are provided in Appendix 5-1. No impacts to conservation easements are anticipated.

The Scattered Wildlife conservation easement is approximately 2,170 feet from the Program route and therefore far enough away to not be impacted by construction.

The Big Muskego Lake Wildlife Area conservation easement is approximately 690 feet from the Program route and therefore far enough away to not be impacted by construction.

The Big Muskego Lake Wildlife Area 9 conservation easement is approximately 2,415 feet away from the Program route and therefore far enough away to not be impacted by construction.

5.3 Program Facilities in Flood-Prone Areas

5.3.1 Facilities other than at the RFDS

No facilities will be in any flood-sensitive areas, as defined by FEMA Flood Insurance Rate Maps. Pipeline appurtenances will be outside of flood-sensitive areas to the extent practicable. If some appurtenances are in flood-sensitive areas, they will be designed to consider flooding conditions. HDD pipeline construction techniques will often be used in flood-sensitive areas around tributaries or rivers to minimize work in floodplains or floodways.

5.3.2 Facilities at the Return Flow Discharge Site

No flood-sensitive buildings will be in the floodplain at the RFDS. The only building that could potentially be in the floodplain is a small shed that is planned for a USGS flow-monitoring gage that will measure flow in the Root River. The size of the structure is expected to be less than 100 square feet. Reaeration of the effluent prior to discharge

from restored wetlands could be required. If the USGS gage or the reaeration structure are positioned in the floodplain, the equipment could be protected from the base flood elevation (100-year return period flood).

No other equipment is planned to be in the floodplain at this time. If it becomes necessary to locate additional equipment in the floodplain, the equipment will be specified to be resistant to flooding conditions.

Return flow outfall pipes to the river will be in the floodplain by nature of their need to discharge to the river. Other conveyance pipes, channels, restored wetlands, or constructed wetlands could be located in the floodplains and would consider the impacts of flooding in their design.

If passive recreational features are included in the final RFDS design, their location in the floodplain will be considered in the detailed design process. No significant change to the floodplain would be expected with passive recreation features located at the site. A list of permits likely to be required for the Program, including those related to floodplains is included in Section 1.9.4.

Based upon analysis to date, no floodplain elevation increase is expected upstream of the RFDS.

5.4 Wetlands

5.4.1 Number of Wetland Crossings

Proposed wetland crossing locations will be determined upon final design. Preliminary potential wetland crossing locations are depicted on the maps in Appendix 1-3. Wetland and waterway impact tables for WDNR requirements in Section 6 are included in Appendix 6.

5.4.2 Special Natural Interest and High-Quality Wetlands Potentially Impacted by the Program

Wetlands within the Program area may have a direct hydrologic connection to Lake Michigan. Impacts to wetland habitat used by state or federally designated threatened or endangered species could also occur. Both of these are a special natural resource according to *Wisconsin Administrative Code* Chapter NR 103.04. Thus, the Program may impact wetlands of special natural interest.

The wetland field delineation reports will be provided with a future PSC application submittal and WDNR wetland and waterway permit application and for WDNR waterway and wetland permitting. Wetlands delineated thus far have had a high abundance of reed canary grass (*Phalaris arundinacea*) and non-native cattails (*Typha spp.*). It is not anticipated that the pipeline route would intersect any high-quality wetlands.

5.4.3 Impacts to Wetlands from Open Trenching

Proposed wetland crossing locations will be determined based upon final design. Preliminary potential wetland crossing locations and construction techniques to minimize impacts are depicted on the maps in Appendix 1-3. Wetland impact tables will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR. Wetland and waterway impact tables, which are conservatively estimated at this time, are included in Appendix 6.

5.4.4 Methods to Avoid, Minimize, and Mitigate Wetland Impacts

Specific construction methods at a given location will be selected to achieve a practicable solution that avoids and minimizes impacts to wetlands. Wetland crossing methods, impact avoidance, and mitigation are described in Section 3.9.4. Compensatory mitigation will be completed as required by WDNR and USACE. The current preferred method of compensatory mitigation for the Program is the purchase of mitigation credits from an approved mitigation bank. Coordination with WDNR and USACE will take place during the permit process to meet permit and mitigation requirements. Potential permits for the Program are provided in Table 1-2.

5.5 Waterbodies/Waterways

5.5.1 Number of Waterway Crossings

Proposed waterway crossing locations will be determined upon final design. Preliminary potential waterway crossings are depicted in Appendix 1-3. Navigability determinations of some of the smaller potential waterways are still being determined and are conservatively shown in the waterway crossings in Appendix 1-3. HDD and jack and bore locations shown in Appendix 1-3 and the resulting minimization of waterway impacts contained in Appendix 6 are preliminary and will be refined during the detailed design process. Waterway impact tables will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR. Wetland and waterway impact tables for WDNR requirements in Section 6 are included in Appendix 6.

5.5.2 Locations with Construction Below the Ordinary High Watermark

Proposed construction below the ordinary high watermark of waterways will be determined based upon the final design.

The RFDS will have one or more outfalls to the Root River, which will be below the ordinary high watermark.

Waterway crossings and preliminary potential construction techniques to minimize waterway impacts are depicted on the maps Appendix 1-3.

5.5.3 Construction Methods at Waterway Crossings

Waterway crossings for the proposed pipelines may be accomplished using construction methods, including open trench, HDD, jack and bore, dam and pump, and flume. Specific construction methods at a given location will be selected to achieve the most practicable solution that minimizes impacts to waterways. Construction at waterway crossings will typically use either HDD or jack and bore methods. Waterway construction methods are described in Section 3.9.4 with preliminary potential construction techniques shown on the maps in Appendix 1-3. Navigability determinations of some of the smaller potential waterways are still being determined and are conservatively shown in the waterway crossings in Appendix 1-3. HDD and jack and bore locations shown in Appendix 1-3 and the resulting minimization of waterway impacts contained in Appendix 6 are preliminary and will be refined during the detailed design process.

5.5.4 Methods to Avoid, Minimize, and Mitigate Waterway Crossing Impacts

Specific construction methods at a given location will be selected to achieve the most practicable solution that minimizes impacts to waterways. Waterway crossing methods and impact avoidance are described in Section 3.9.4.

Compensatory mitigation will be completed as required by WDNR and USACE. The current preferred method of compensatory mitigation for the Program is the purchase of mitigation credits from an approved mitigation bank. Coordination with WDNR and USACE will take place to meet permit and mitigation requirements. Expected permits for the Program are provided in Table 1-2.

5.5.5 Waterways with Special Classifications

5.5.5.1 Outstanding or Exceptional Resource Waters

The Program does not cross any outstanding or exceptional resource waters.

5.5.5.2 Trout Streams

The Program does not cross any trout streams.

5.5.5.3 Wild or Scenic Rivers

The Program does not cross any wild or scenic rivers.

5.6 Construction Methods through Wetlands and Waterways

5.6.1 Open-Trench Construction Method Description

Open-trench crossing methods are described in Section 3.9.4.

5.6.2 Jack and Bore and Horizontal Directional Drilling

5.6.2.1 Locations of Jack and Bore and Horizontal Directional Drilling

Final locations for jack and bore as well as HDD construction techniques will be determined during detailed design. Preliminary potential jack and bore as well as HDD locations are shown on the maps in Appendix 1-3.

Navigability determinations of some of the smaller potential waterways are still being determined and are conservatively shown in the wetlands and waterways crossings in Appendix 1-3. HDD as well as jack and bore locations shown in Appendix 1-3 and the resulting minimization of wetland and waterway impacts contained in Appendix 6 are preliminary and will be refined during the detailed design process. The detailed design process will result in refinement of the impacts listed in Appendix 6.

5.6.2.2 Purpose for Jack and Bore and Horizontal Directional Drilling

Jack and bore as well as HDD construction methods will be implemented to minimize impacts to waterways and wetlands. These construction techniques may also be used for major roadways and at railroad crossings. As detailed design progresses, there may also be instances where these construction techniques are used to avoid or minimize impacts to existing utilities. Specific construction methods at a given location will be selected to achieve the most practicable solution that minimizes impacts.

5.6.2.3 Description of Jack and Bore and Horizontal Directional Drilling

Descriptions of jack and bore as well as HDD construction methods are provided in Section 3.9.4.

5.6.2.4 Temporary Construction Needs for Jack and Bore and Horizontal Directional Drilling

Temporary construction needs for jack and bore as well as HDD methods are provided in Section 3.9.4.

5.7 Rare Species and Natural Communities

5.7.1 Communication with WDNR and USFWS

Representatives from WDNR and USFWS have been contacted to discuss the Program. WDNR representatives attended a construction permitting workshop (see Appendix 5-2). USFWS representatives were contacted to discuss the Program in September 2017. Formal consultation with USFWS for the Program is planned in the future.

Endangered resource reviews conducted for the Program are summarized in Section 2.4.1.4 and are provided as confidential information in Appendix 2-10.

5.7.2 Compliance with WDNR and USFWS Direction

Additional WDNR and USFWS requests have not been made at this time. Requests by WDNR and USFWS will be addressed as necessary.

5.7.3 Document Compliance with WDNR and USFWS Direction

5.7.3.1 WDNR Required Follow-Up Actions

Rare species and natural community avoidance and impact mitigation measures are provided as confidential information in Appendix 2-10. Required avoidance and impact mitigation measures will be taken. Recommended measures and any additional avoidance and impact mitigation measures will be evaluated in coordination with WDNR.

5.7.3.2 USFWS Required Follow-Up Actions

Rare species and natural community avoidance and impact mitigation measures are provided as confidential information in Appendix 2-10. Additional avoidance and impact mitigation measures will be evaluated in coordination with USFWS.

5.8 Invasive Species (Uplands and Wetlands)

5.8.1 Invasive Species Observations

TRC Companies, Inc. (TRC) began biological surveys along the Program corridor in September 2017. Staff documented *Wisconsin Administrative Code* Chapter NR 40 invasive species as a part of this study. Prohibited species (no person may transport, possess, transfer or introduce a prohibited invasive species; control is required), as well as restricted species (no person may transport, transfer or introduce a restricted invasive species; control is encouraged) were observed. Invasive species were prevalent throughout much of the Program corridor. Mitigation methods to avoid the spread of invasive species are provided in Section 5.8.3.

The following Restricted species were observed:

- Reed canary grass (*Phalaris arundinacea*)
- Glossy buckthorn (*Frangula alnus*)
- Common buckthorn (*Rhamnus cathartica*)
- European bush honeysuckle (*Lonicera x bella*)
- Common teasel (*Dipsacus fullonum*)
- Cut-leaved teasel (*Dipsacus laciniatus*)
- Tree-of-heaven (*Ailanthus altissima*)
- Common reed (*Phragmites australis*)
- Canada thistle (*Cirsium arvense*)
- Moneywort (*Lysimachia nummularia*)
- Purple loosestrife (*Lythrum salicaria*)
- White mulberry (*Morus alba*)
- Wild parsnip (*Pastinaca sativa*)
- Narrow-leaf and Hybrid cattail (*Typha angustifolia* and *Typha x glauca*)
- Garlic mustard (*Alliaria petiolata*)
- Crown vetch (*Coronilla varia*)
- Multiflora rose (*Rosa multiflora*)

Additionally, disease-causing organisms may be present along the Program route, including the following:

- Emerald ash borer (*Agrilus planipennis*)
- Asian longhorned beetle (*Anoplophora glabripennis*)
- Gypsy moth (*Lymantria dispar*)
- Jumping worm (*Amynthas* sp.)
- Heterobasidion root disease
- Oak wilt

5.8.2 Locations Dominated by Invasive Species

Invasive species are known to be prevalent throughout most of the Program route. Known dominant invasive species are listed in Section 5.8.1.

5.8.3 Mitigation Methods to Avoid the Spread of Invasive Species

BMPs will be implemented to minimize the introduction or spread of invasive species during construction and revegetation. BMPs include washing, steam cleaning, and disinfecting equipment prior to and upon completion of construction. Invasive species precautions will also be taken during re-vegetation of disturbed areas, as described in Section 5.10.

During the operation phase, multiple barriers would prevent the spread of invasive species through the pipeline. The water supply pipeline carries fully treated drinking water. Drinking water treatment includes filters and disinfection procedures to remove and inactivate viruses. This level of treatment would not allow transfer of invasive species through the water supply pipeline and into the City of Waukesha water distribution system. Once the water is distributed in pipelines, an ongoing disinfectant residual would be maintained, as required, to prevent microbial growth in the pipelines (WDNR 2016a).

Once water is used and collected in the sanitary sewer collection system, the Waukesha CWP would provide wastewater treatment before the water was discharged to the Fox River or via the return flow pipeline to the Root River. The CWP is an advanced wastewater treatment facility with settling and biological treatment systems, dual media sand filters, and ultraviolet light disinfection designed to meet WPDES requirements. Consequently, there would be no opportunities for invasive species or viral hemorrhagic septicemia to be introduced to the Lake Michigan basin from the return flow discharge (WDNR 2016a).

5.9 Archaeological and Historical Resources

5.9.1 Wisconsin Historic Preservation Database Search Results

Wisconsin Historical Preservation Database search results are provided in Appendix 2-8.

5.9.2 Potential Affects upon Archaeological Resources and Methods to Reduce Potential Affects

Potential affects to archaeological resources include alteration or disturbance of culturally significant sites overlapping or close to the Program. Archaeological resource reviews are provided in Appendix 2-8. A summary of these resource reports is provided in Section 2.4.1.2. The Program route is intended to avoid culturally significant sites.

Phase 1 cultural resource surveys along the Program corridors conducted by TRC began in September 2017. An additional Phase 1 cultural resource survey of the RFDS was conducted by TRC in October 2017. Results of these surveys will be incorporated into the Program plan to avoid, minimize, and mitigate impacts to archaeological sites.

5.10 Restoration of Disturbed Areas

5.10.1 Proposed Revegetation

Vegetative disturbances along the pipeline route will be temporary in nature. Specific restoration activities will be based upon site-specific and landowner needs, as well as preconstruction vegetative, soil, and hydrologic regime conditions. Sites will be restored in accordance with all applicable requirements and permit conditions, including the WDNR general permit for construction site erosion control (WPDES Permit No. WI-S067831-5 [WDNR 2016c]).

Typical revegetation activities may include grading, replacement of topsoil, seeding, planting, and mulching. Over pipelines, site topography will be graded to preconstruction conditions using proper segregated soil replacement.

Facility sites will be graded to their final topography prior to revegetation. Construction vehicle rutting greater than 6 inches deep will be repaired. Site restoration and revegetation will be completed as soon as practicable upon completion of construction activities and consistent with erosion control requirements. Temporary erosion control measures will be used throughout construction and will be removed upon final stabilization.

Because much of the construction will be within existing road ROW, restoration activities will be consistent with requirements of local municipalities and will follow either WDNR and/or WisDOT Standard Specifications. Examples include WisDOT Standard Specifications for Highway and Structure Construction Section 625 "Topsoil and Salvaged Topsoil," Section 627 "Mulching," Section 630 "Seeding," and Section 632 "Furnishing and Planting Plant Materials." Active or rotated agricultural sites will not be seeded unless requested by the landowner.

In wetland areas, topography, soils, and vegetation will be restored. Over pipelines, site topography will be graded to preconstruction conditions using proper segregated soil replacement. Facility sites will be graded to their final topography prior to revegetation. Native seed mixes will be used to revegetate wetland areas. Temporary and permanent erosion control measures, including straw bales, silt fence, timber matting, and other materials will be used as necessary throughout construction. Upon final stabilization, all temporary erosion control measures will be removed. Planting of trees or shrubs post-construction will be made consistent with the landscaping plan and local municipality requirements. See Section 5.10.4 for additional information on landscaping.

At HDD crossing locations, wetlands will be monitored for signs of inadvertent return of drilling lubricant, or "frac-out." Occurrences will be promptly addressed. For a wetland frac-out, the slurry at the surface would be isolated using silt fence and/or hay bales, then removed by vacuum truck, machinery, or by hand, and disposed of in an acceptable upland location.

In areas dominated by invasive species, or where invasive species are prevalent close to the disturbed area, vegetative restoration will be limited to seeding with a cover crop.

A permanent approximately 10- to 15-foot width above the pipeline will be maintained clear of woody vegetation to facilitate periodic inspections and emergency pipeline access. The width will be approximately 10 feet for single pipeline areas and approximately 15 feet for colocated pipeline areas. Woody vegetation will be allowed to reseed naturally within the easement outside of these maintained areas. Within the approximately 10- to 15-foot-wide portion, woody vegetation will be cut or removed as needed.

5.10.2 Vegetation Monitoring Criteria

Vegetative monitoring will take place during the growing season until vegetative cover has been established with a density of at least 70 percent cover, as required by the WDNR general permit for construction site erosion control (WPDES Permit No. WI-S067831-5) conditions. Areas will be reseeded as necessary to meet this requirement.

5.10.3 Invasive Species Monitoring

Revegetated areas will be monitored for invasive species through final stabilization or as stipulated in permit requirements. Actions will be taken to control and minimize the spread of invasive species where they occur within revegetated areas.

5.10.4 Potential Landscaping

Landscaping at the proposed facilities will conform to the surrounding area and will comply with local and municipal guidelines. Native species will be used where possible.

SECTION 6 WDNR Permits and Approvals for Impacts to Waterways and Wetlands

6.1 WDNR Tables for Wetlands and Waterways

6.1.1 WDNR Table 1 and WDNR Table 2 for the Program

WDNR-requested information for wetlands and waterways crossings of the Program is included in WDNR Table 1 and WDNR Table 2, contained in Appendix 6. Navigability determinations for some of the smaller potential waterways are still being made and are conservatively shown in the wetlands and waterways crossings in Appendix 1-3. HDD and jack and bore locations shown in Appendix 1-3 and calculations of resulting impacts shown in Appendix 6 also will be refined during the detailed design process. As a result, minimization of wetland and waterway impacts contained in Appendix 6 is preliminary.

6.2 Wetland Practicable Alternatives Analysis

The Compact Council approval of the Lake Michigan Application concluded that Lake Michigan is the only reasonable water supply solution for the City of Waukesha (Compact Council 2016). The Compact Council conclusion thus renders Program alternatives that do not include a Lake Michigan water supply as unreasonable. Furthermore, in 2017 the City of Milwaukee provided an unsolicited proposal to supply water to the City of Waukesha. The City of Milwaukee was selected by the Program to be the Lake Michigan water supplier and an agreement was signed to use the City of Milwaukee as the water supplier.

6.2.1 Wetland Consideration in the Route Selection Process

Pipeline routes and facility locations were evaluated in a two-step process (see Section 2.4). Wetlands were considered within the first phase as non-economic, environmental criteria. Specific factors considered for these criteria included potential short-term and permanent disturbances and mitigation, design and construction complexity, and quality of the wetlands, including flora and fauna diversity.

Wetlands were also considered in the comparison of Oak Creek Route Alternatives 2, 3, and 4 and the Milwaukee Supply Route Alternative and Milwaukee Supply Route Sub-Alternative. Screening-level environmental impacts were considered as a KPI; criteria for this metric included acres of WWI and photo-interpreted wetlands, along with the number of waterways crossed.

Wetland considerations will be documented in detail in a future PSC application submittal and WDNR wetland and waterway permit application, or as requested by WDNR.

6.2.2 How Wetlands Impacts are Avoided and Minimized

Methods to avoid, minimize, and mitigate wetland impacts are provided in Section 5.4.4.

6.2.3 Reasons for Unavoidable Wetland Impacts

Wetland impacts will be avoided to the extent practicable. Unavoidable wetland impacts associated with the Program may include placement of pipeline within wetlands, placement of facilities and access routes within wetlands, and conversion of wetland types. Through the route selection process described in Section 2.4, it was determined that the

benefit associated with long-term safe operation, human safety, pipeline maintenance, cost, and schedule, would outweigh the cost of unavoidable wetland impacts.

Wetland crossing locations will be determined based upon final design. Preliminary potential wetland crossing locations and construction crossing techniques are depicted on the maps in Appendix 1-3. WDNR-requested information for wetlands and waterways crossings is included in WDNR Table 1 and WDNR Table 2 contained in Appendix 6. Avoidance, minimization, and mitigation of wetland impacts are discussed in Section 5.4.4.

The following sections summarize the types of wetland impacts expected along the pipeline route and at facilities.

6.2.3.1 Pipeline

Wetland crossings along the Program route are depicted in Appendix 1-3. Wetland crossings may be temporarily impacted during construction. Permanent wetland impacts may include conversion of wetland types. Wetland impact mitigation and minimization are described in Section 5.4.4. Following construction, wetlands will be restored as described in Section 5.10.

6.2.3.2 Facilities

Facilities have been sited and designed to minimize wetland impacts to the extent practicable. Wetland impacts at the Program sites will be minimal. An approximately 4.0-acre wetland exists on the BPS site; the facility and access road will be located to the southeast of this wetland to avoid impacts. No temporary or permanent impacts are expected at this location. Wetlands along the Fox River are located close to the proposed RFPS. The RFPS Facility and access roads will not be sited within existing wetlands. Temporary and permanent impacts to wetlands are not anticipated at any facility locations other than at the RFDS, which is described separately in the following section. The WSPS location is undetermined at this time; wetland impacts will be avoided to the extent practicable. Facilities are described in Section 3.3. Facilities maps are provided in Appendices 3-1 through 3-4.

6.2.3.3 Return Flow Discharge Site

The proposed RFDS parcel is described in Section 3.3.1, and maps are provided in Appendix 3-4.

The proposed RFDS has been sited and designed to minimize wetland impacts to the extent practicable. The proposed RFDS is located at the southeast corner of the intersection of South 60th Street and West Oakwood Road. Current land uses comprise of an agricultural use, and the site is zoned R-2 residential use. Upland conditions exist along West Oakwood Road, on the north side of the site, while farmed wetlands and a non-farmed wetland exist within the southern areas of the site, with the Root River located on the southwest portion of the site. Impacts to the site could include a zoning change to a utility use, if deemed necessary by the City of Franklin. Because a farmed wetland exists between the proposed Return Flow Pipe location and the Root River, impacts to the farmed wetland is expected along with waterway impacts. With proposed improvements, the existing, non-farmed wetland is not expected to be impacted at this time, and future design activities will make all efforts to avoid the non-farmed wetland.

The magnitude of farmed wetland impacts will be refined as the design progresses at the site. Because the Root River is adjacent to existing farmed wetlands, impacts to these farmed wetlands are expected from activities resulting from conveyance pipeline installation to the river outfall. An access road may be required from South 60th Street to the proposed outfall location(s) and may present impacts to the existing farmed wetlands. The number of outfalls is anticipated to be between one and four and will depend upon final WPDES permit requirements. Pipeline and outfall impacts are not expected within the existing, non-farmed wetland. Placing necessary site improvements within the

farmed wetlands will minimize disruption of overall wetland impacts as the farmed wetland is void of valuable wetland vegetation, as it remains actively farmed. Placing the potential access road within the existing farmed wetlands is unavoidable, as this is the only way to reach the river outfall location(s). Overall potential impacts are included in Appendix 6, and are believed to be conservative in nature.

Future constructed wetlands implementation may be required based on future WDNR regulatory requirements, and are expected be sited within the upland and farmed wetland areas only. Because current farmed wetland areas are void of wetland vegetation, implementation of constructed wetlands are expected to improve site conditions for local flora and fauna populations, as the farmed wetlands currently serve little to no habitat function. Construction activities are expected to incorporate protection and construction limit delineation for existing wetland areas so impacts can be avoided as much as possible. Final site grading is not expected to impact existing, non-farmed wetlands areas at this time.

Impacts to the agricultural land use are described in detail in Section 4.3.2. Existing agricultural activities are expected to continue for a minimum of 5 years and conclude within 10 years of Program construction completion. The site is expected to incorporate native and naturalized plant populations, which could incorporate constructed wetlands.

6.2.4 Restoration Methods for Wetland Temporary and Permanent Impacts

Methods to minimize wetland impacts and to restore wetlands that have temporary impacts are described in detail in Section 3.9.4. Revegetation of impacted wetlands is described in Section 5.10.

Compensatory wetland mitigation will be completed as required by WDNR and USACE. Coordination with WDNR and USACE will take place during the permit process to meet permit and mitigation requirements. Expected permits for the Program are provided in Table 1-2.

6.3 Wetland Delineations

Wetland delineations of the Program have been underway since August 2017. Plant communities for each of the delineated wetlands will be mapped based on the Eggers and Reed Classification System and will also have Floristic Quality Assessments. Wetland mapping and impact estimations provided on the wetland maps in Appendix 1-3 and in the tables in Appendix 6 are from wetland field-delineations. Wetland delineation reports will be provided in a future PSC application submittal and WDNR wetland and waterway permit application, or as requested by WDNR.

6.4 Mapping Wetland and Waterway Crossings

6.4.1 Recent Aerial Photo

Recent aerial photography is provided on the maps in Appendix 1-3.

6.4.2 Proposed Main or Facility

Program pipelines maps are provided in Appendix 1-2 and Appendix 1-3. Program facilities maps are provided in Appendices 3-1 through 3-4.

6.4.3 Right-of-Way or Construction Area

The Program construction area is provided on the maps in Appendix 1-3.

6.4.4 Waterways

Waterways are depicted on the maps in Appendix 1-3.

6.4.5 Wisconsin Wetland Inventory

WWI maps used for screening pipeline route alternatives are included in Appendix 2-7. Field-delineated wetlands are depicted on the Program preliminary wetland impacts maps included in Appendix 1-3.

6.4.6 Delineated Wetlands

A Wetland Delineation Report will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR. Field-delineated wetlands are depicted on the Program preliminary wetland impacts maps included in Appendix 1-3.

6.4.7 Hydric Soils

Hydric soils maps will be provided in a Wetland Delineation Report, which will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

6.4.8 Any Proposed Temporary Bridge Locations

Temporary bridge locations will be determined upon final design. Maps of these locations will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR. The Program will seek to minimize natural resource impacts from temporary bridge construction and meet permit requirements for these features, if they are used.

6.4.9 Locations for other Chapter 30 Activities such as Grading or Riprap

Chapter 30 activity locations will be determined upon final design. Maps of these locations will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

SECTION 7 Endangered, Threatened, Special Concern Species, and Natural Communities

7.1 WDNR-Endangered Resource Review

WDNR endangered resource reviews conducted for the Program are summarized in Section 2.4.1.4 and are provided as confidential information in Appendix 2-10.

7.2 NHI Occurrence Maps

NHI occurrence maps are provided as confidential information in Appendix 2-10.

7.3 Field Surveys

Field surveys will be provided in a future PSC application submittal and WDNR wetland and waterway permit application or as requested by WDNR.

SECTION 8 WDNR Guidance Information

The Program will work with WDNR to meet its requirements for the project. Additional details will be provided during the permitting phase of the Program.

8.1 WDNR Guidance for Erosion Control Plans

The Program will work to meet WDNR guidance for erosion control plans. Additional erosion control plan detail will be provided during the Chapter 30 permitting process.

8.2 WDNR Guidance for Materials Management Plans

The Program will work to meet WDNR guidance for materials management plans. Additional materials management plan detail will be provided during the Chapter 30 permitting process.

8.3 WDNR Guidance for Dewatering Plans

The Program will work to meet WDNR guidance for dewatering plans. Additional dewatering plan detail will be provided during the Chapter 30 permitting process.

SECTION 9 References

AACE International. 2016. Recommended Practice No. 18R-97 for a Class 5 Opinion of Probable Construction Cost. https://web.aacei.org/docs/default-source/toc/toc_18r-97.pdf?sfvrsn=4. March 1. Accessed November 20, 2017.

CH2M HILL and Ruekert & Mielke. 2002. *Future Water Supply Report* prepared for the Waukesha Water Utility. March.

CH2M HILL. 2010. Application for Lake Michigan Water Supply. Submitted to Wisconsin Department of Natural Resources. Submitted by City of Waukesha. May.

CH2M HILL. 2012. Final Water Conservation Plan. May.

CH2M HILL. 2013. City of Waukesha Application for a Lake Michigan Diversion with Return Flow, Volumes 1 through 5. October.

Cherkauer, D. S. 2009. Groundwater Budget Indices and Their Use in Assessing Water Supply Plans for Southeastern Wisconsin.

Cherkauer, D. S., R. W. Taylor, and M. P. Anderson. 1990. Measurement of the Interaction Between Lake Michigan and the Groundwater of Wisconsin.

Conference of Great Lakes and St. Lawrence Governors and Premiers. 2017. Conference of Great Lakes and St. Lawrence Governors and Premiers. http://www.cglslgp.org/. Accessed September 20, 2017.

Feinstein, D.T. and U.S. Geological Survey (USGS). 2011. Draft Groundwater Flow Model Applied to Conceptual Analysis of Riverbank Inducement in vicinity of Waukesha, Wisconsin. April.

Feinstein, D.T./U.S. Geological Survey (USGS), Douglas Cherkauer/UW-Milwaukee, Tim Grundl/UW-Milwaukee, Paul Boersma/Black & Veatch. 2011. Presentation given to Wisconsin Department of Natural Resources on April 1, 2011 in Madison, WI on Groundwater Flow Model Applied to Conceptual Analysis of Riverank Inducement in vicinity of Waukesha, Wisconsin.

Giese, Laura, TRC Companies, Inc. 2018. Personal communication (e-mail) with Ryan Wnuk, CH2M. March 1.

Great Lakes-St. Lawrence River Basin Water Resources Council (Compact Council). 2005. December 13, 2005 Resources Agreement "compact."

Great Lakes-St. Lawrence River Basin Water Resources Council (Compact Council). 2016. Final Decision. June 21.

Great Lakes-St. Lawrence River Basin Water Resources Council (Compact Council). 2017. Opinion. May 4.

Great Lakes-St. Lawrence River Water Resources Regional Body. 2017. *Resolutions, Guidance Statements and Other Documents.* http://www.glslregionalbody.org/Resolutions.aspx. Accessed September 23, 2017.

Great Water Alliance (GWA). 2017. Great Water Alliance. http://greatwateralliance.com/. Accessed September 23 and 30, October 7, and November 6, 2017.

GZA GeoEnvironmental, Inc. 2015. *Non-Diversion Alternative Using Existing Water Supply Within Treatment City of Waukesha Water Supply, Report to Clean Wisconsin and Milwaukee Riverkeeper, Report to Clean Wisconsin and Milwaukee Riverkeepers.* July 9.

Institute for Sustainable Infrastructure. 2017. Envision Rating System. https://sustainableinfrastructure.org/. Accessed November 20, 2017.

Milwaukee Metropolitan Sewer District (MMSD). 2008. "Watercourse: Underwood Creek Rehabilitation and Flood Management – Phase 1." Designed by Short Elliott Hendrickson, Inc. (SEH).

Public Service Commission of Wisconsin (PSC). 2015. Application Filing Requirements Type 2 Water Projects. January. https://psc.wi.gov/Documents/water/ENVAFRwaterType2.pdf.

Southeastern Wisconsin Regional Planning Commission (SEWRPC). 2010. A Regional Water Supply Plan for Southeastern Wisconsin. Planning Report No. 52. Final Report. December.

State of Wisconsin. 2017. Wisconsin Act 38. https://docs.legis.wisconsin.gov/2017/related/acts/38. Accessed September 23, 2017.

TRC Companies Inc. (TRC). 2018a. 4-130 D1 Endangered Resources Technical Memorandum.

TRC Companies Inc. (TRC). 2018b. 4-130 D1 Wetland and Waterway Technical Memorandum.

TRC Companies Inc. (TRC). 2018c. 4-130 D3 Wetland and Waterway Technical Memorandum.

TRC Companies Inc. (TRC). 2018d. 4-130 D4 Endangered Resources Technical Memorandum.

TRC Companies Inc. (TRC). 2018e. 4-140 D1 Cultural Resources Technical Memorandum.

TRC Companies Inc. (TRC). 2018f. 4-140 D3 Cultural Resources Technical Memorandum.

TRC Companies Inc. (TRC). 2018g. 4-170 D1 Agricultural Resources Technical Memorandum.

U.S. Geological Survey (USGS). 2012a. Development and application of a groundwater/surface-water flow model using MODFLOW-NWT for the Upper Fox River Basin, southeastern Wisconsin.

U.S. Geological Survey (USGS). 2012b. Scientific Investigations Report 2012–5108. Authored by Feinstein, D. T., Fienen, M. N., Kennedy, J. L., Buchwald, C. A., and Greenwood, M. M.

University of Wisconsin-Milwaukee (UWM). 2011. Cost Analysis of a Conceptual Riverbank Inducement System Along the Fox River. Final Report. Black & Veatch for the University of Wisconsin–Milwaukee. April.

Waukesha Water Utility (WWU). 2017. *Published Articles*. http://www.waukesha-water.com/pa.html. Accessed October 7, 2017.

Wisconsin Department of Natural Resources (WDNR). 2016a. Preliminary Final Environmental Impact Statement City of Waukesha Proposed Great Lakes Diversion. January.

Wisconsin Department of Natural Resources (WDNR). 2016b. Technical Review for the City of Waukesha's Proposed Diversion of Great Lakes Water for Public Water Supply with Return Flow to Lake Michigan. January.

Wisconsin Department of Natural Resources (WDNR). 2016c. General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System (WPDES) Permit No. WI-S067831-5). http://dnr.wi.gov/topic/stormwater/documents/WI-S067831-5.pdf. October.

Wisconsin Department of Natural Resources (WDNR). 2017. Information needed for Wisconsin Department of Natural Resources and Public Service Commission of Wisconsin and Wisconsin Environmental Policy Act documents.

Appendix 1 – Program Overview

1-1 Proposed Program Cost and Schedule

Project: Great Water Alliance
Client: Waukesha Water Utility
Title: Contract Package Construction Schedule and Cost
Date: 11/3/2017

Contract Package	Name	Construction Cost with Oak Creek Supply[2] ($M)		
		Route 2	Route 3	Route 4
1	Water Supply Pumping Station[1]	$0.00	$0.00	$0.00
2	Water Supply Pipeline Segments	$10.02	$10.02	$10.02
3	Chemical Feed Facilities, Booster Pumping Station and Reservoir	$43.66	$43.66	$43.66
4	Return Flow Pump Station	$11.54	$11.54	$11.54
5	Return Flow Pipeline Segments and Outfall	$18.75	$18.75	$18.75
6	Common Corridor Pipelines	$142.29	$148.09	$163.39
	Total	**$226.26**	**$232.06**	**$247.36**

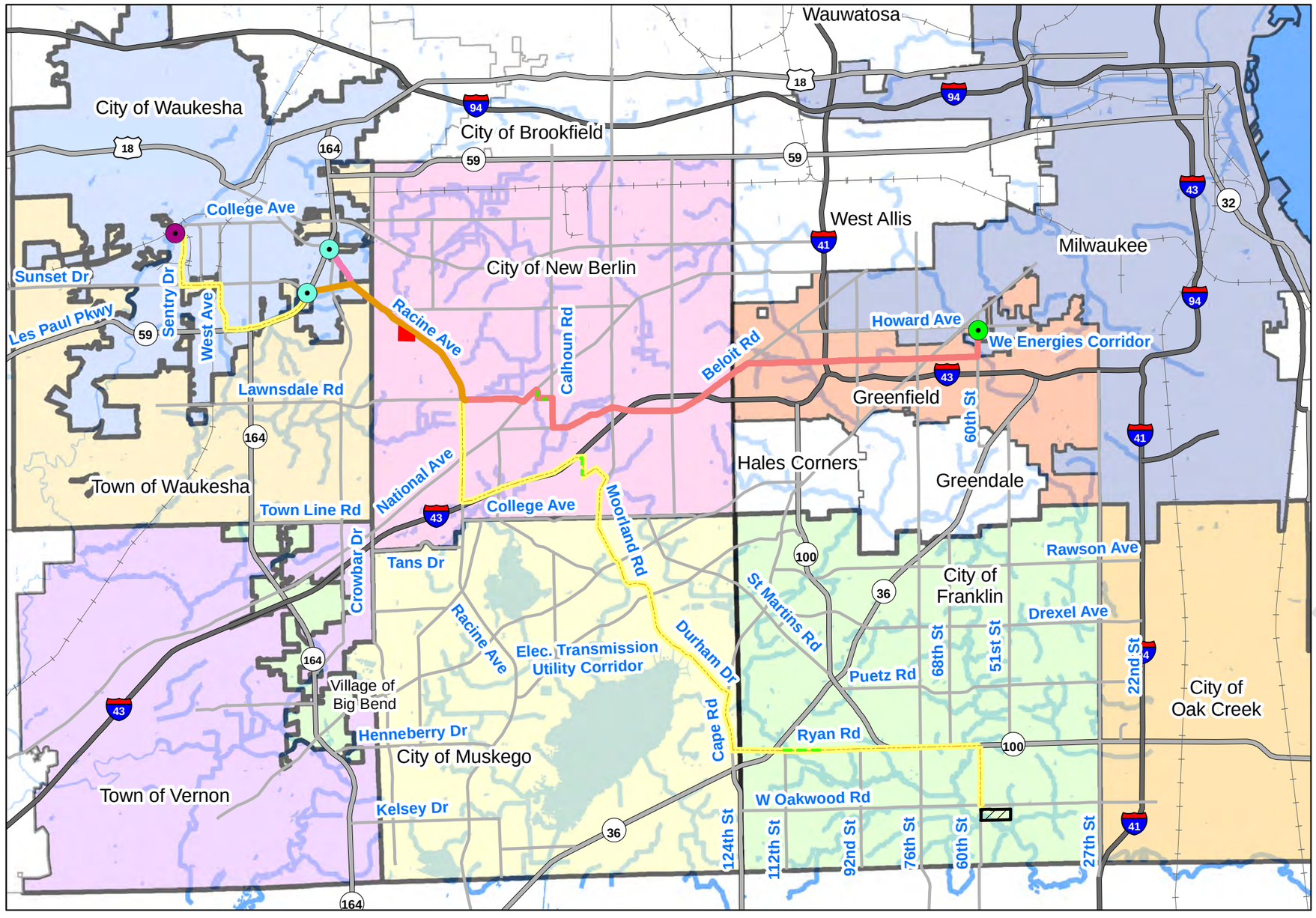
1) Water Supply Pumping Station is assumed to be paid for by the water supplier
2) Construction cost includes Bonds and Insurance (at 3%), Mobilization / Demobilization (at 5%), Contingency (at 25%), and Contractor Overhead and Profit (at 15%). It does not include any Land Acquisition, Distribution System Improvement, and Permit costs, or other costs included in the Program.

Contract Package	Name	Start	Duration (months)	End	Construction Cost with Milwaukee Supply[2] ($M)
1	Water Supply Pumping Station[1]	Aug-20	14	Oct-21	$0.0
2	Water Supply Pipeline Segments	May-20	28	Sep-22	$37.2
3	Chemical Feed Facilities, Booster Pumping Station and Reservoir	Dec-20	14	Feb-22	$43.7
4	Return Flow Pump Station	Jun-20	12	Jun-21	$11.5
5	Return Flow Pipeline Segments and Outfall	Aug-20	24	Aug-22	$75.7
6	Common Corridor Pipelines	Mar-21	12	Mar-22	$22.2
				Total	**$190.3**

1) Water Supply Pumping Station is assumed to be paid for by the water supplier
2) Construction cost includes Bonds and Insurance (at 3%), Mobilization / Demobilization (at 5%), Contingency (at 25%), and Contractor Overhead and Profit (at 15%). It does not include any Land Acquisition, Distribution System Improvement, and Permit costs, or other costs included in the Program.

1-2 Proposed Program Maps –

Proposed Program Route



Legend

- Milwaukee Route Both Pipelines
- Milwaukee Route Return Pipeline
- Milwaukee Route Supply Pipeline
- Milwaukee Route, Easement Required
- Water Supply Pumping Station
- Return Flow Pumping Facility
- Potential Connection to Distribution System
- Storage and Booster Pumping Station
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Milwaukee
- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend
- Village of Greenfield

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

0 5,000 10,000 20,000

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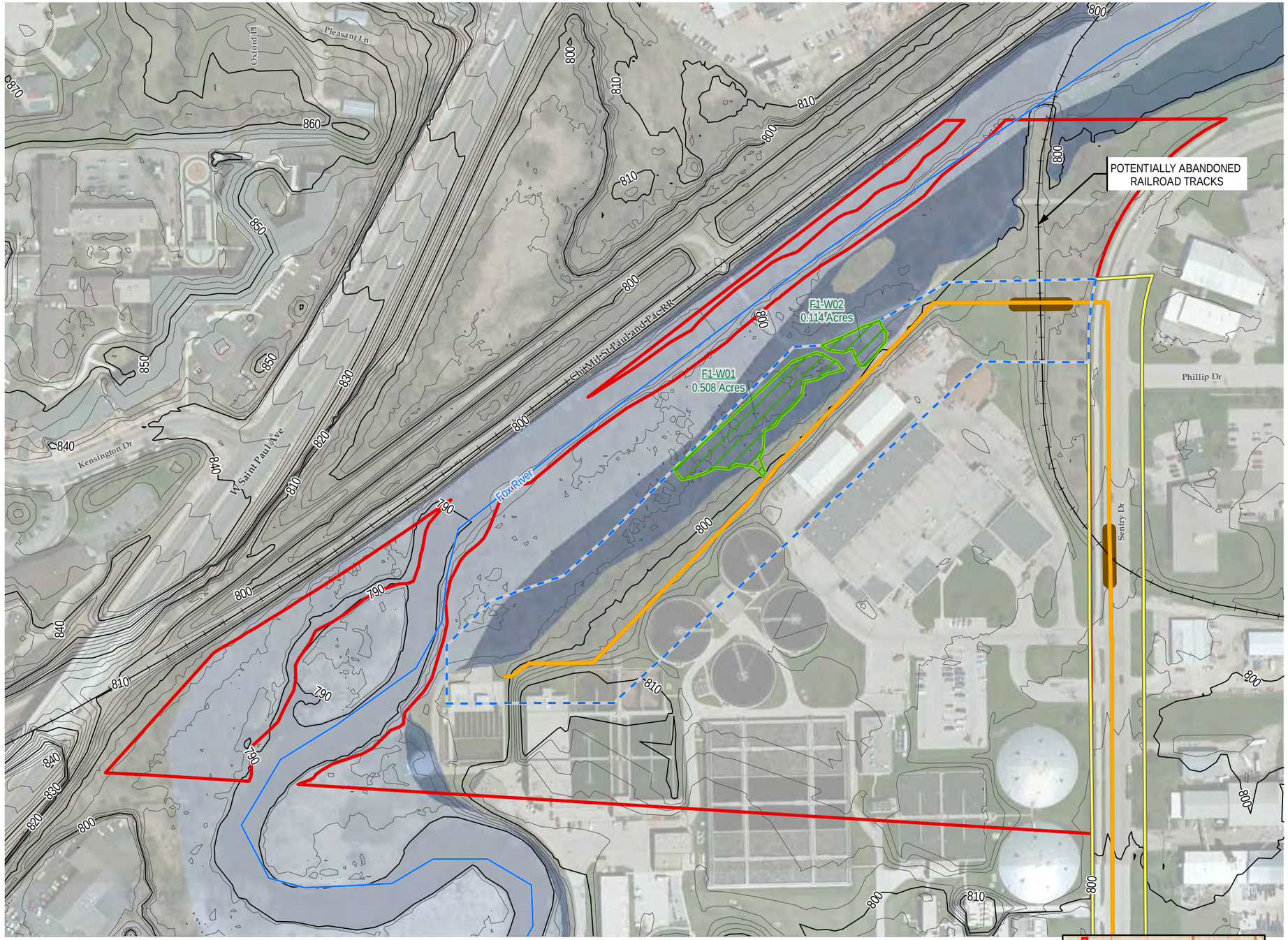
Waukesha, Wisconsin
Great Lakes Water Supply Program
Preferred Route Alternative - Milwaukee Route
Date: 11/14/2017

Plotted: 11/14/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.05_Working_MXDs\To CH2M\Preffered Route Railroad Crossings.mxd

1-3 Proposed Program Maps - Proposed Program Potential Water Resource Impacts

FIGURE NO. 1
SHEET 1 OF 88



LEGEND

- PROPOSED PROJECT PIPELINE
- CLEAN WATER PLANT SITE BOUNDARY, LOCATION OF RETURN FLOW PUMP STATION
- NON-IMPACTED TRC DELINEATED WETLANDS
- CLEAN WATER PLANT STUDY AREA
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- RAILROADS
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

1. BASE MAP FROM ESRI, WORLD IMAGERY WEB BASEMAP SERVICE LAYER.
2. ACREAGES ARE REPRESENTATIVE OF WETLANDS THAT ARE ONLY IN THE RIGHT OF WAY (ROW) AND EASEMENTS.
3. FLOODPLAIN DATA FROM FEMA.
4. LIMITS OF DISTURBANCE ARE WITHIN ROADWAY, EASEMENT OR IS SHOWN BY A LIMITS OF DISTURBANCE LINE.
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1 " = 200 '

N

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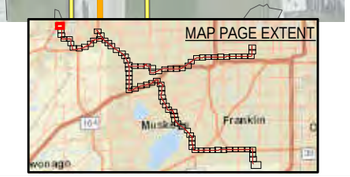

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Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

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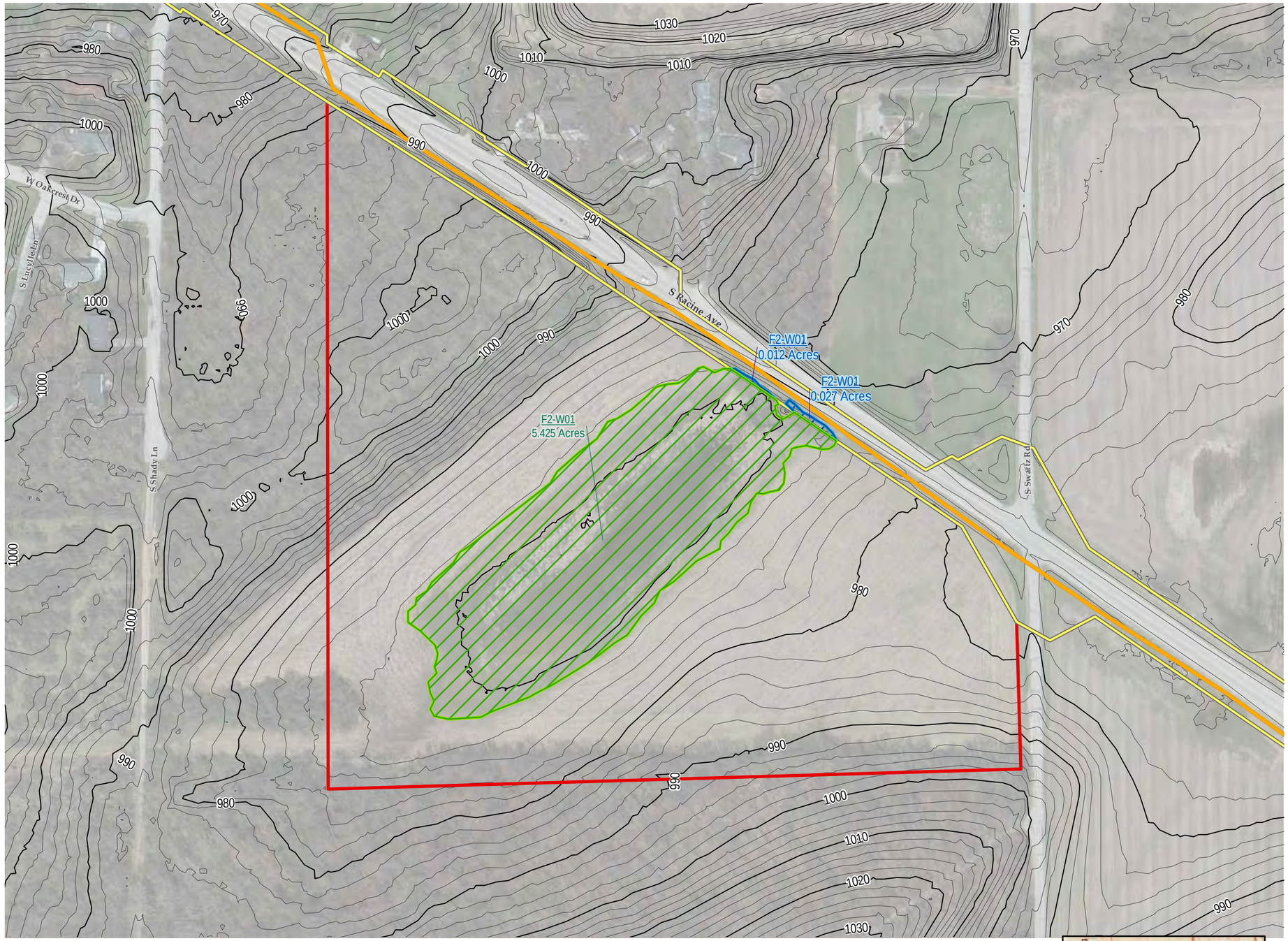

FIGURE NO. 1
SHEET 2 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- MINOOKA PARK BOOSTER PUMP STATION FACILITY SITE BOUNDARY
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

1. BASE MAP FROM ESRI, WORLD IMAGERY WEB BASEMAP SERVICE LAYER.
2. ACREAGES ARE REPRESENTATIVE OF WETLANDS THAT ARE ONLY IN THE RIGHT OF WAY (ROW) AND EASEMENTS.
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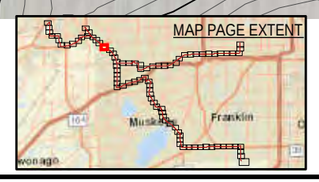

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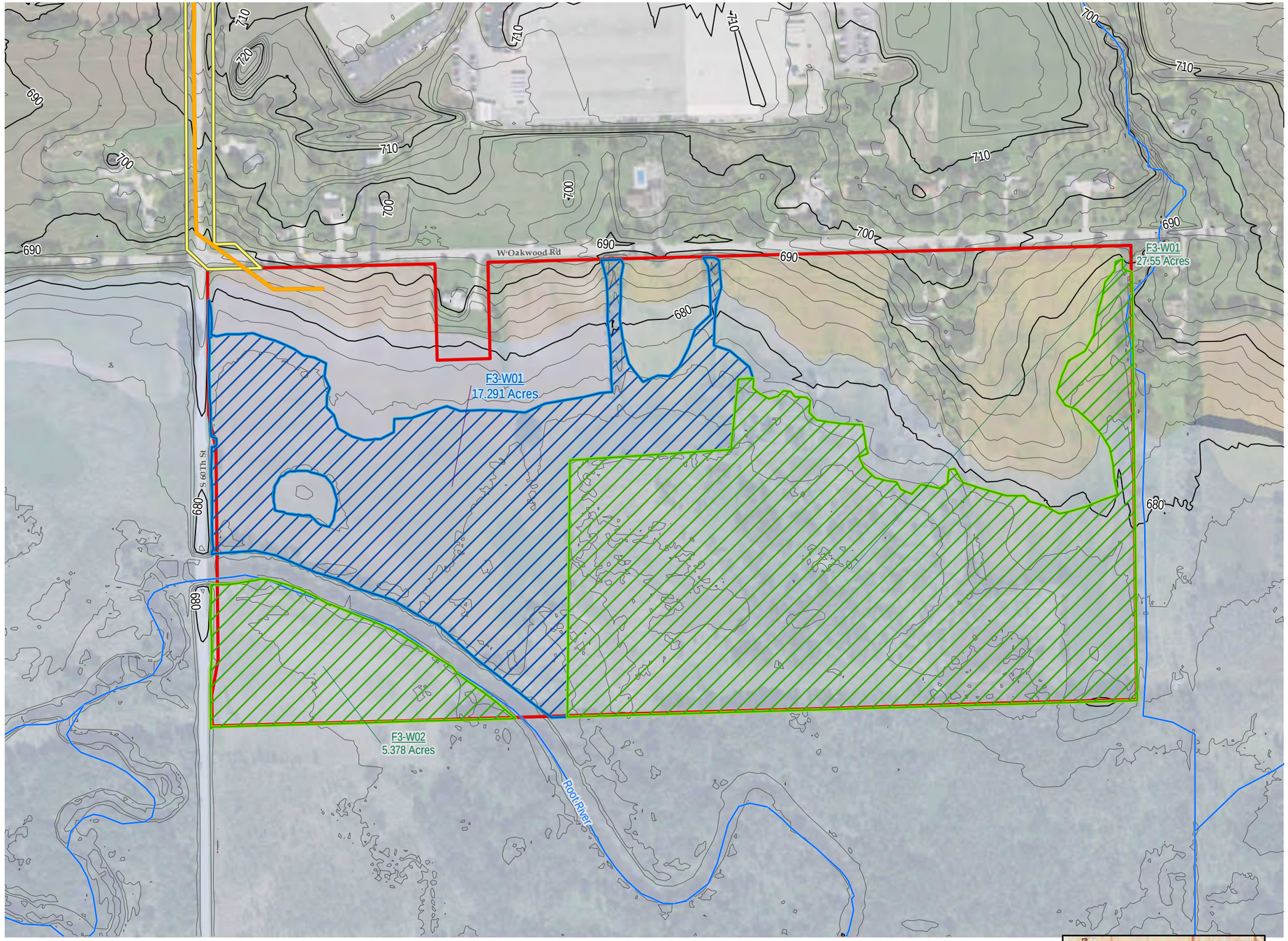

LEGEND

- PROPOSED PROJECT PIPELINE
- ROOT RIVER RETURN FLOW DISCHARGE SITE BOUNDARY
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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1 " = 300 '

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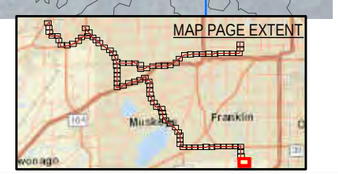

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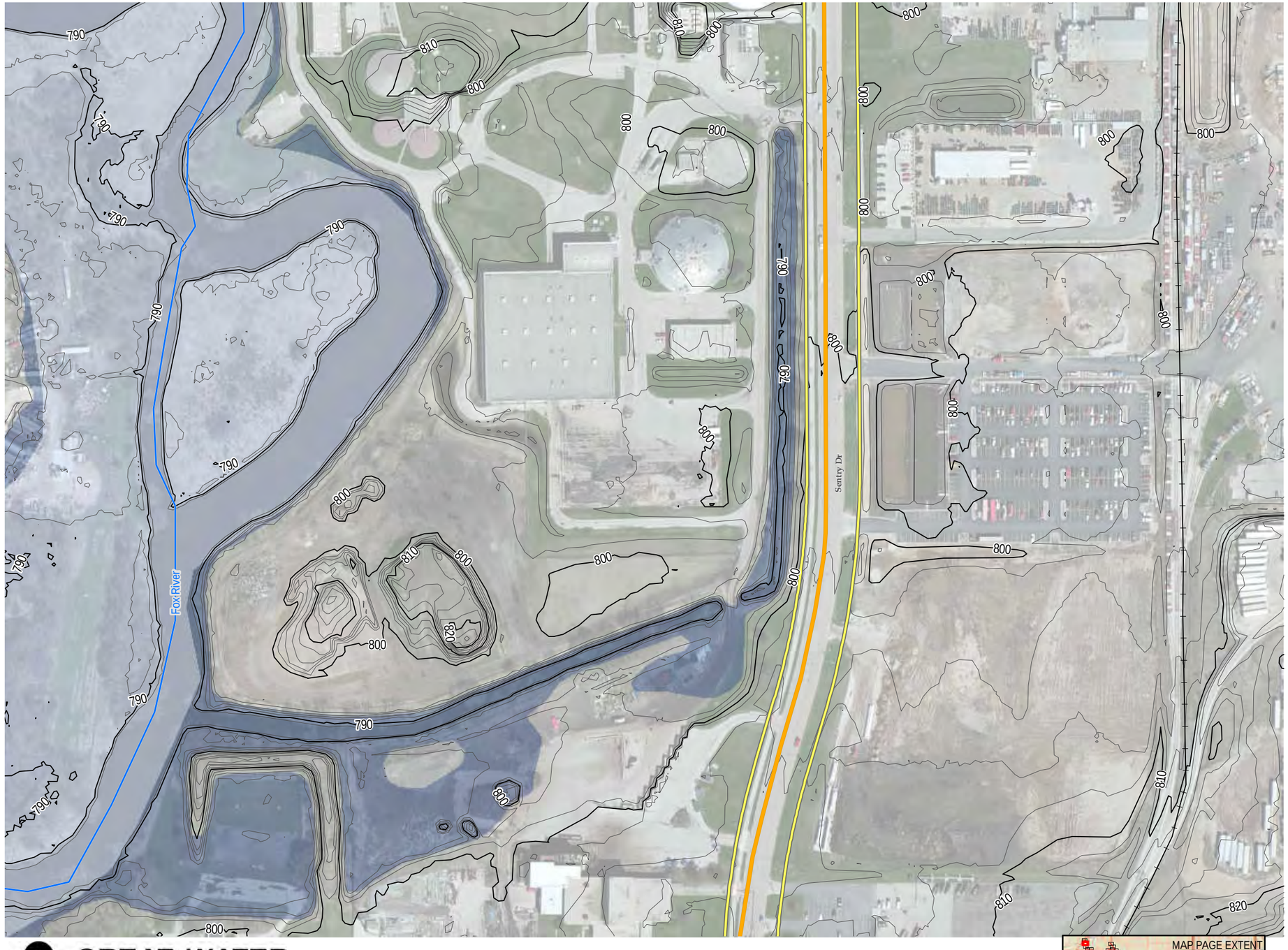

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- RAILROADS
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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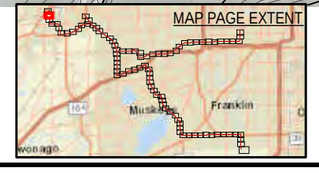

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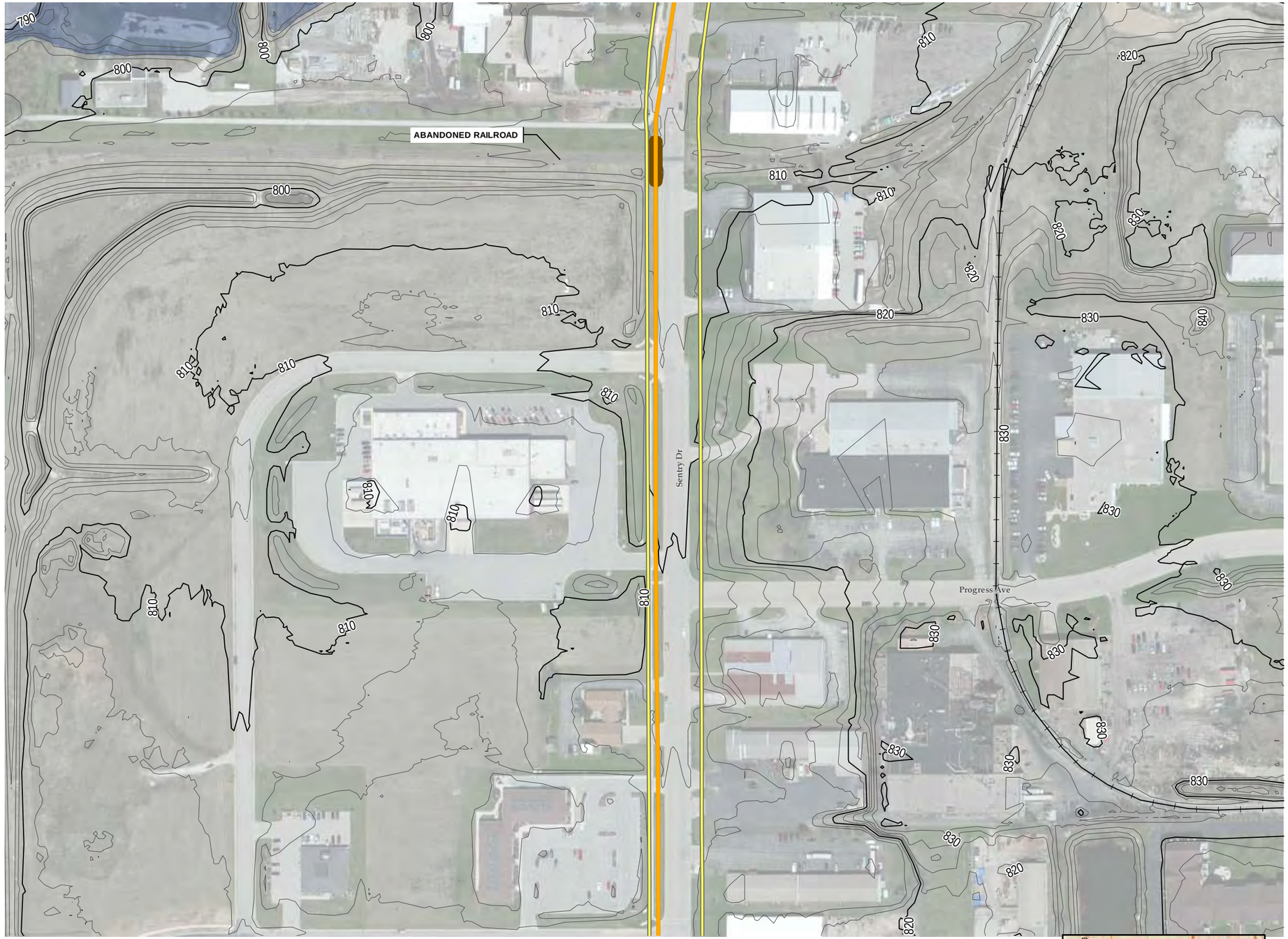

FIGURE NO. 1
SHEET 5 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- RAILROADS
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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1 " = 200 '

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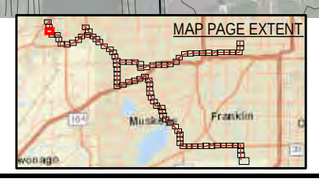

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- RAILROADS

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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N

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MAP PAGE EXTENT

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FIGURE NO. 1
SHEET 7 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- RAILROADS
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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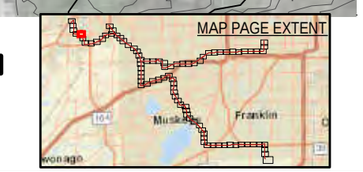

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- RAILROADS

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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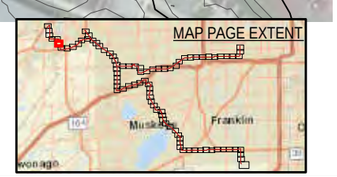

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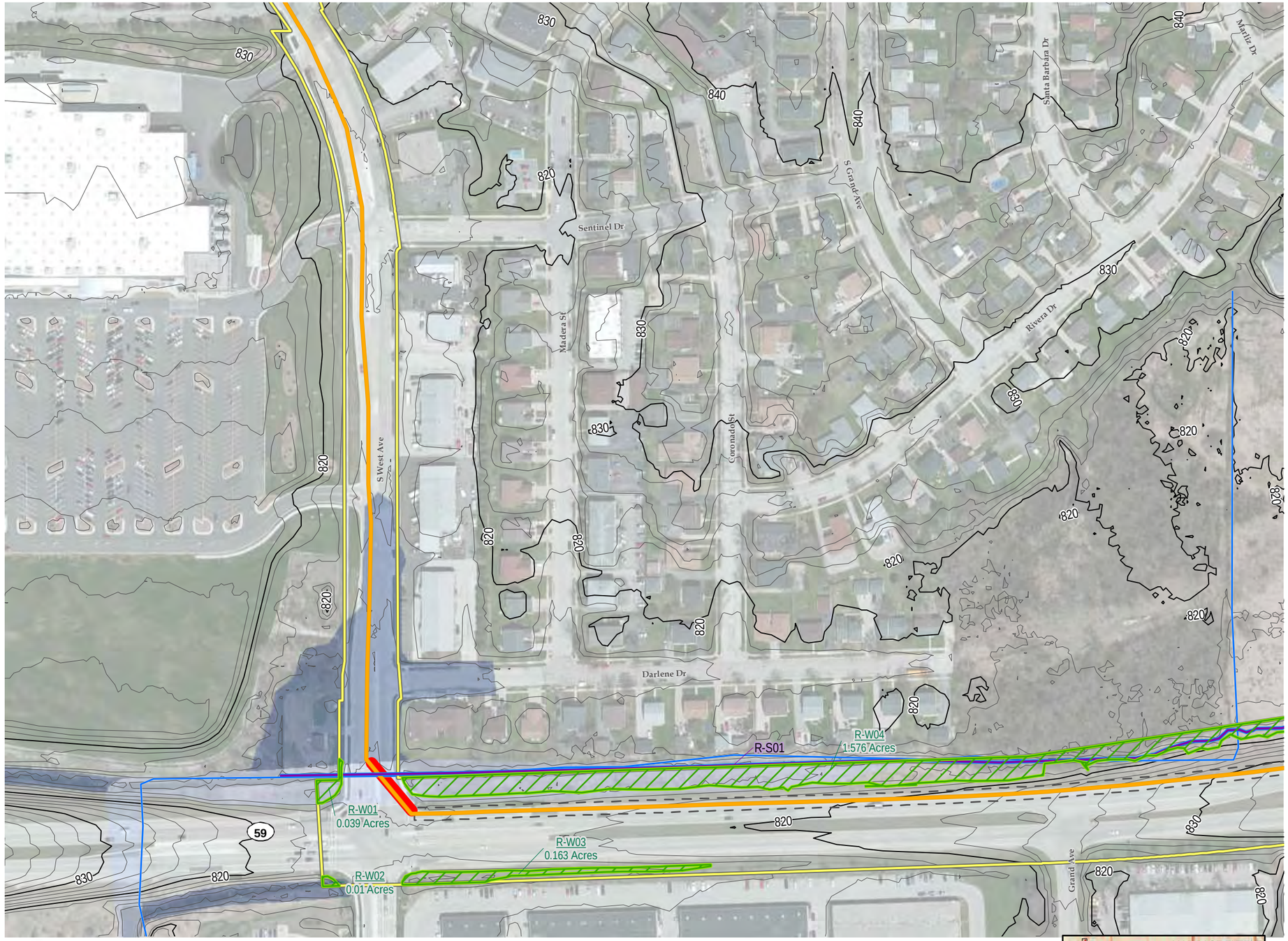

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- LIMITS OF CONSTRUCTION DISTURBANCE
- NHD STREAM/RIVER
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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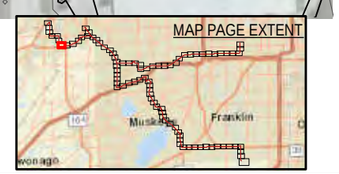

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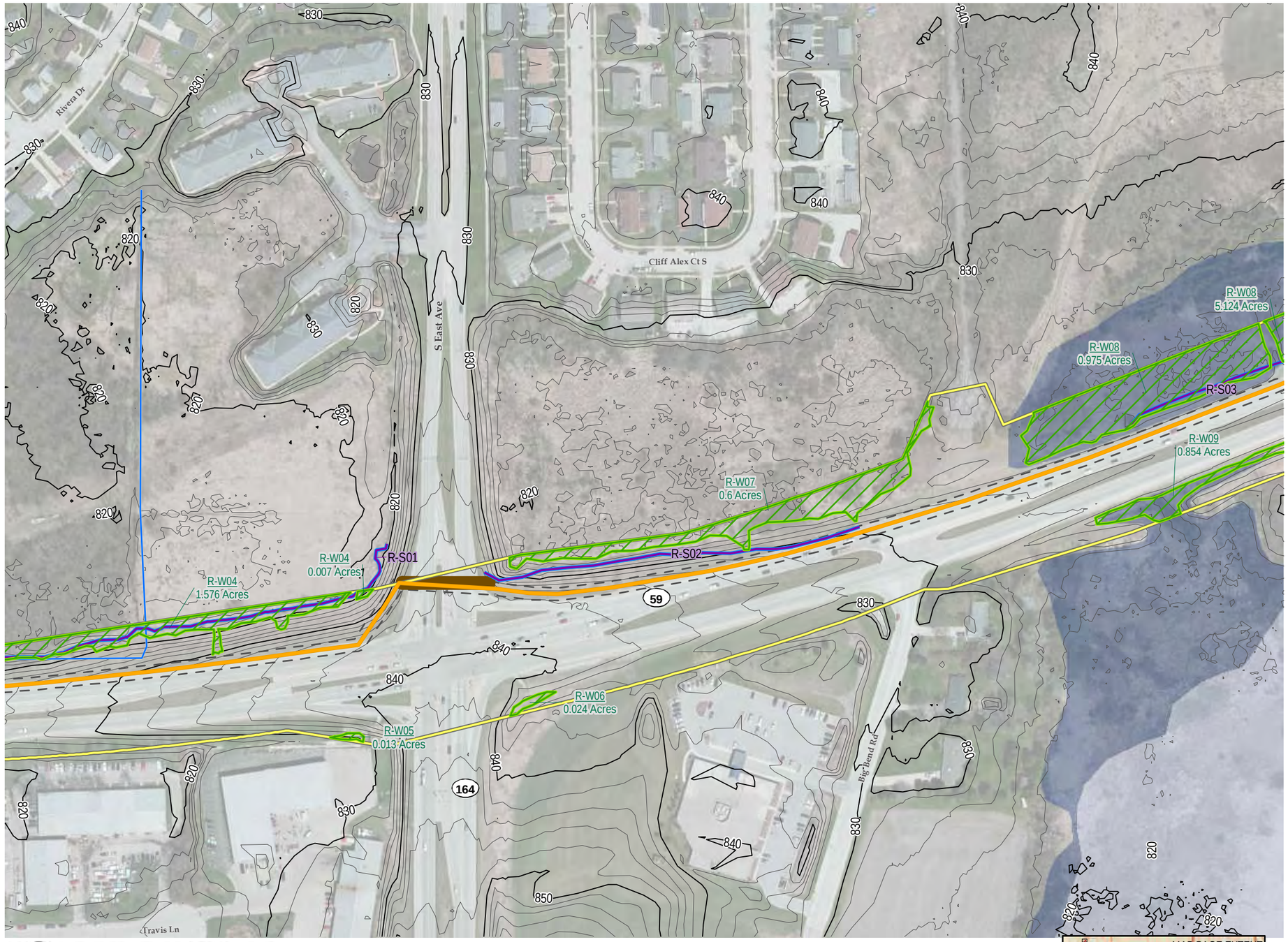

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- LIMITS OF CONSTRUCTION DISTURBANCE
- NHD STREAM/RIVER
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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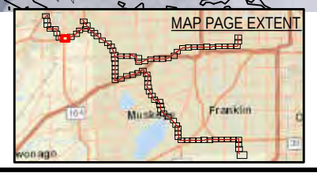

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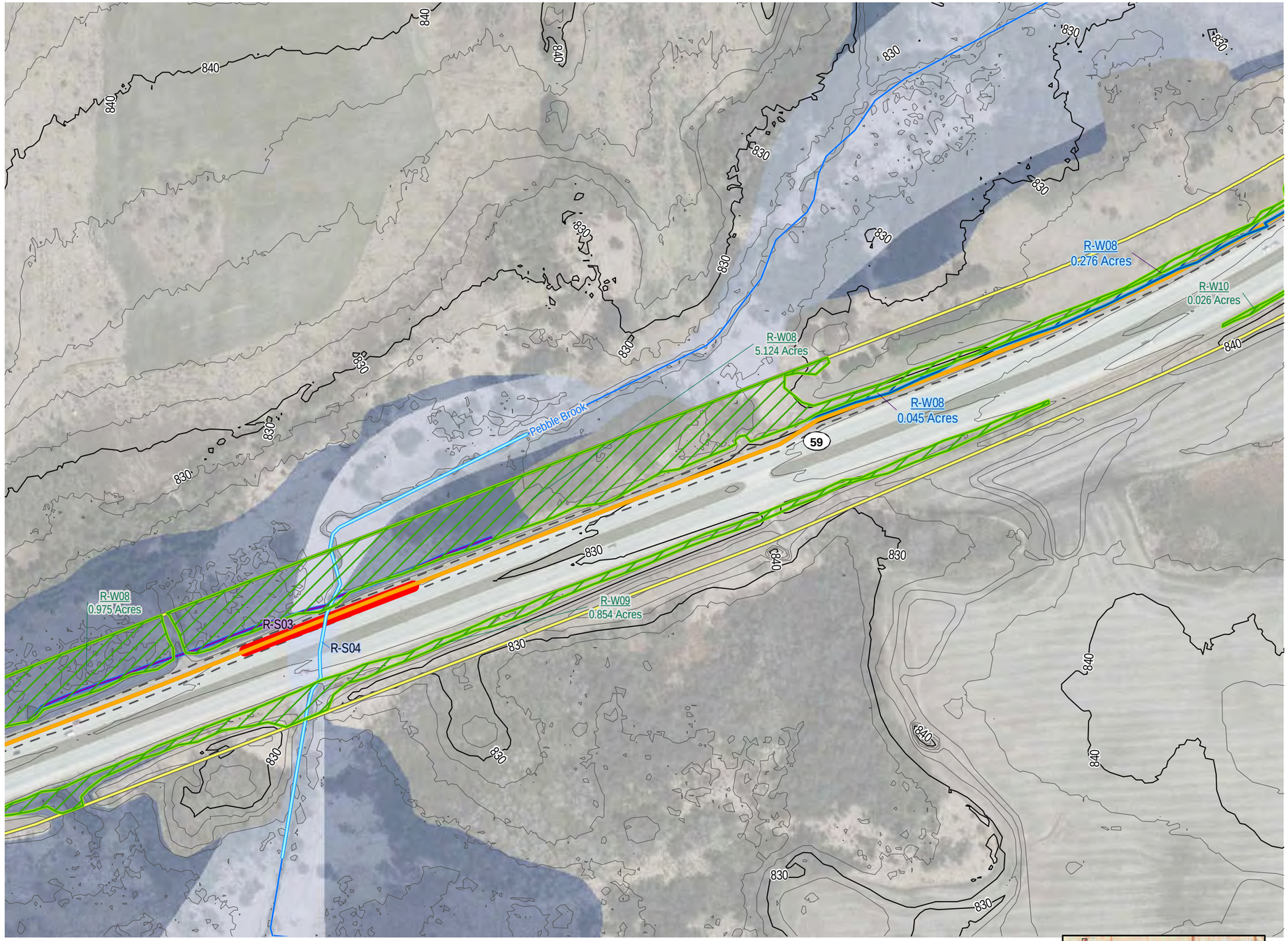

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- LIMITS OF CONSTRUCTION DISTURBANCE
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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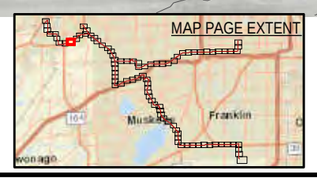

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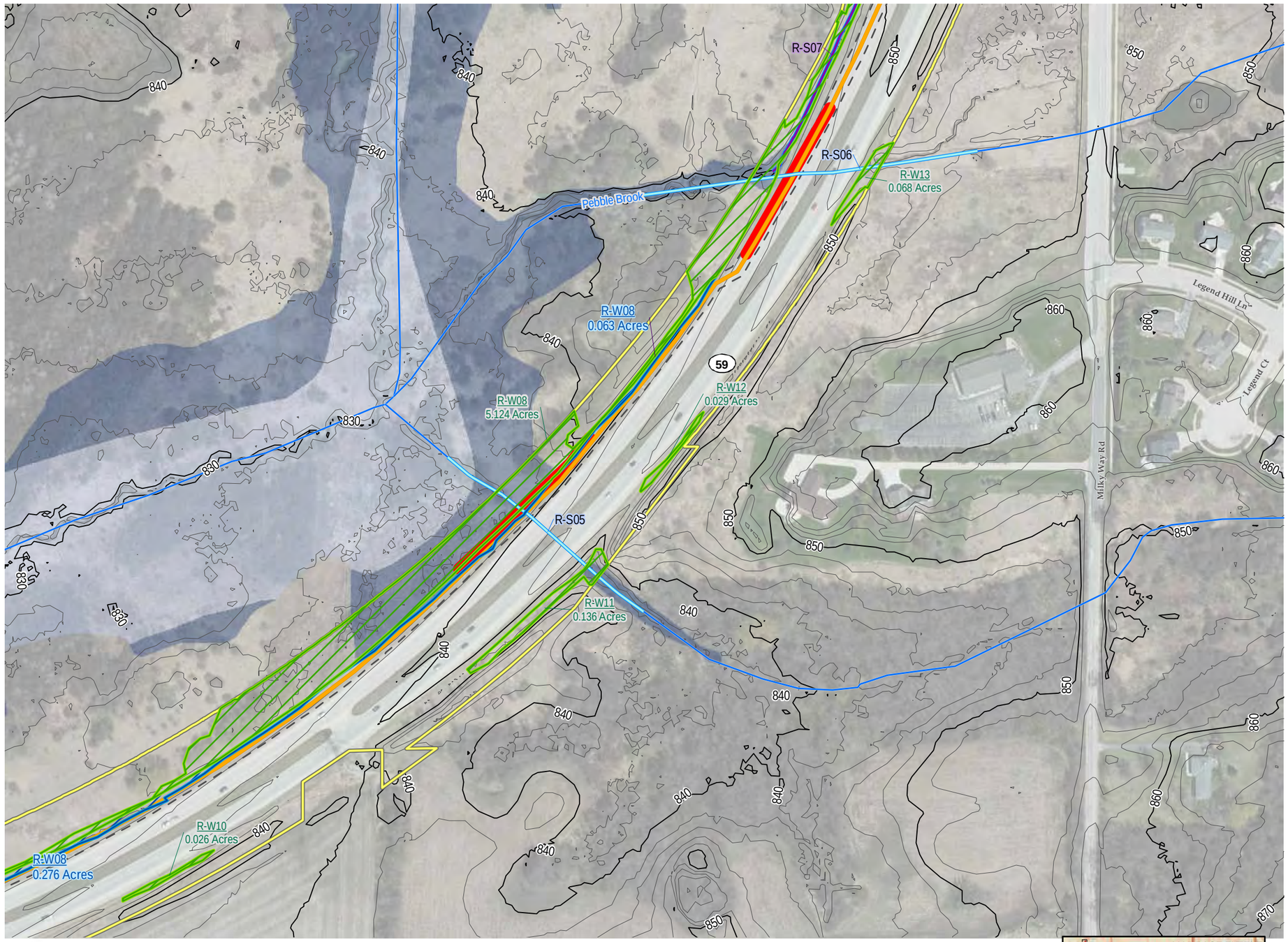

FIGURE NO. 1
SHEET 12 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- LIMITS OF CONSTRUCTION DISTURBANCE
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

1. BASE MAP FROM ESRI, WORLD IMAGERY WEB BASEMAP SERVICE LAYER.
2. ACREAGES ARE REPRESENTATIVE OF WETLANDS THAT ARE ONLY IN THE RIGHT OF WAY (ROW) AND EASEMENTS.
3. FLOODPLAIN DATA FROM FEMA.
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1 " = 200 '

N

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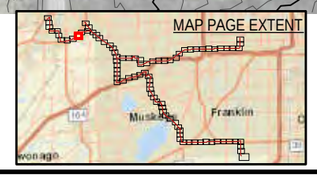

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Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
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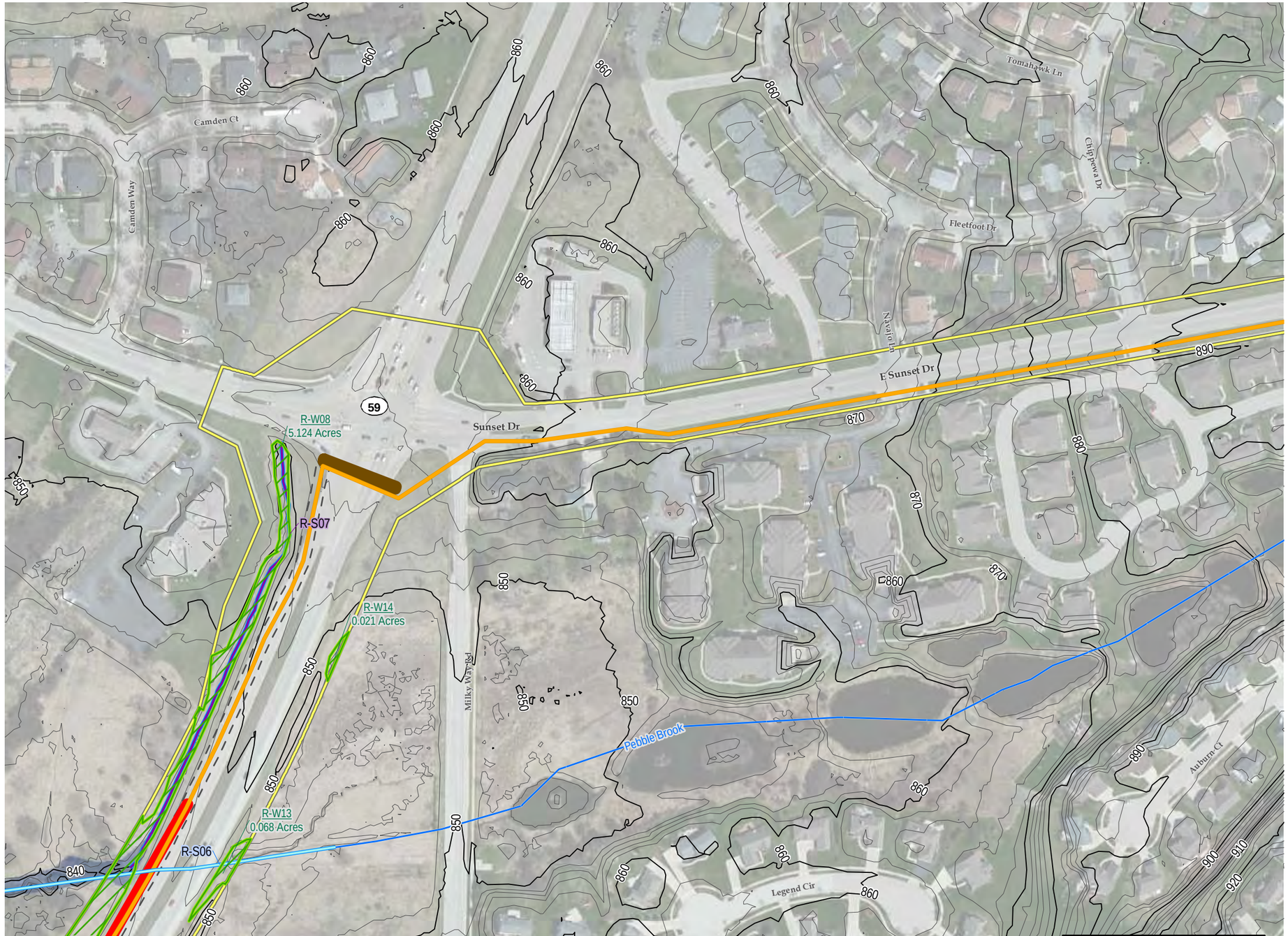

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- LIMITS OF CONSTRUCTION DISTURBANCE
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL JACK AND BORE PIPELINE
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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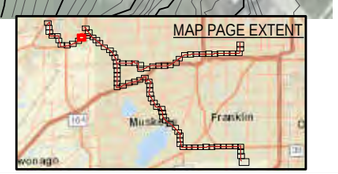

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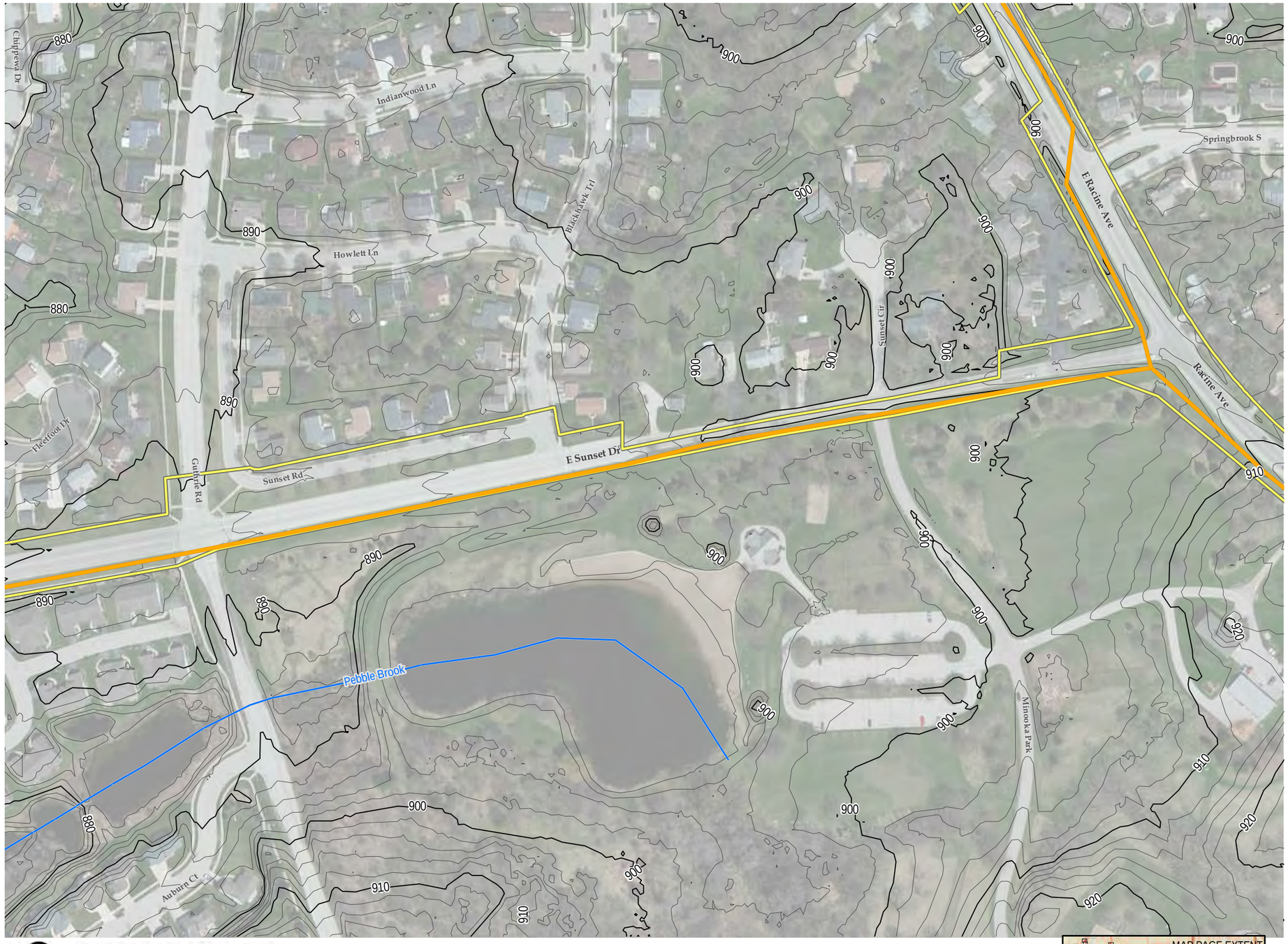

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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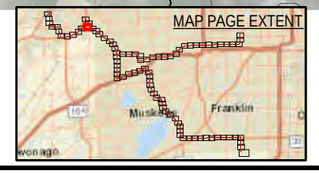

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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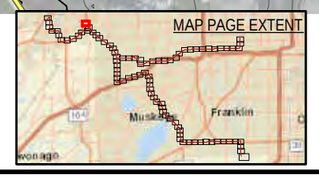

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
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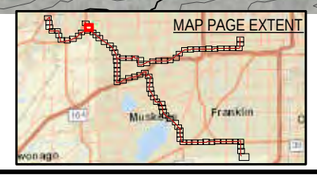

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

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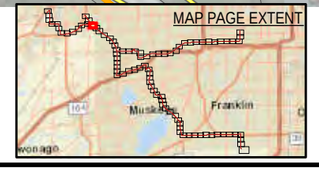

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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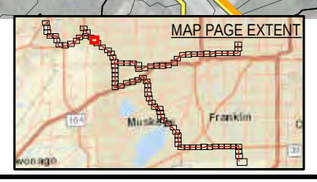

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LEGEND

- PROPOSED PROJECT PIPELINE
- MINOOKA PARK BOOSTER PUMP STATION FACILITY SITE BOUNDARY
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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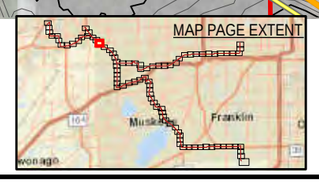

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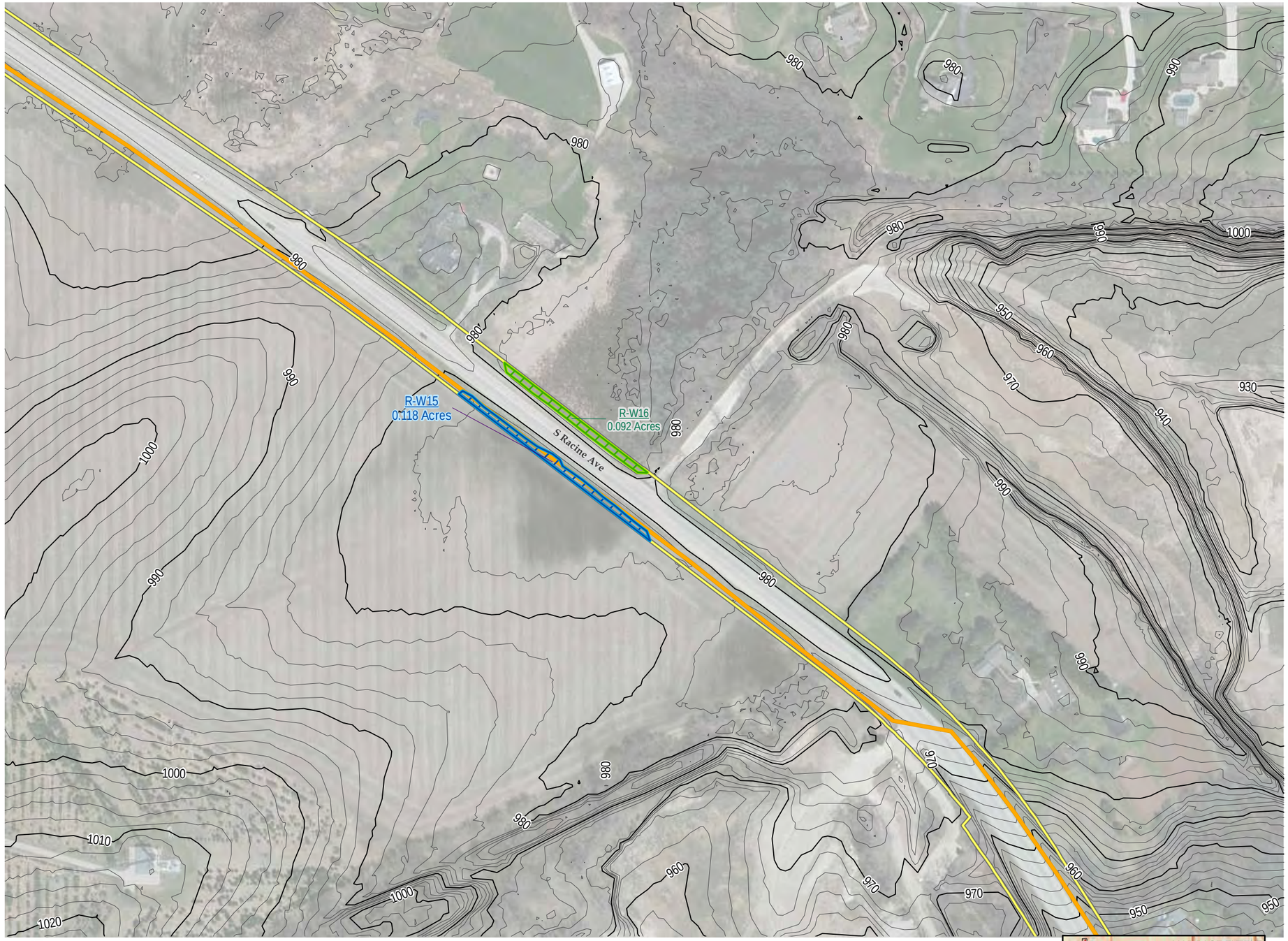

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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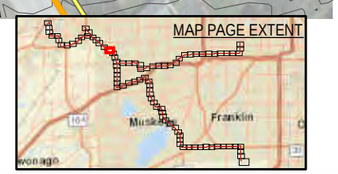

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LEGEND

- PROPOSED PROJECT PIPELINE
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS

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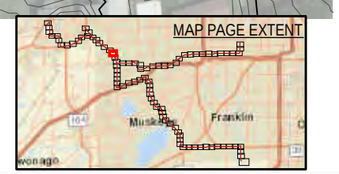

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LEGEND

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- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

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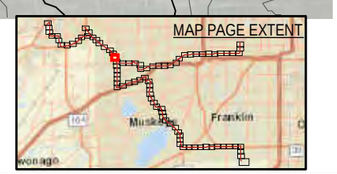

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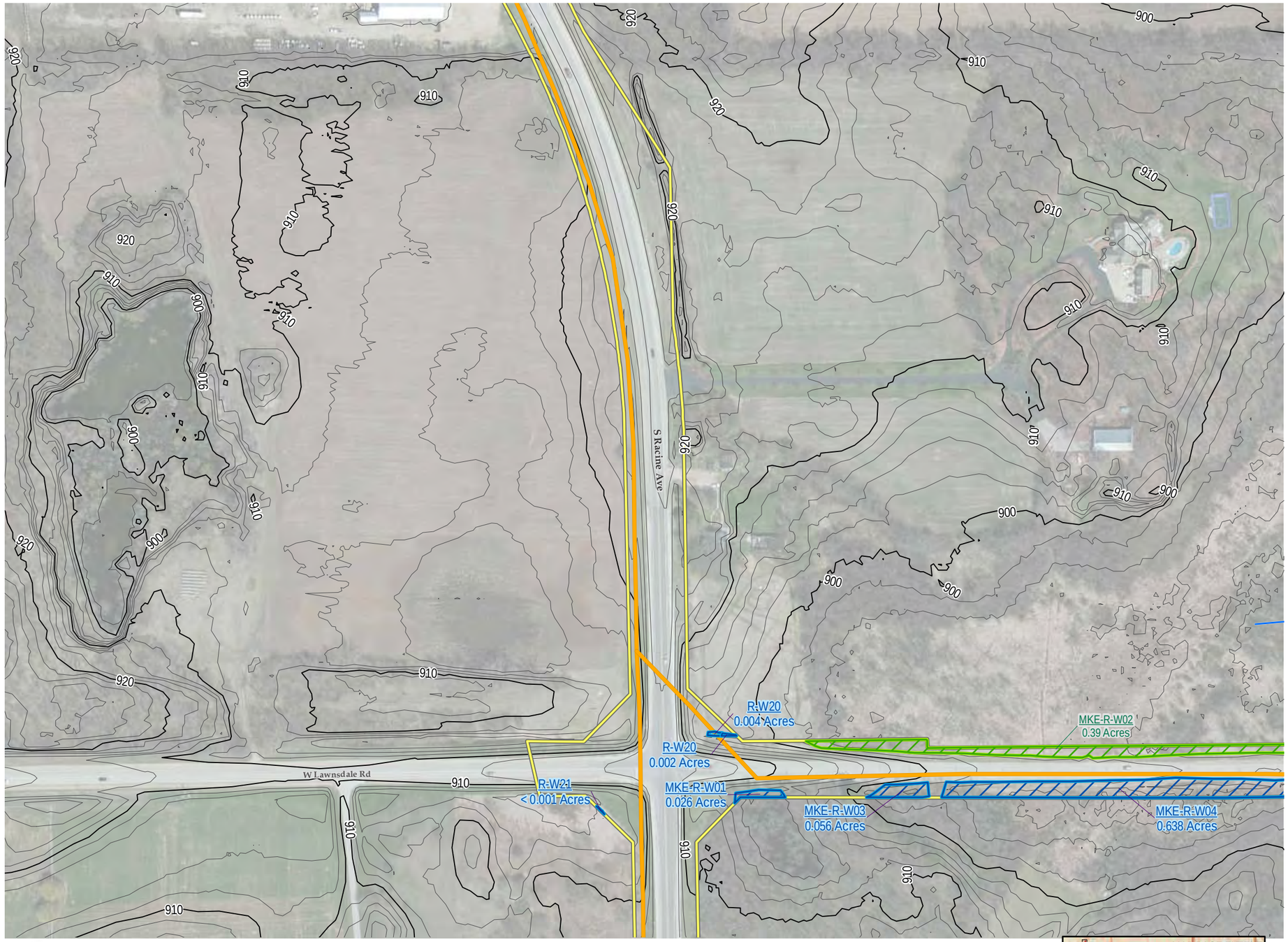

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS
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1 " = 200 '

N

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SERVING WAUKESHA SINCE 1886
GREELEY AND HANSEN
741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186
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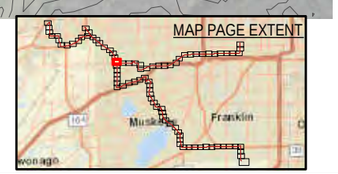

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

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LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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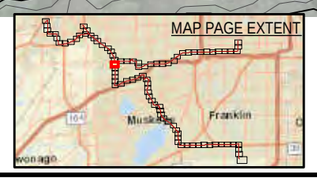

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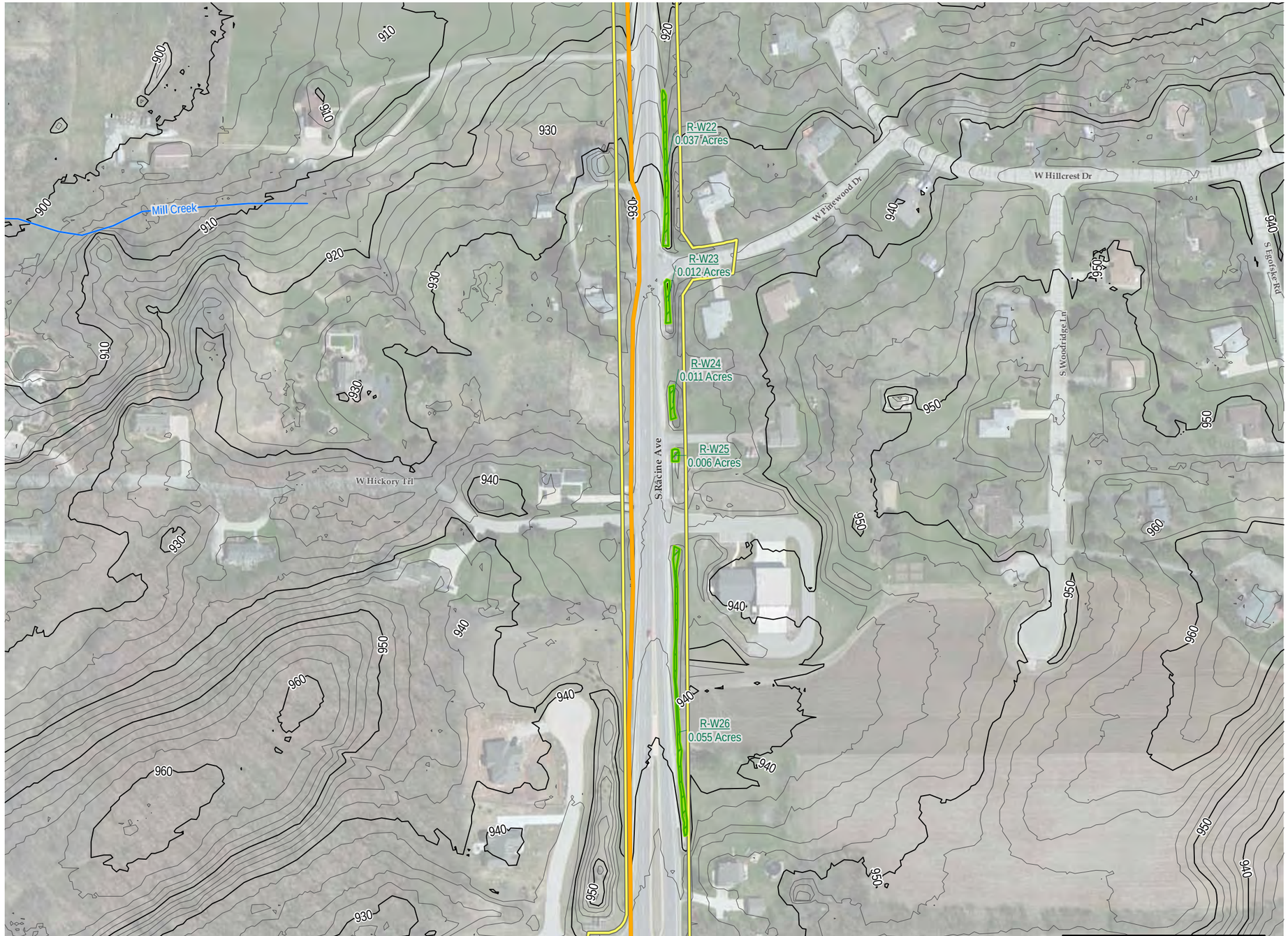
FIGURE NO. 1
SHEET 25 OF 88



LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS
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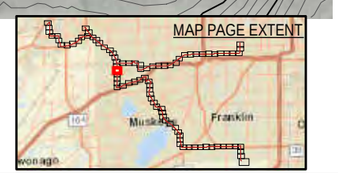

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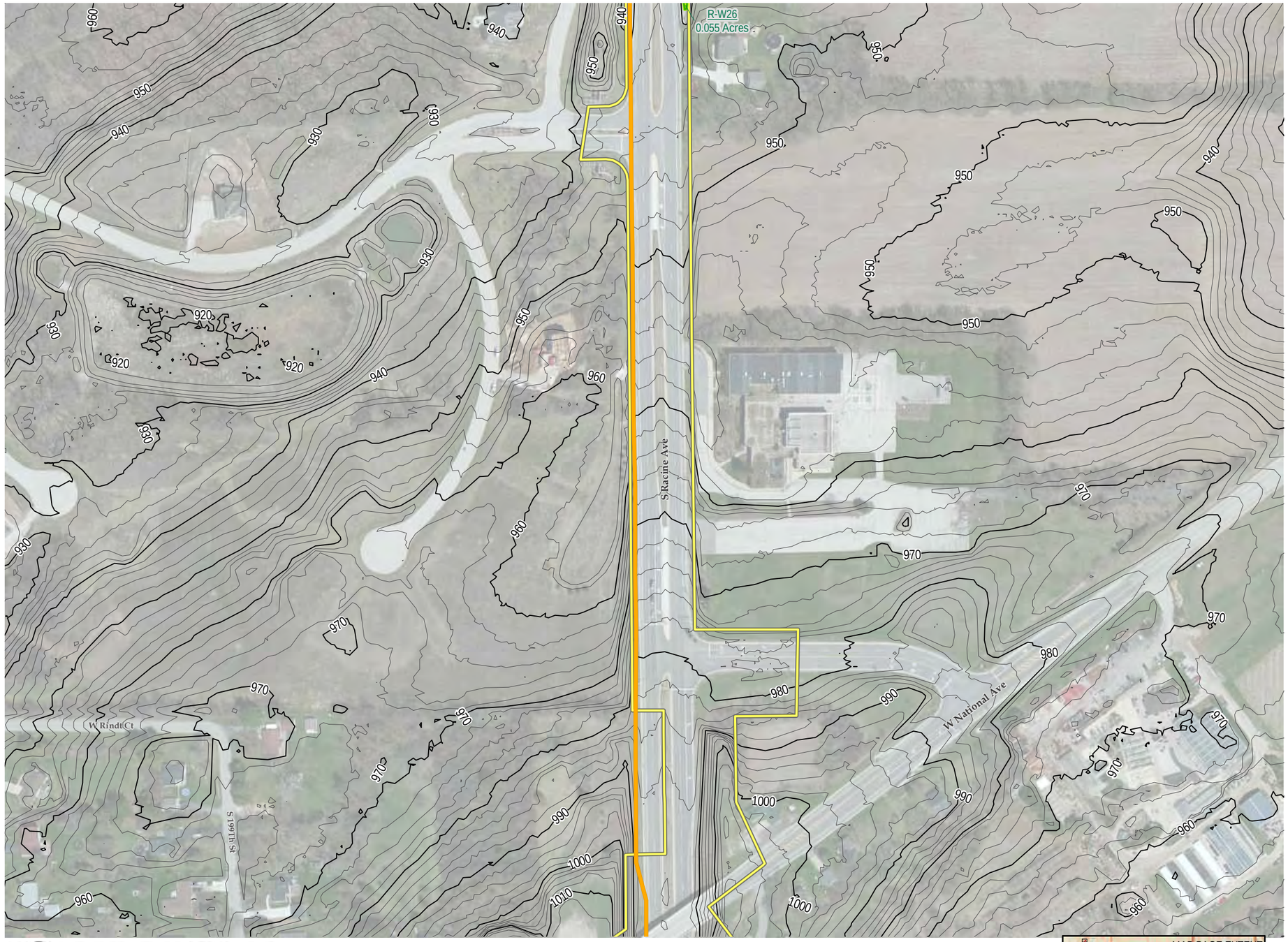

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- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

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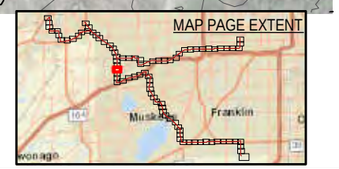

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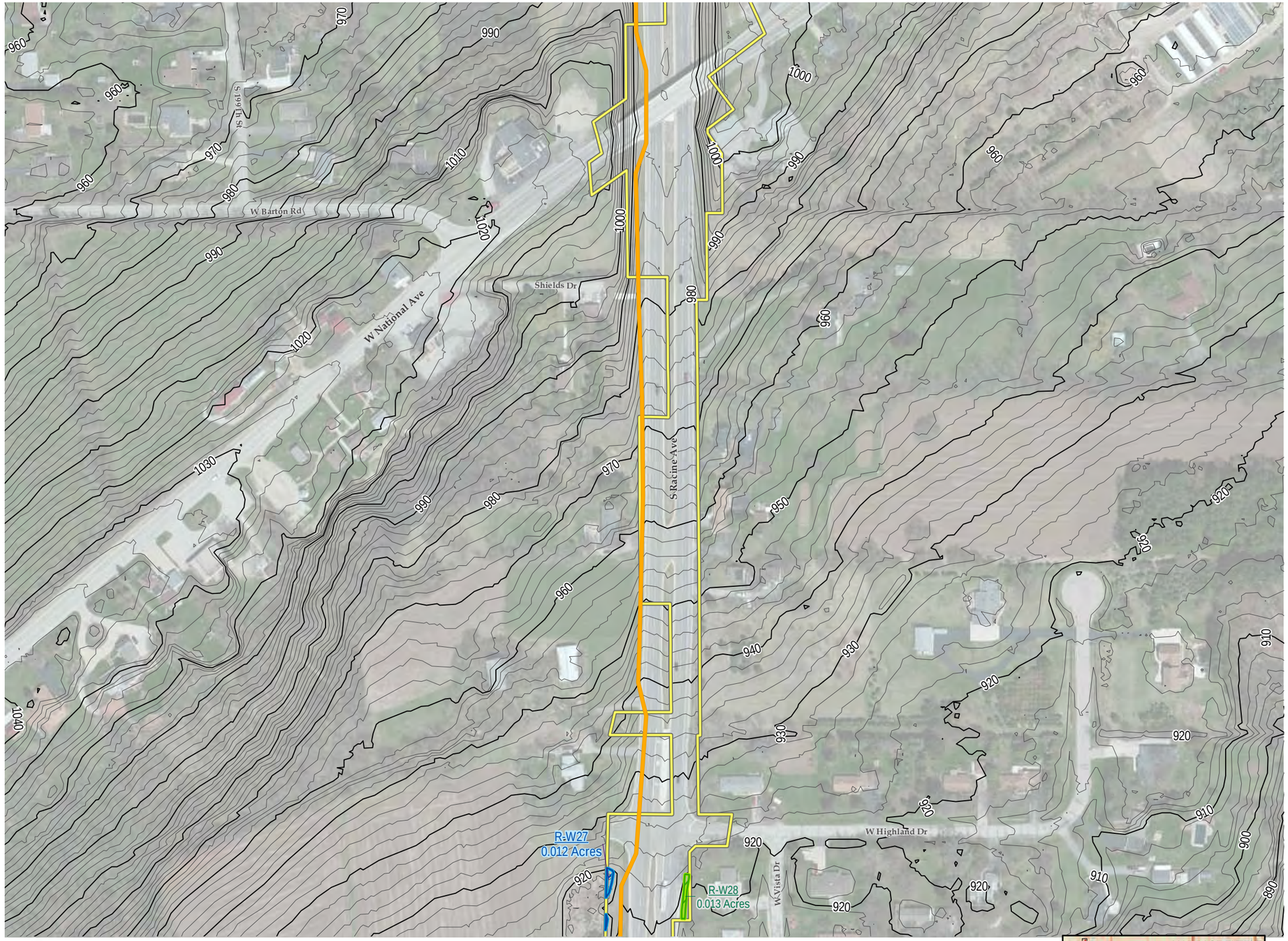

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- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

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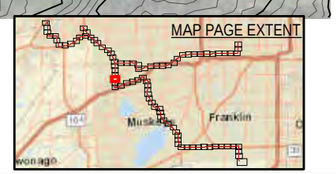

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

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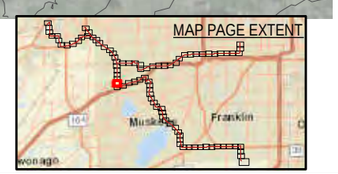

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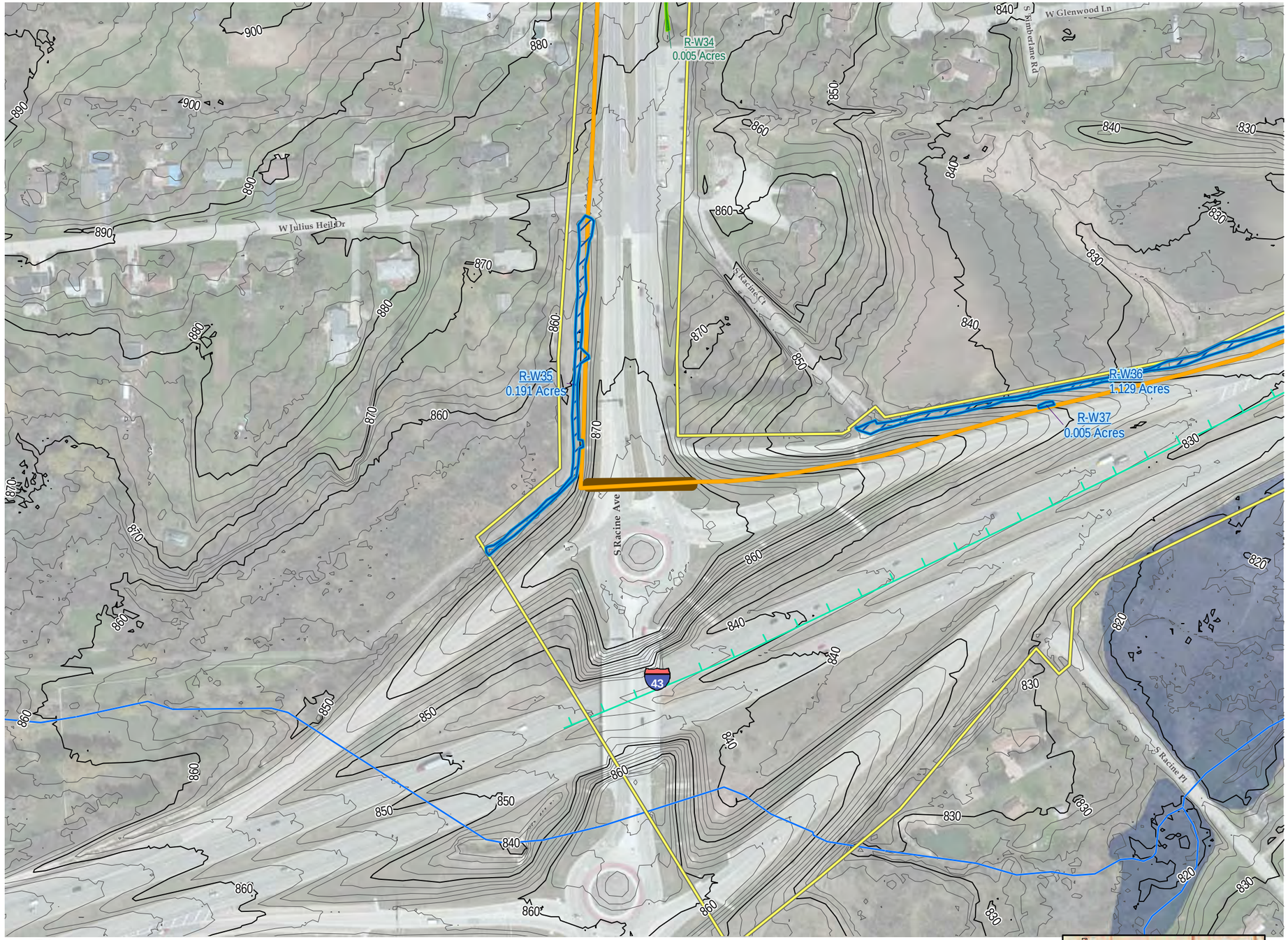

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- WETLAND DELINEATION EXTENT (HASH LINE TO SURVEYED SIDE)
- NHD STREAM/RIVER
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

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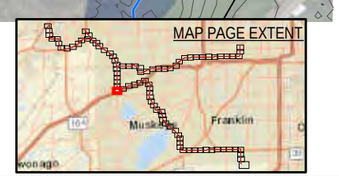

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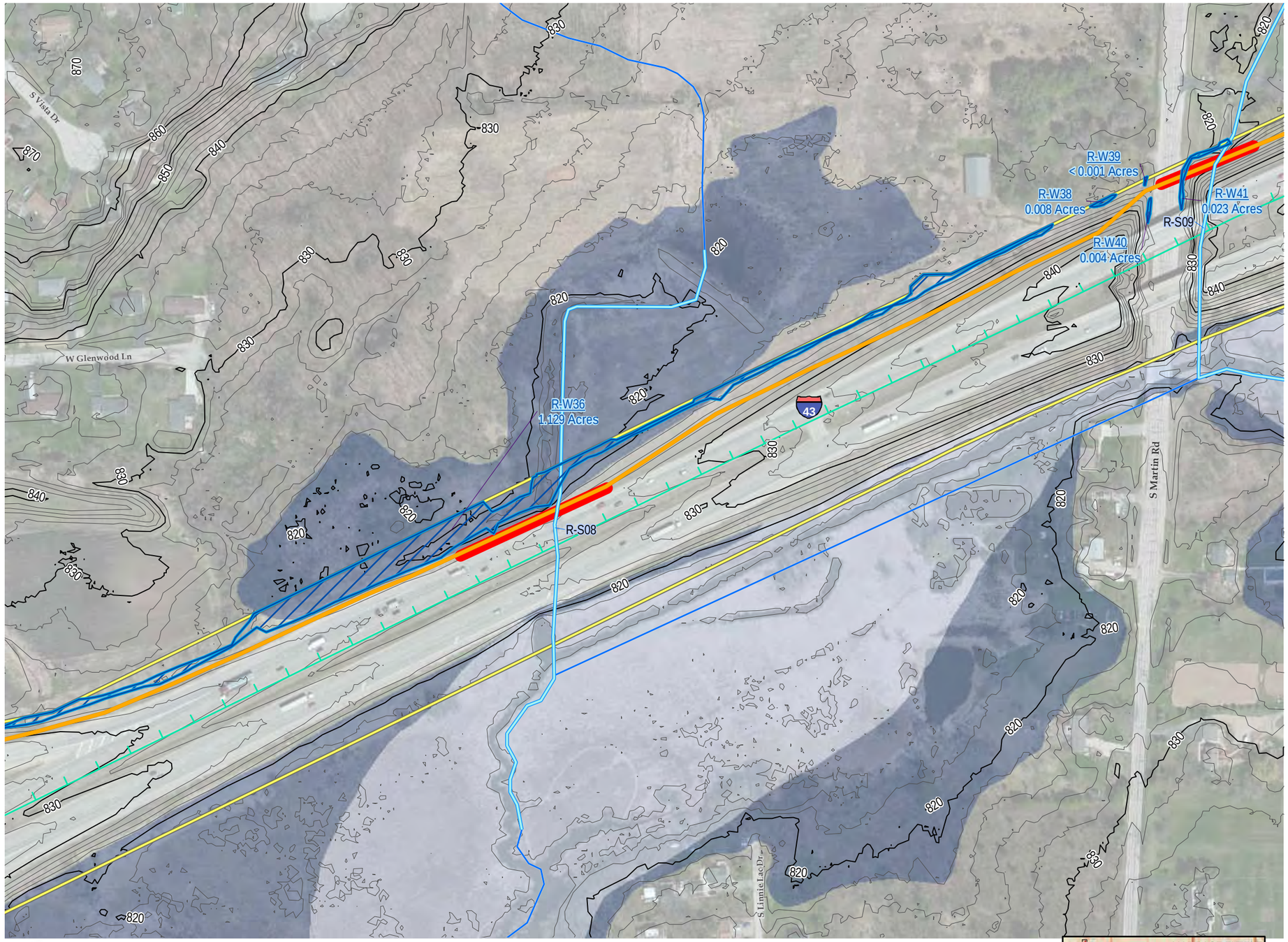

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- FLOODWAY
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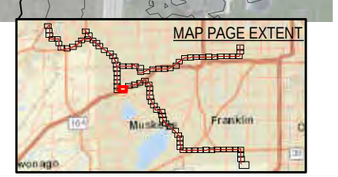

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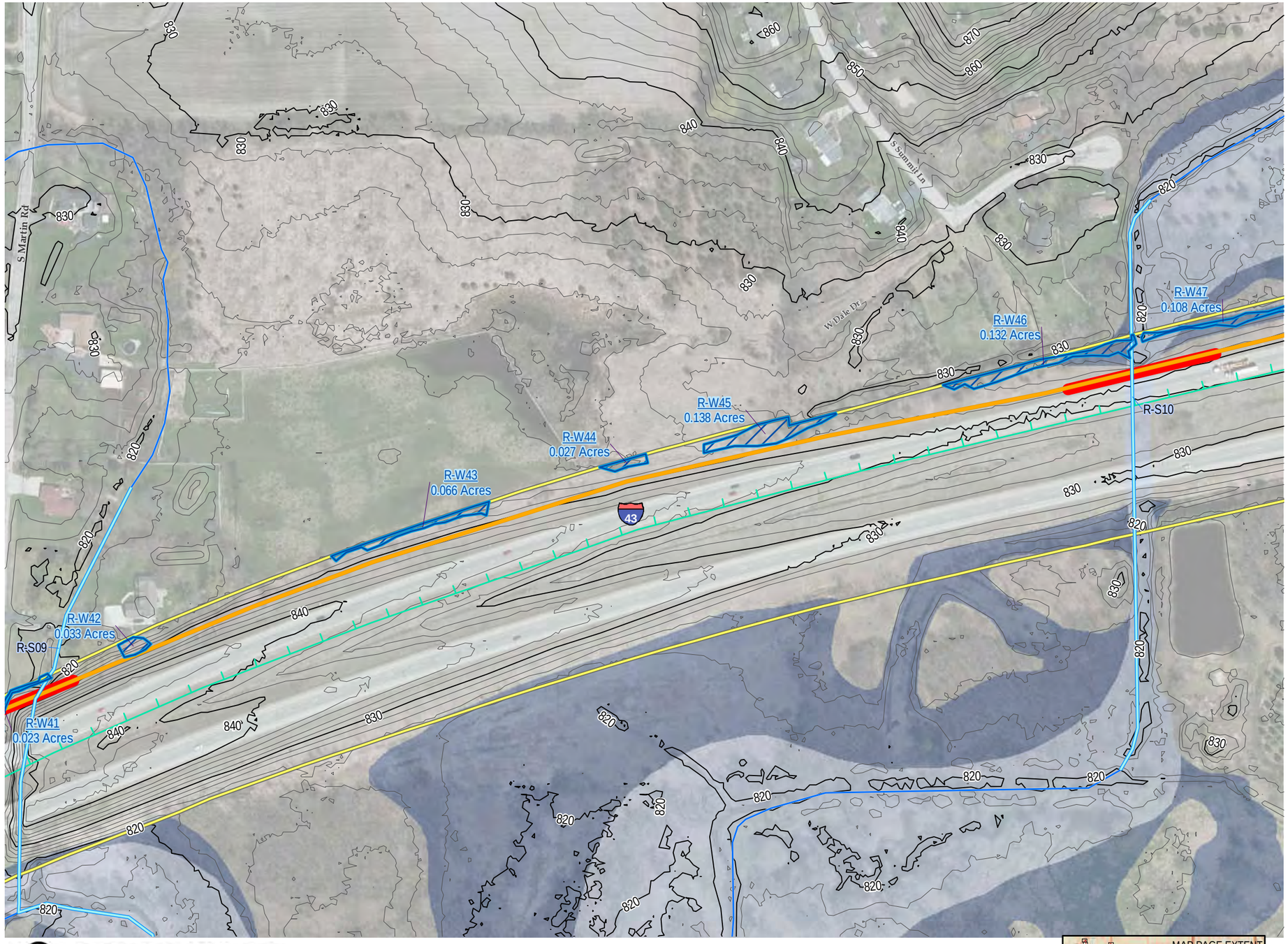

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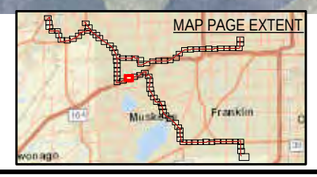

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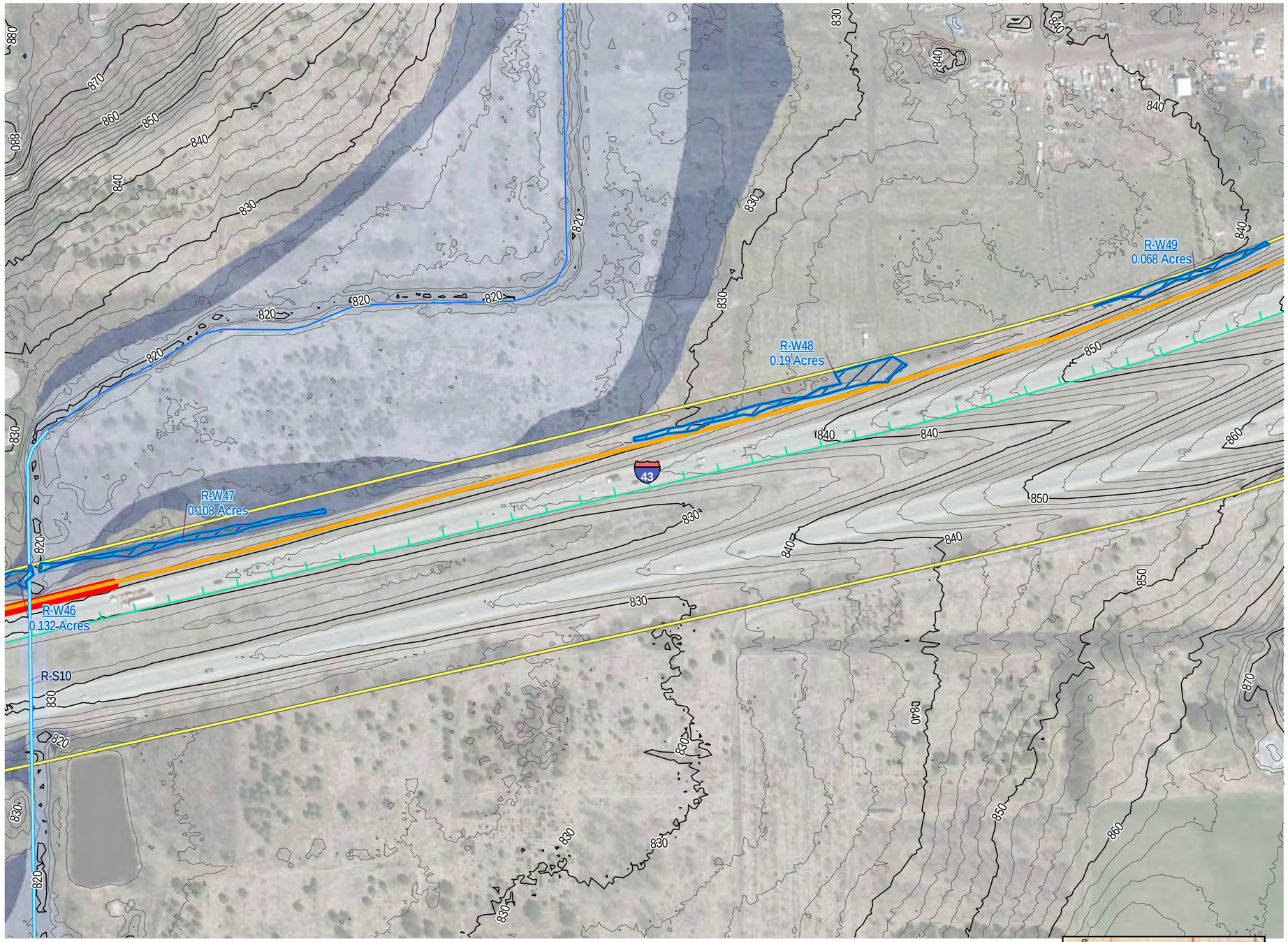

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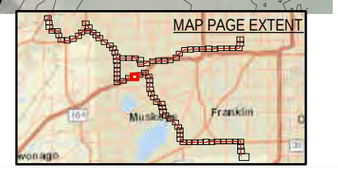

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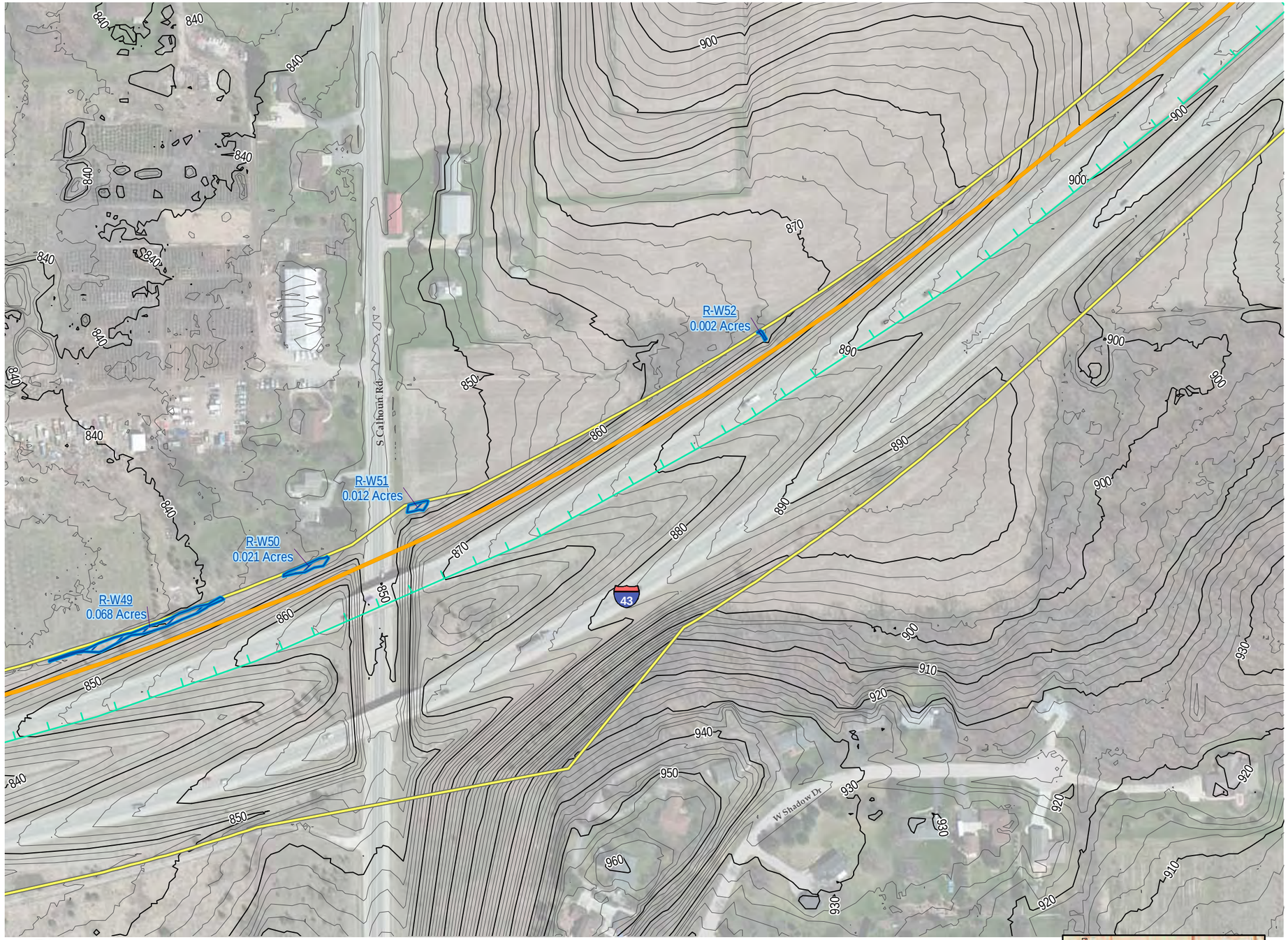

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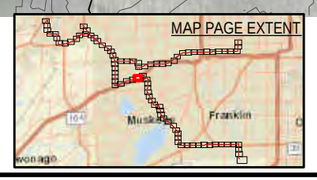

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Plotted: 11/21/2017
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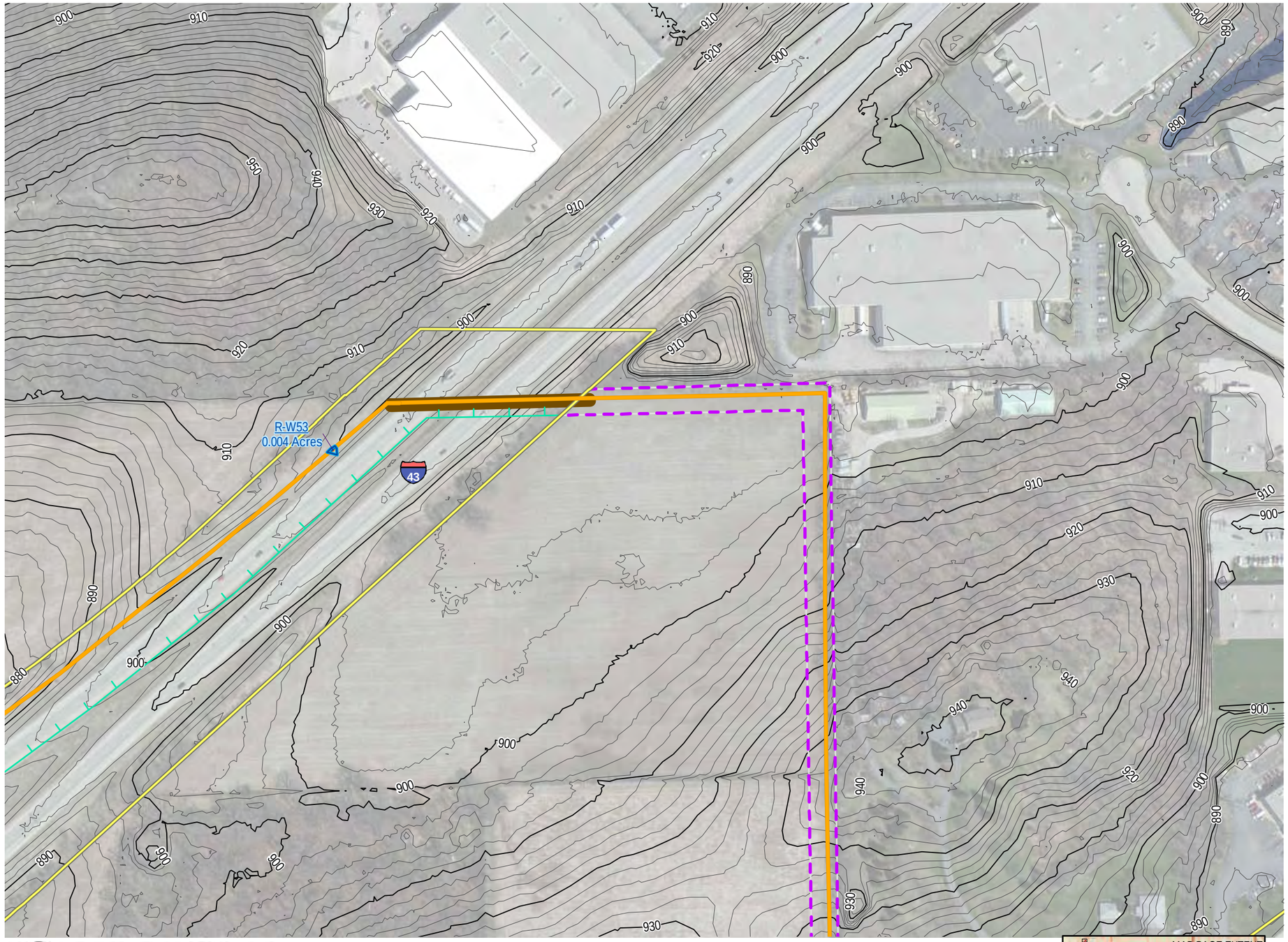

LEGEND

- PROPOSED PROJECT PIPELINE
- IMPACTED TRC DELINEATED WETLANDS
- PARCEL WITH NEW EASEMENT
- EXISTING RIGHT OF WAY (ROW)
- WETLAND DELINEATION EXTENT (HASH LINE TO SURVEYED SIDE)
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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1 " = 200 '

N

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GREELEY AND HANSEN
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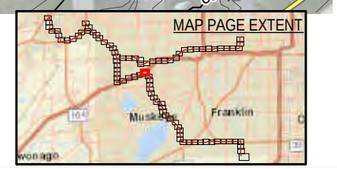

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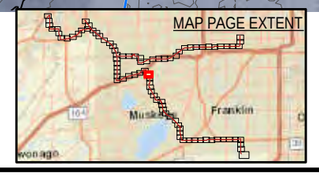

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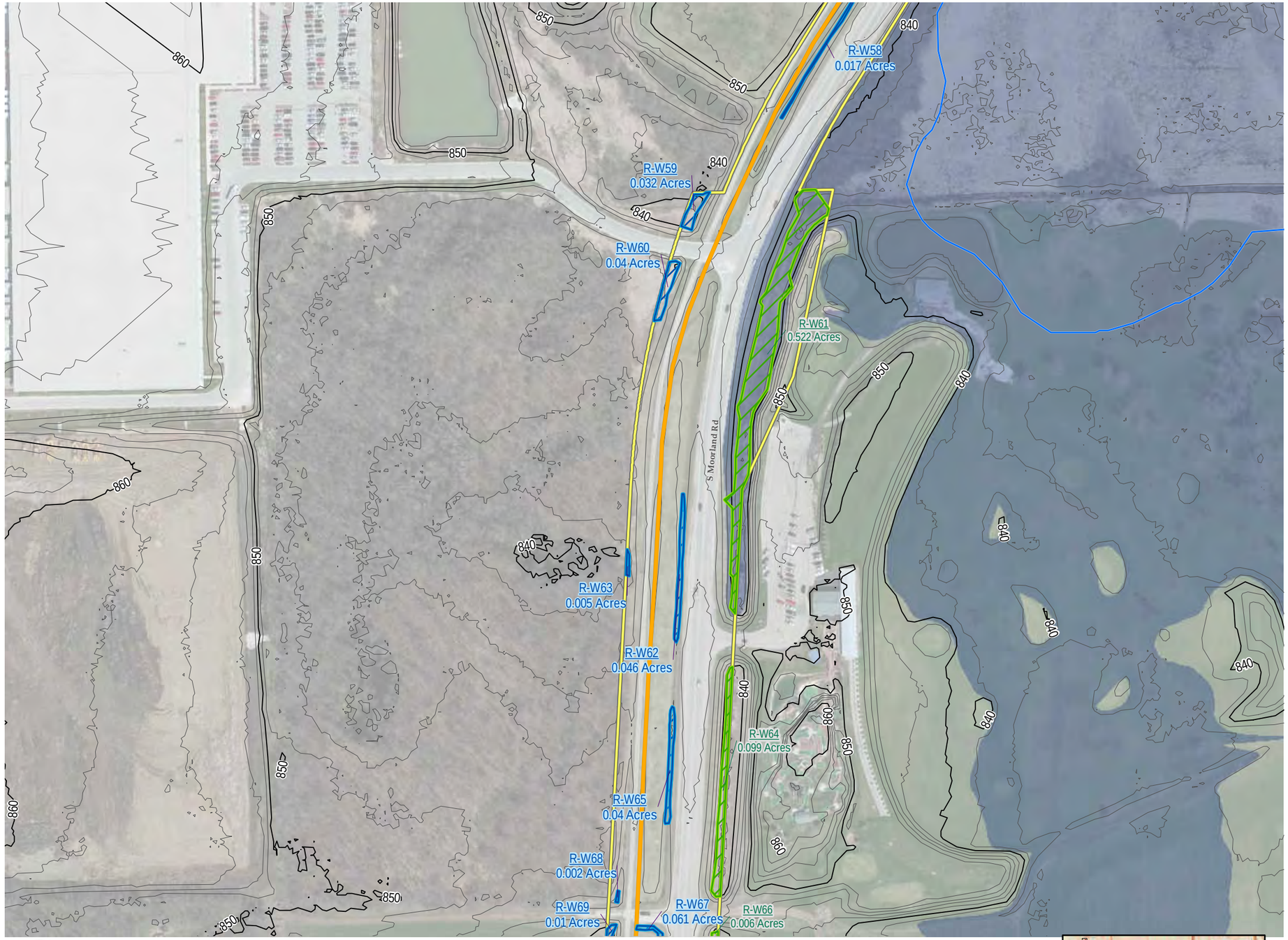

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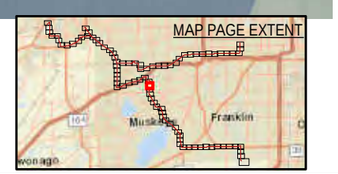

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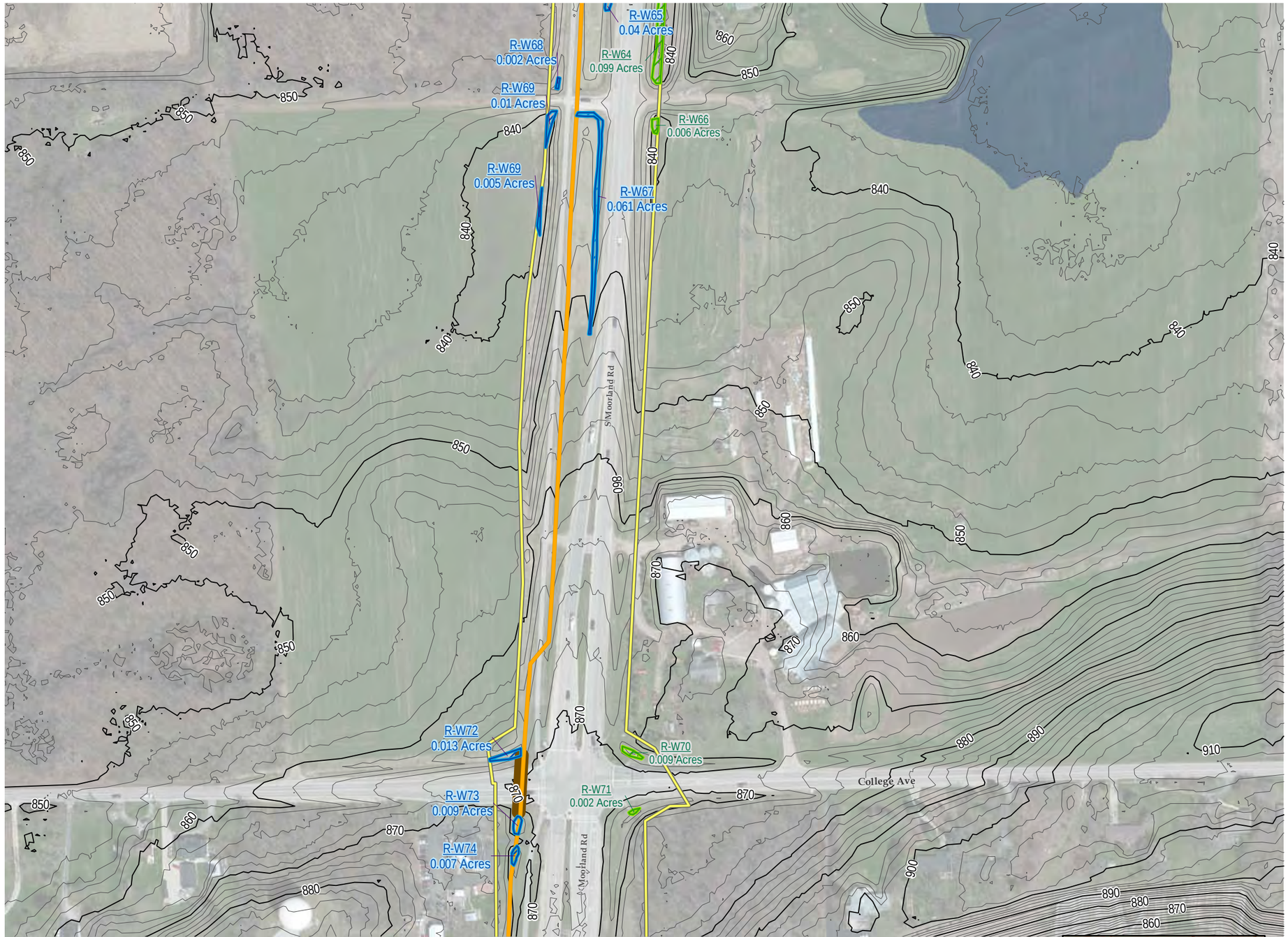

FIGURE NO. 1
SHEET 37 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
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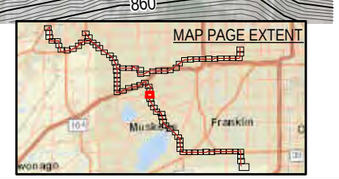

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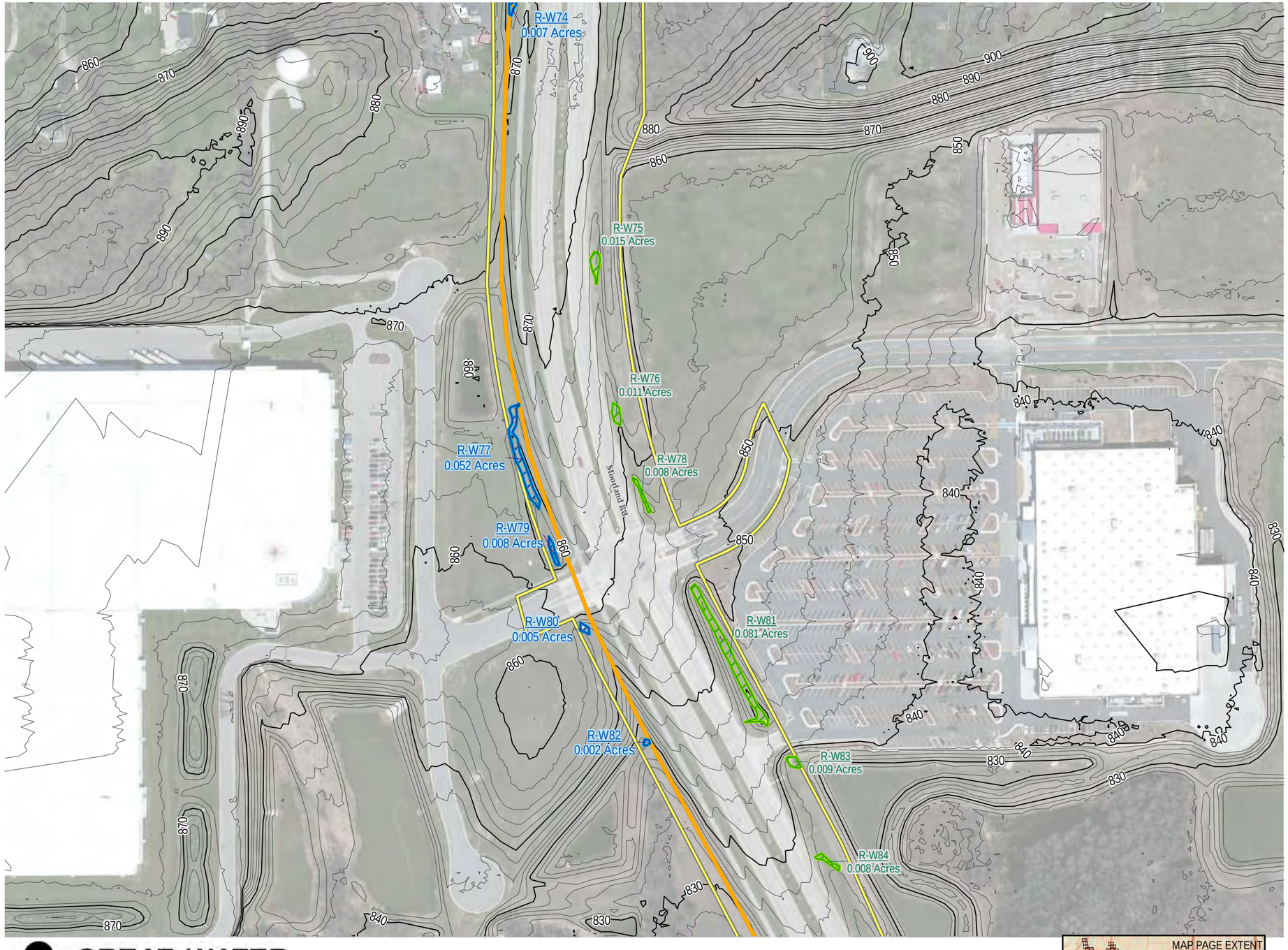

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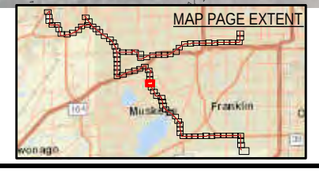

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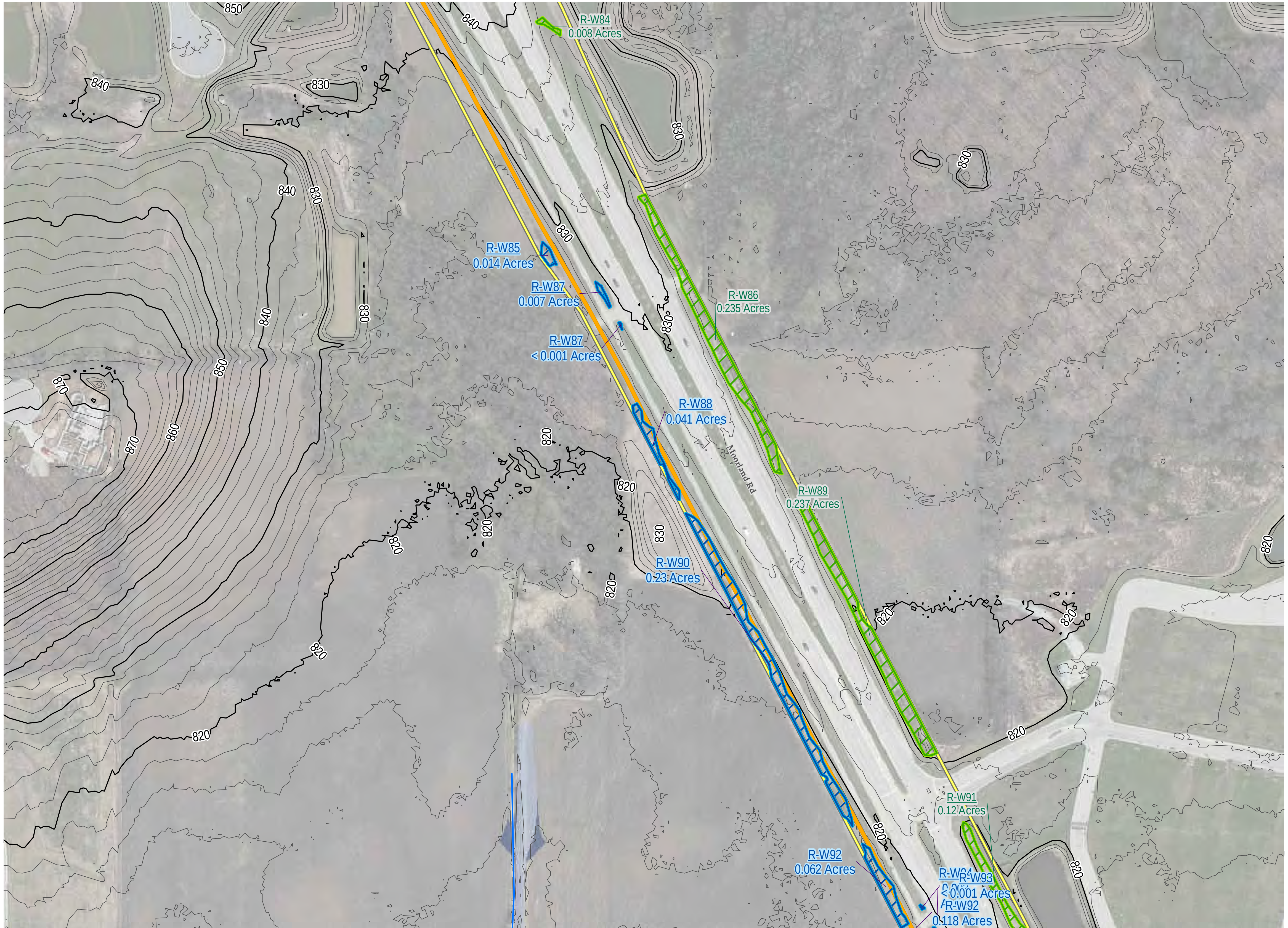

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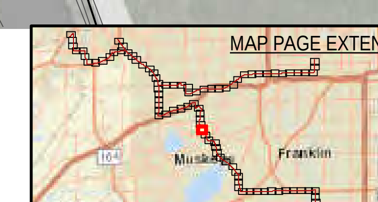

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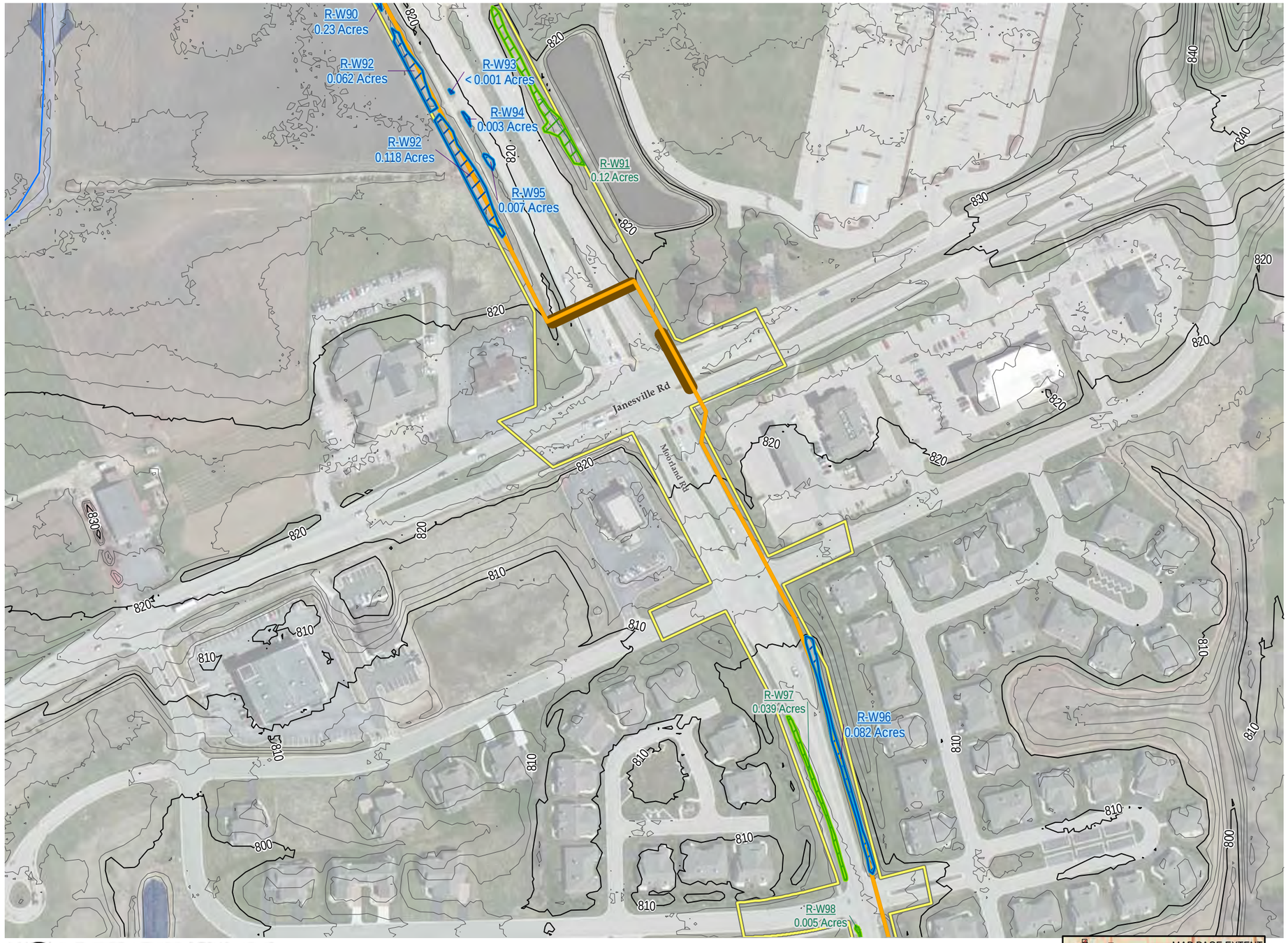

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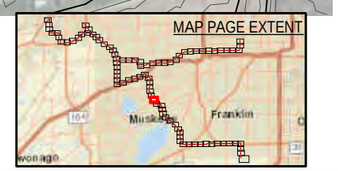

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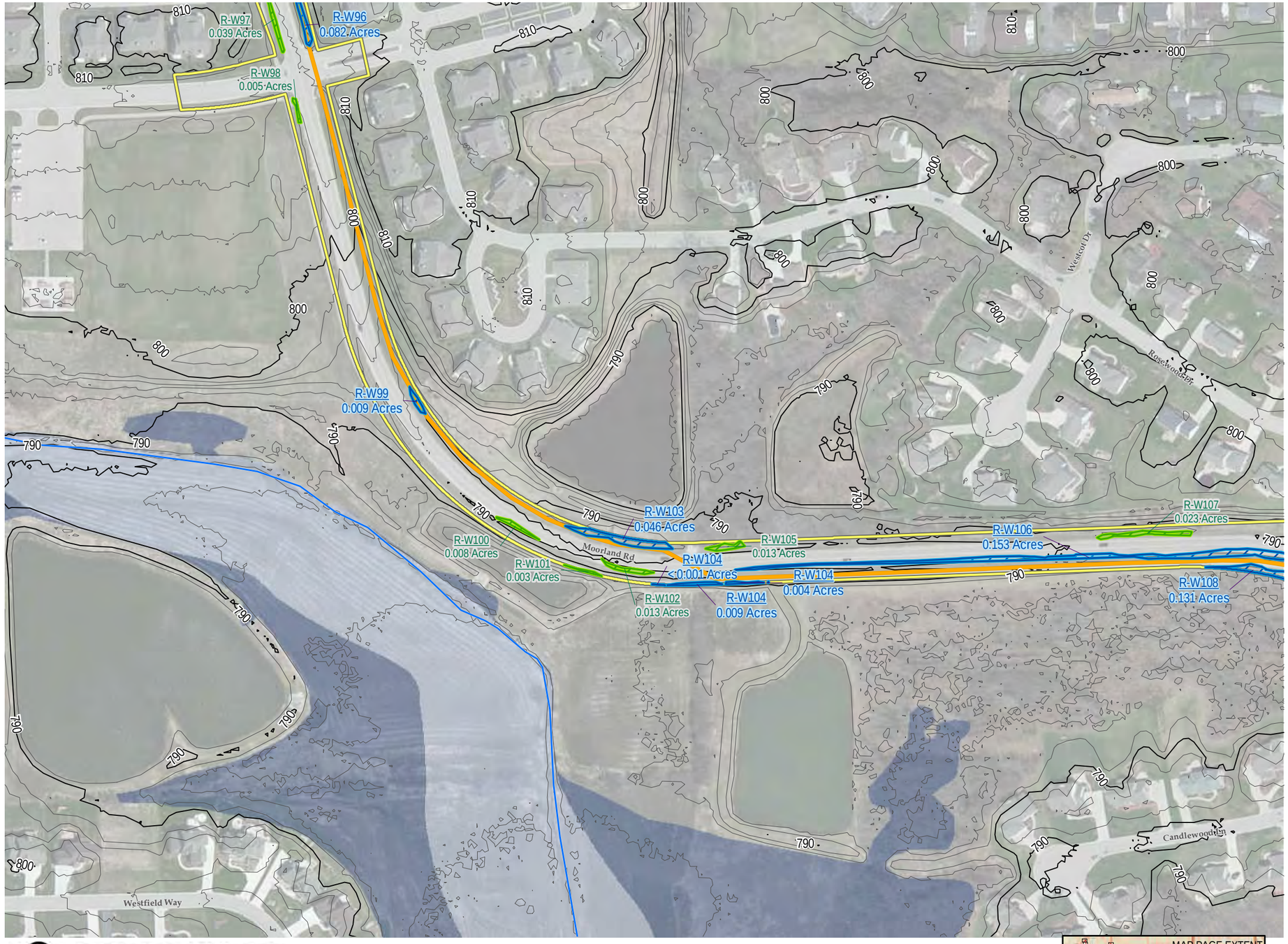

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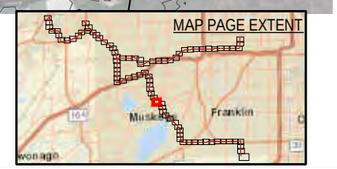

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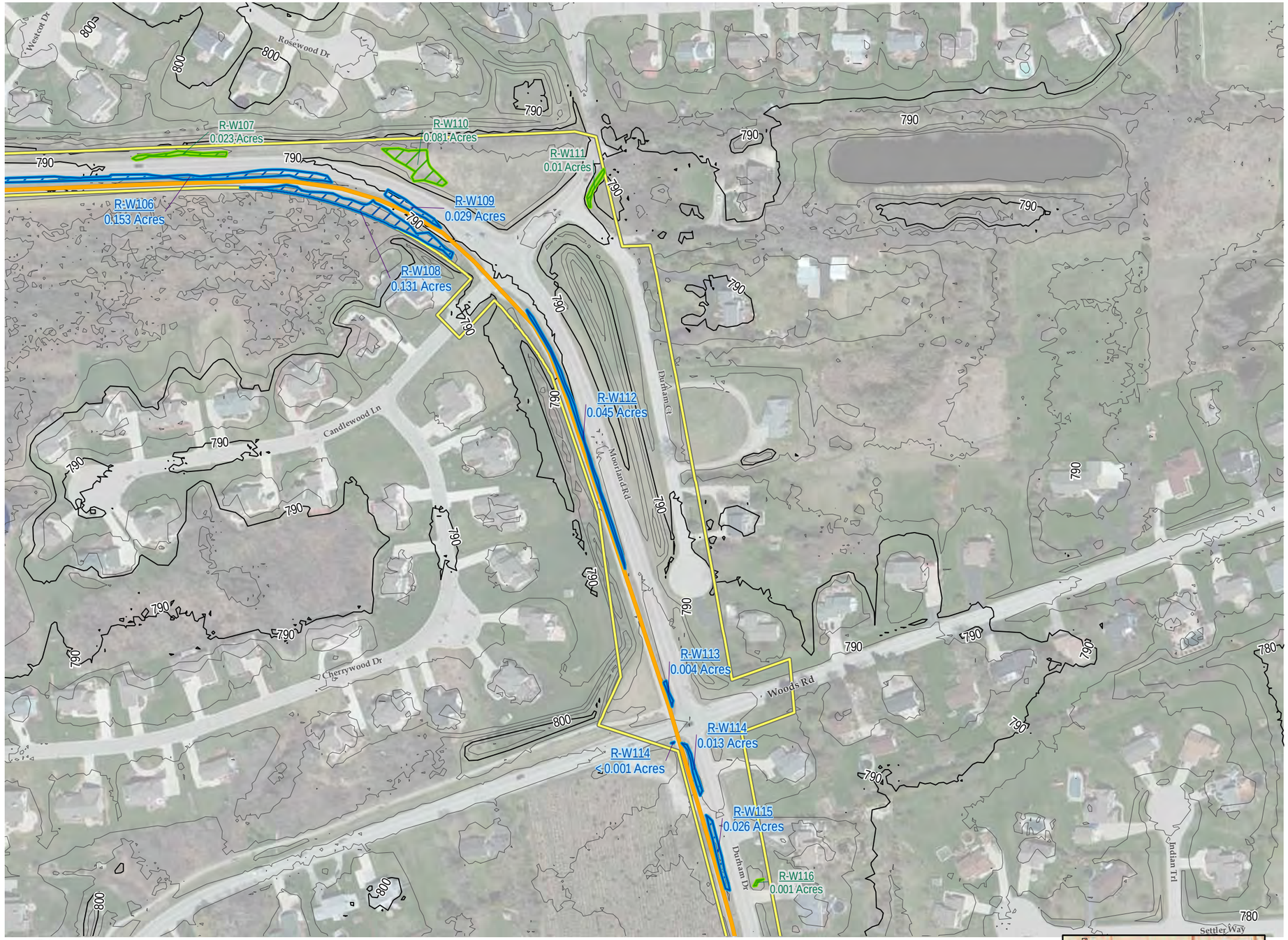

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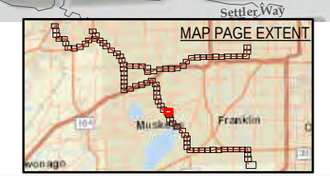

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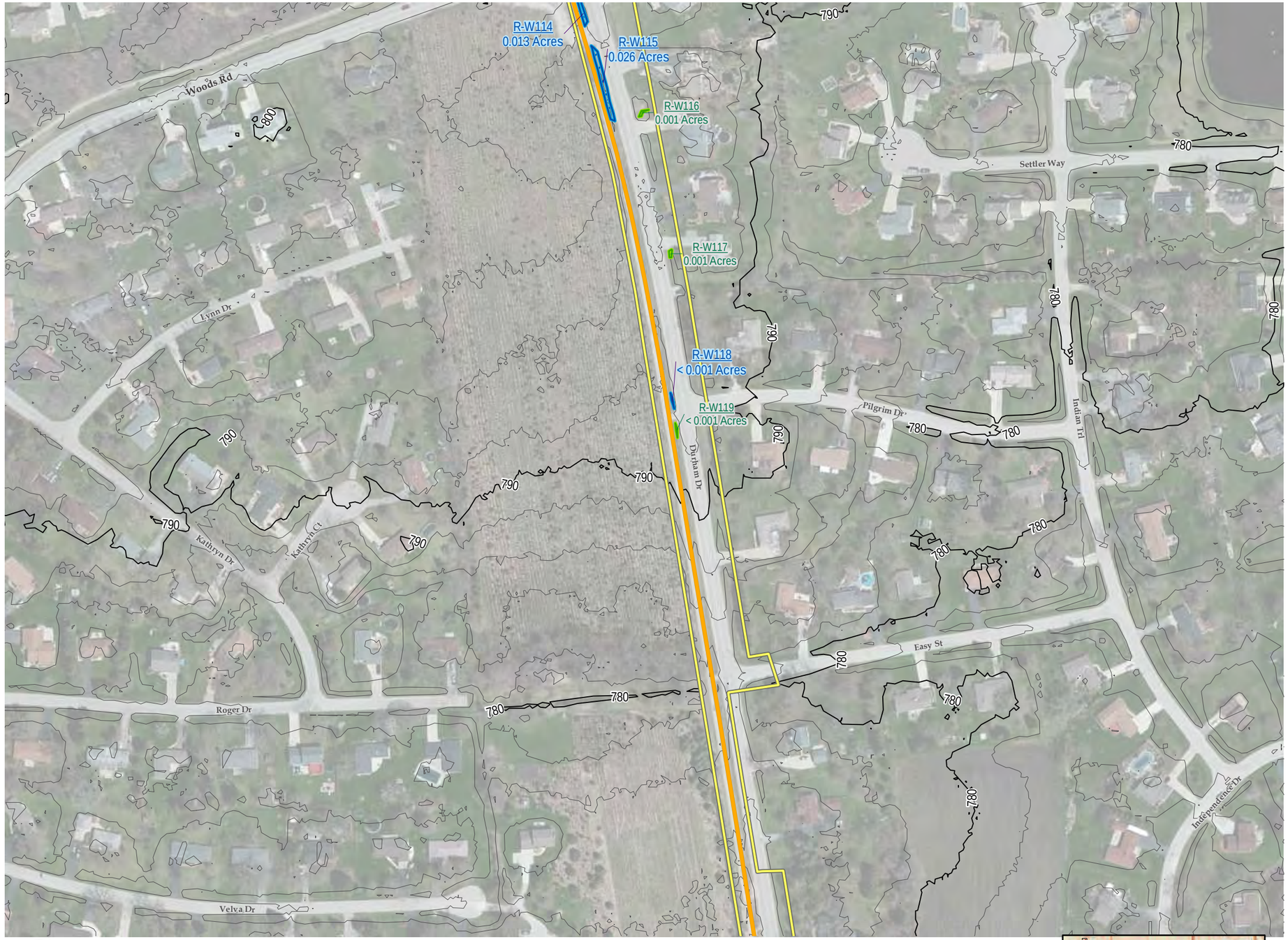

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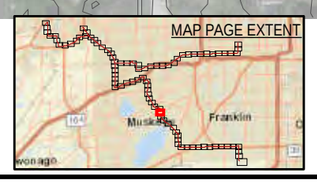

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1 " = 200 '

N

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Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
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Waukesha, Wisconsin 53186

TRC
Results you can rely on

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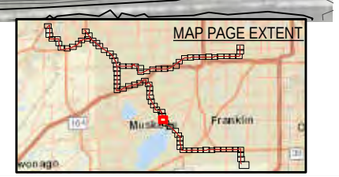

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

Plotted: 11/21/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-MKEroute\ProjMB.mxd

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- 100 YEAR FLOODZONE (A, AE)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

1. BASE MAP FROM ESRI, WORLD IMAGERY WEB BASEMAP SERVICE LAYER.
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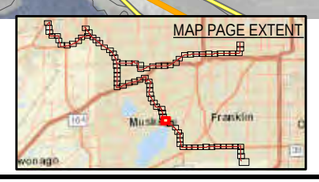

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)

TOPOGRAPHIC CONTOURS

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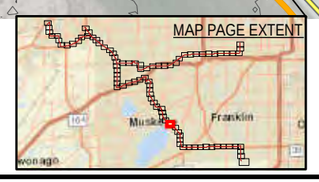

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
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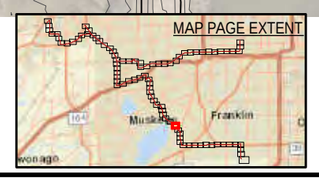

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
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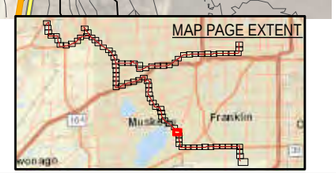

Waukesha, Wisconsin
Great Lakes Water Supply Program
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Date: 11/21/2017

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
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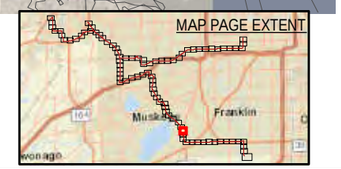

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
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Waukesha, Wisconsin
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LEGEND

- PROPOSED PROJECT PIPELINE
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS
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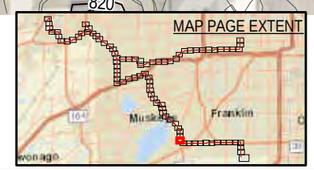

Waukesha, Wisconsin
Great Lakes Water Supply Program
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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
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- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS

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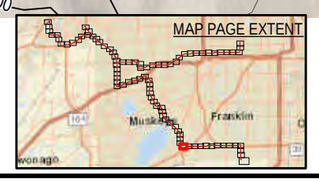

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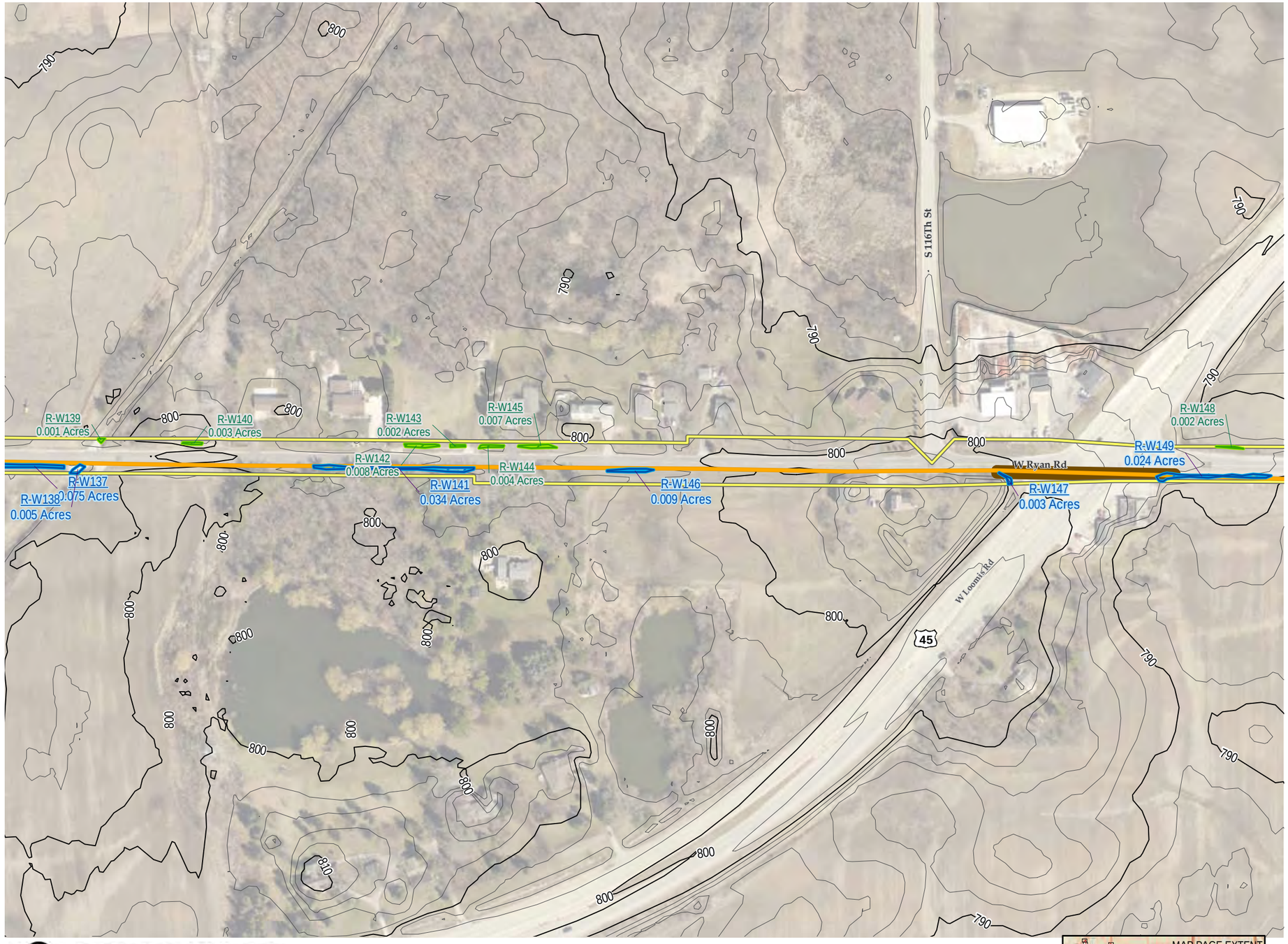

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- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
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- EXISTING RIGHT OF WAY (ROW)
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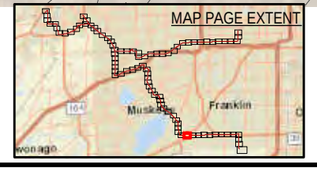

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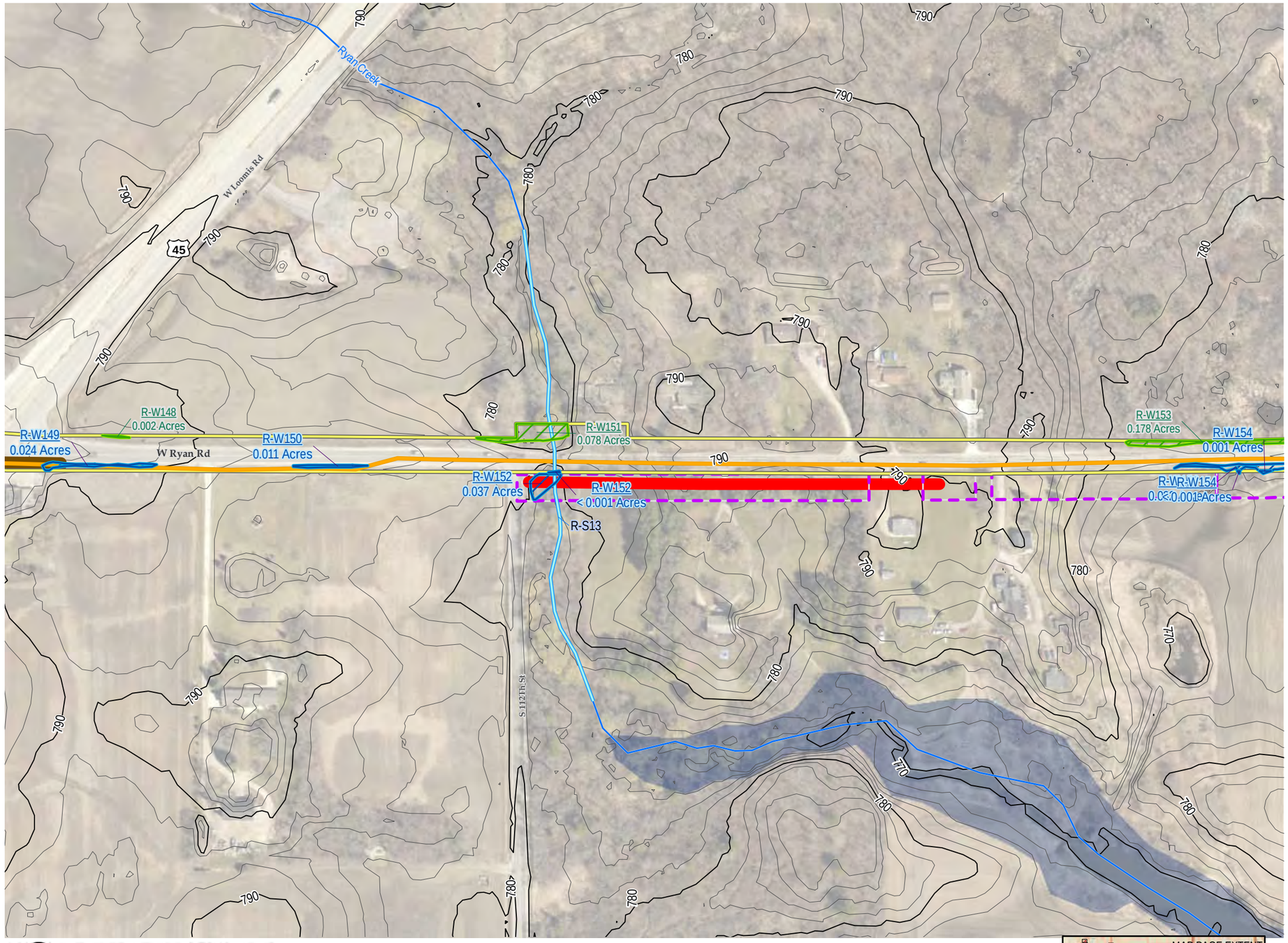

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- PARCEL WITH NEW EASEMENT
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
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- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

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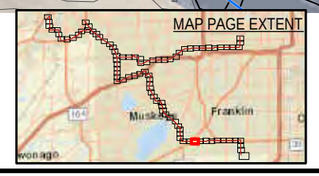

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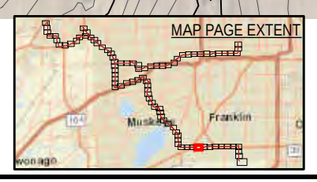

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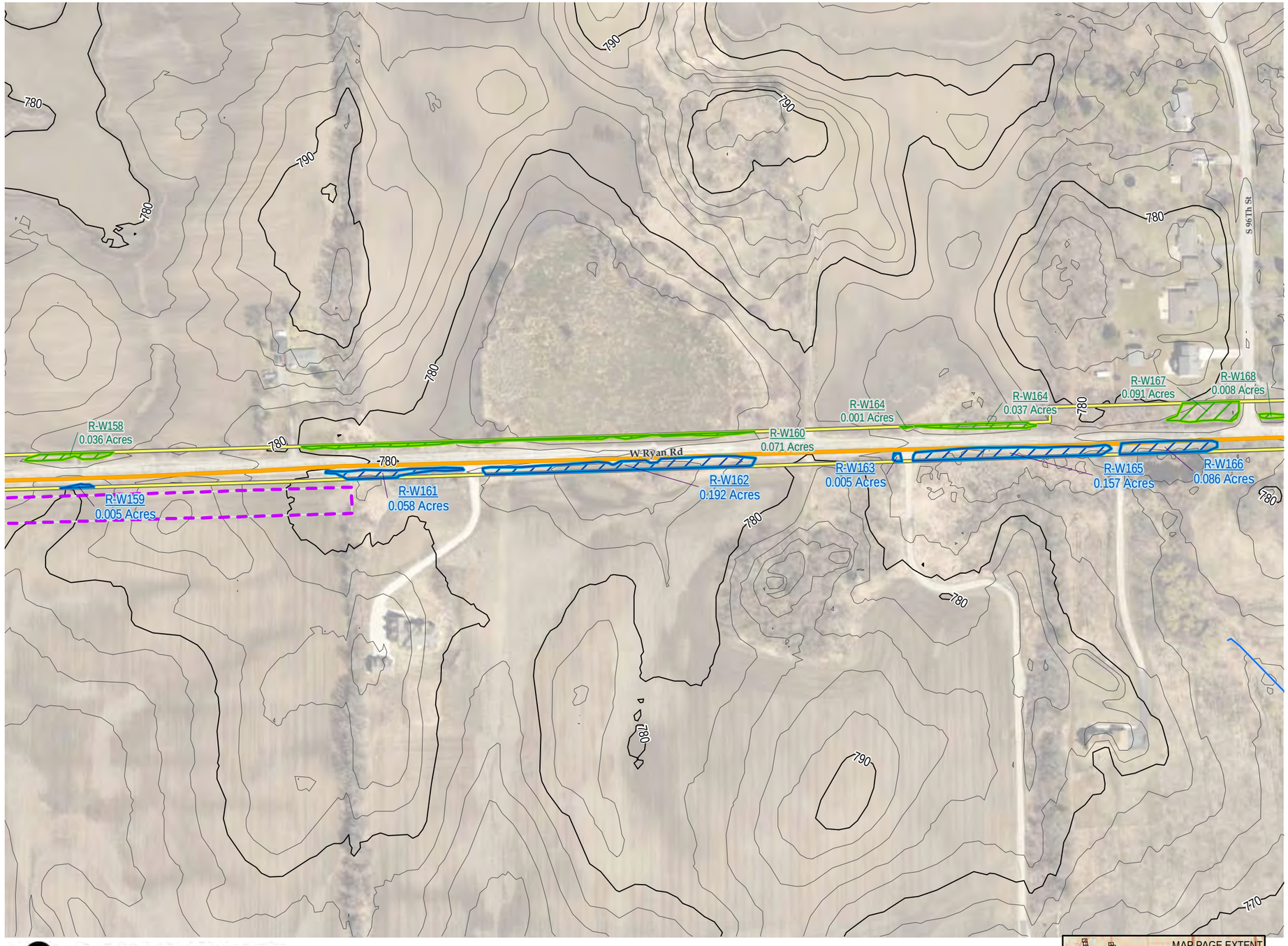

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
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- PARCEL WITH NEW EASEMENT
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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1 " = 200 '

N

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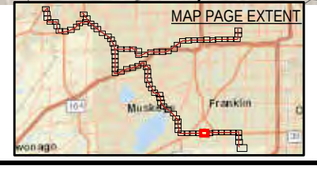
Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186

TRC
Results you can rely on

DRAFT



Waukesha, Wisconsin
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Date: 11/21/2017

Plotted: 11/21/2017
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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- 100 YEAR FLOODZONE (A, AE)

TOPOGRAPHIC CONTOURS

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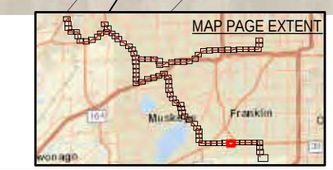

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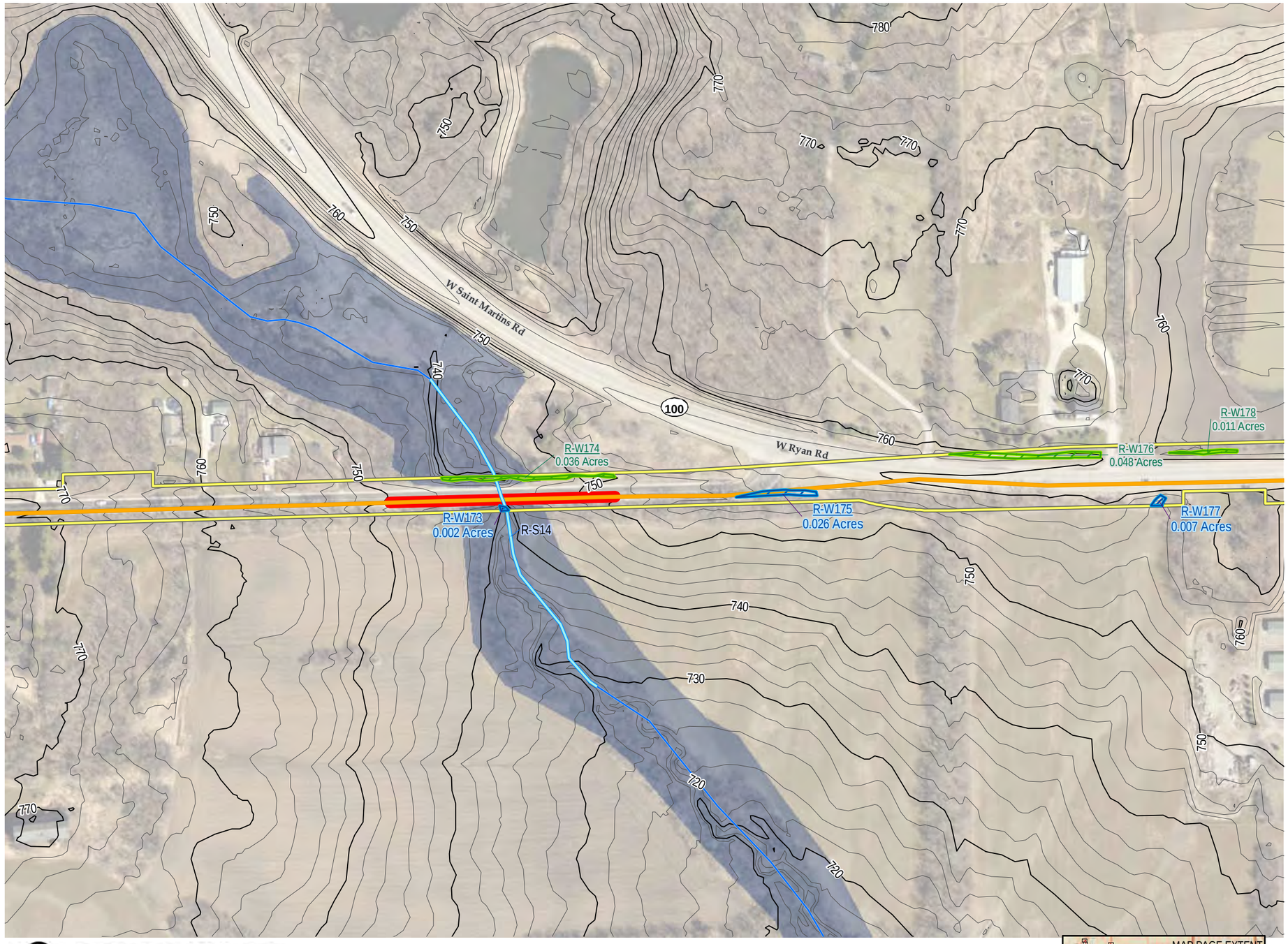

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- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

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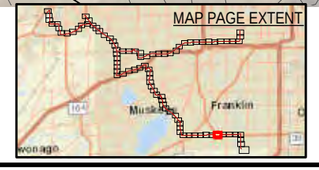

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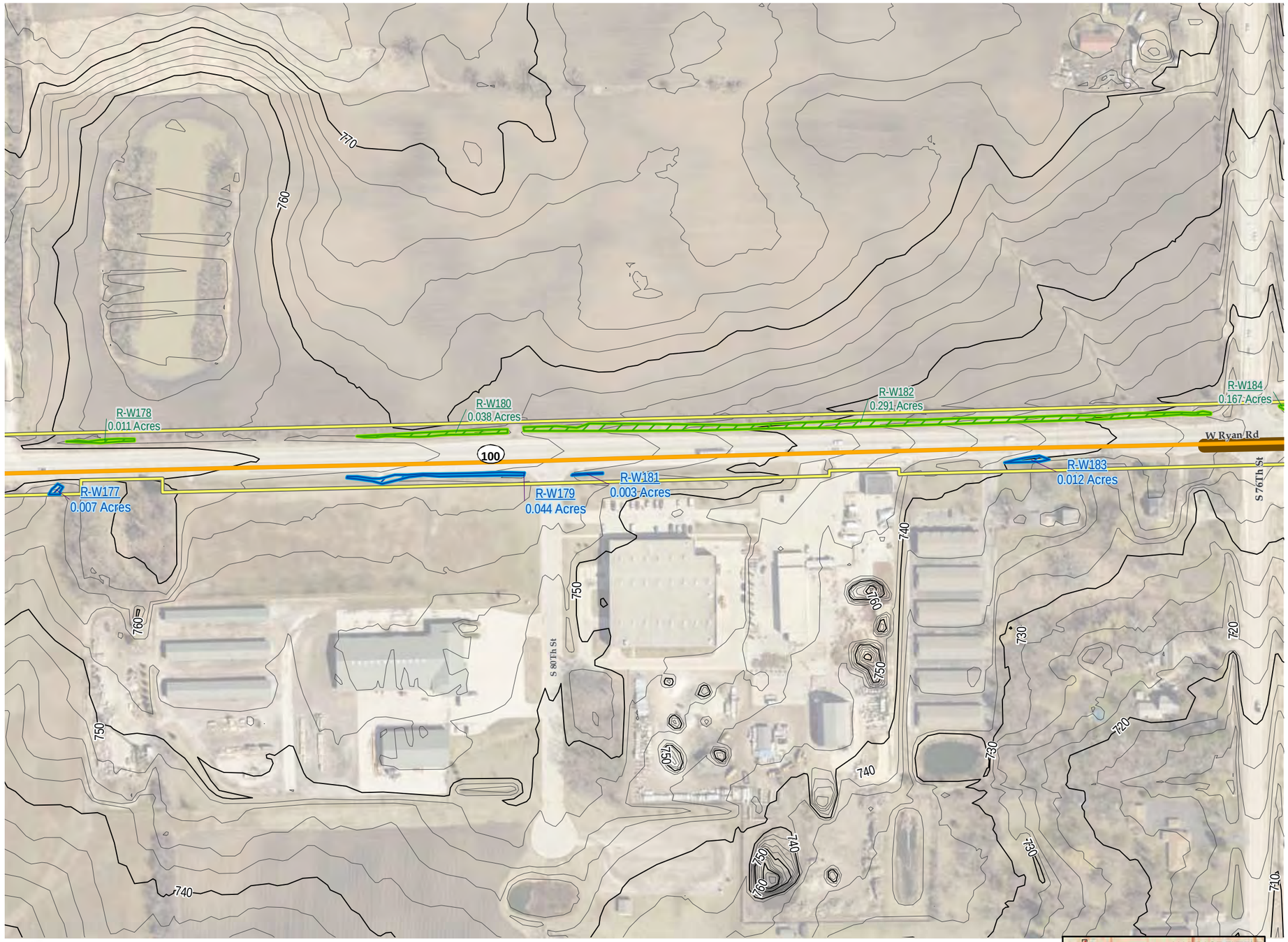

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- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
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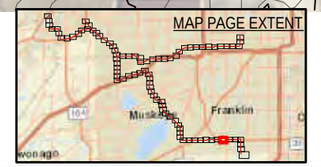

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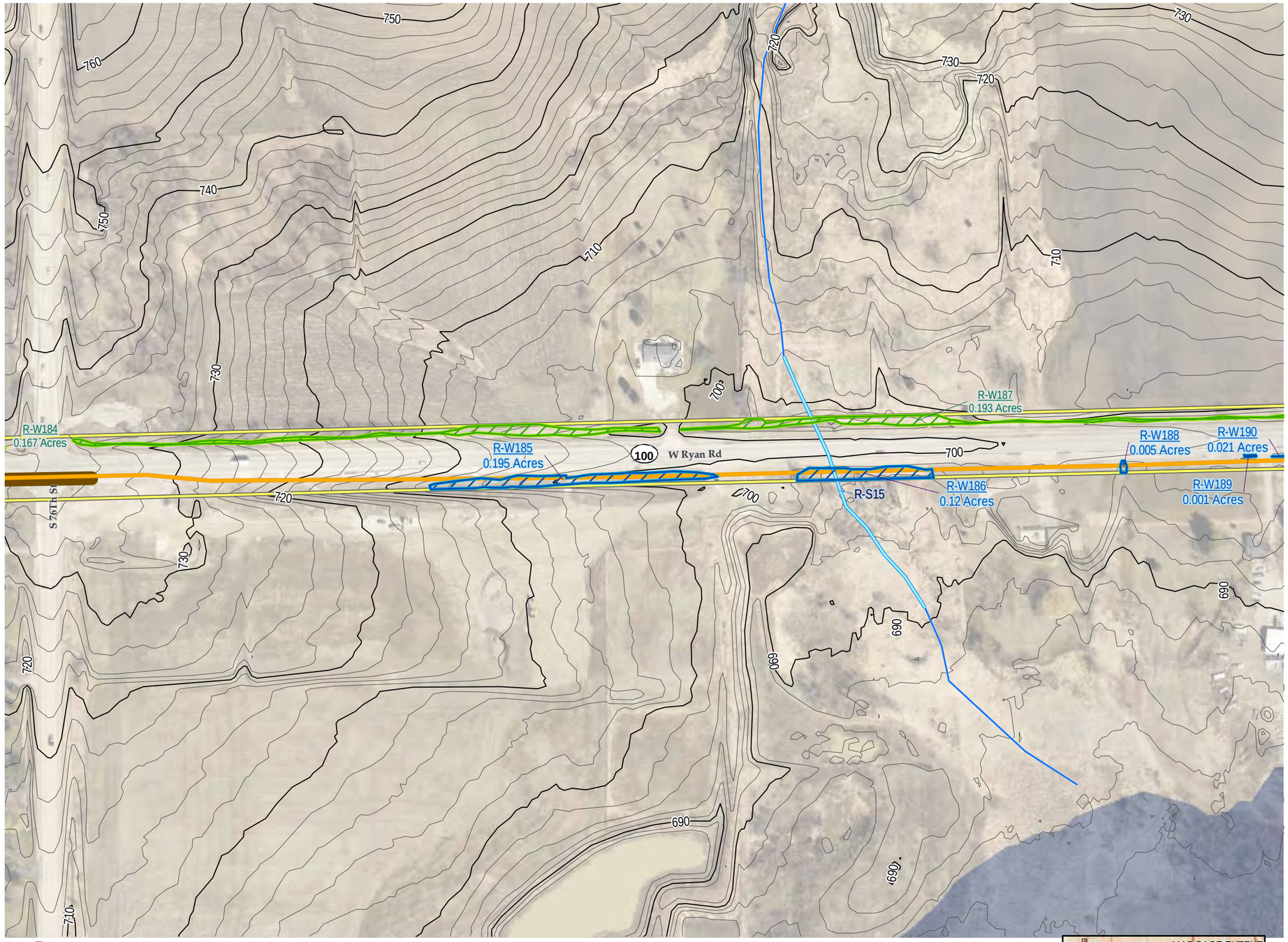

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- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- 100 YEAR FLOODZONE (A, AE)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

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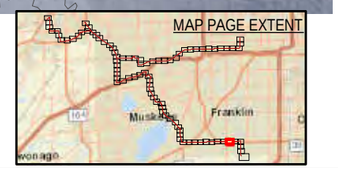

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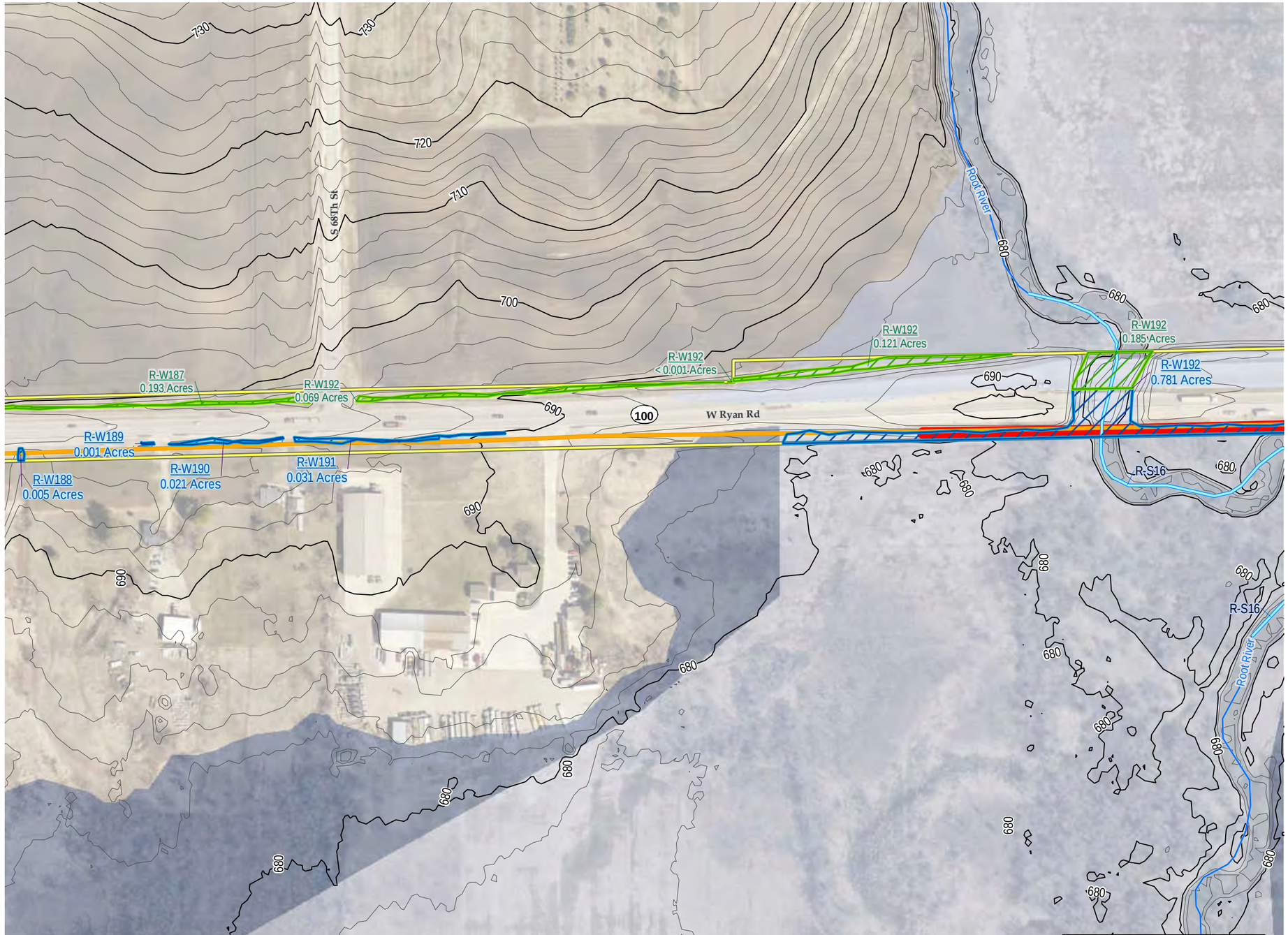

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- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
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- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
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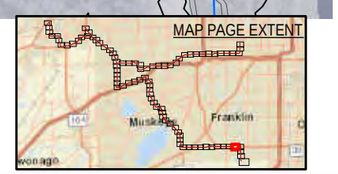

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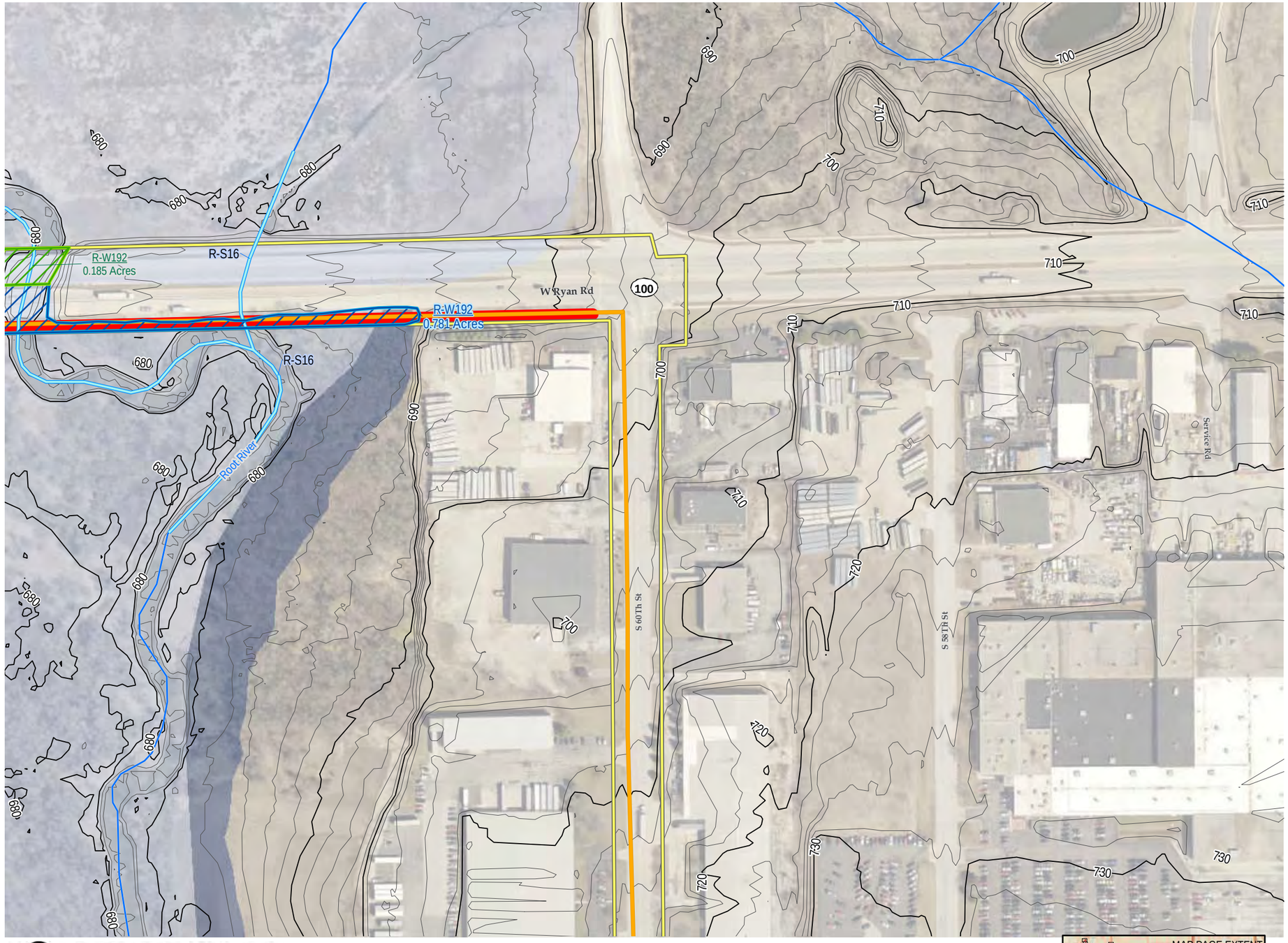

FIGURE NO. 1
SHEET 62 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

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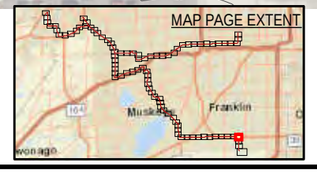

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- EXISTING RIGHT OF WAY (ROW)
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- FLOODWAY

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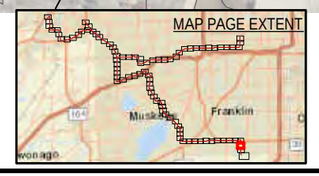

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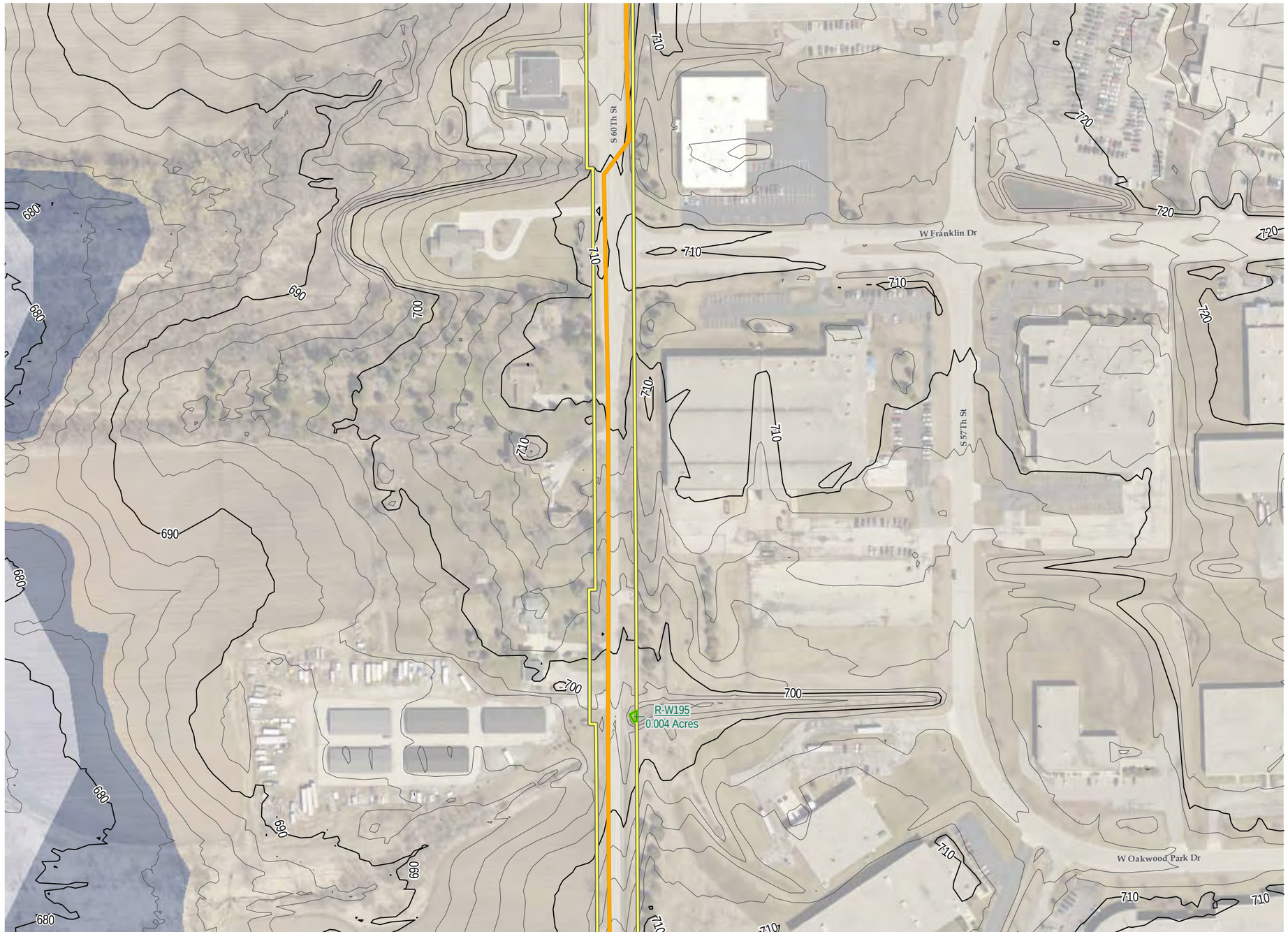

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY

TOPOGRAPHIC CONTOURS

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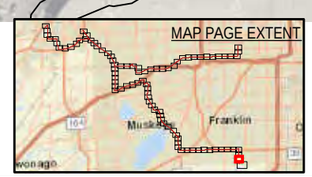

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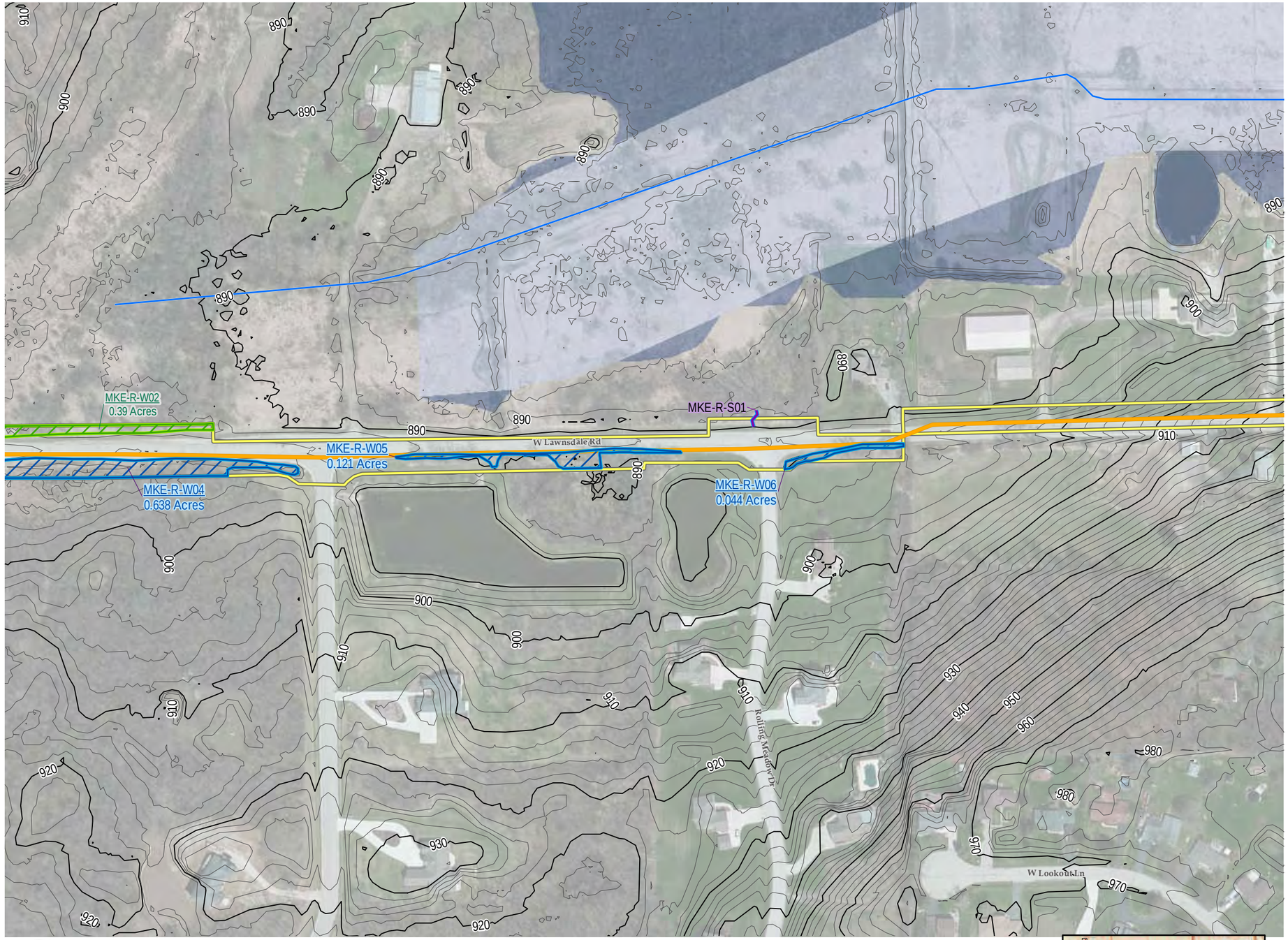

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- EXISTING RIGHT OF WAY (ROW)
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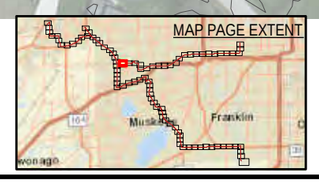

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Waukesha, Wisconsin 53186

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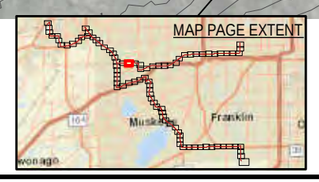

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

Plotted: 11/21/2017
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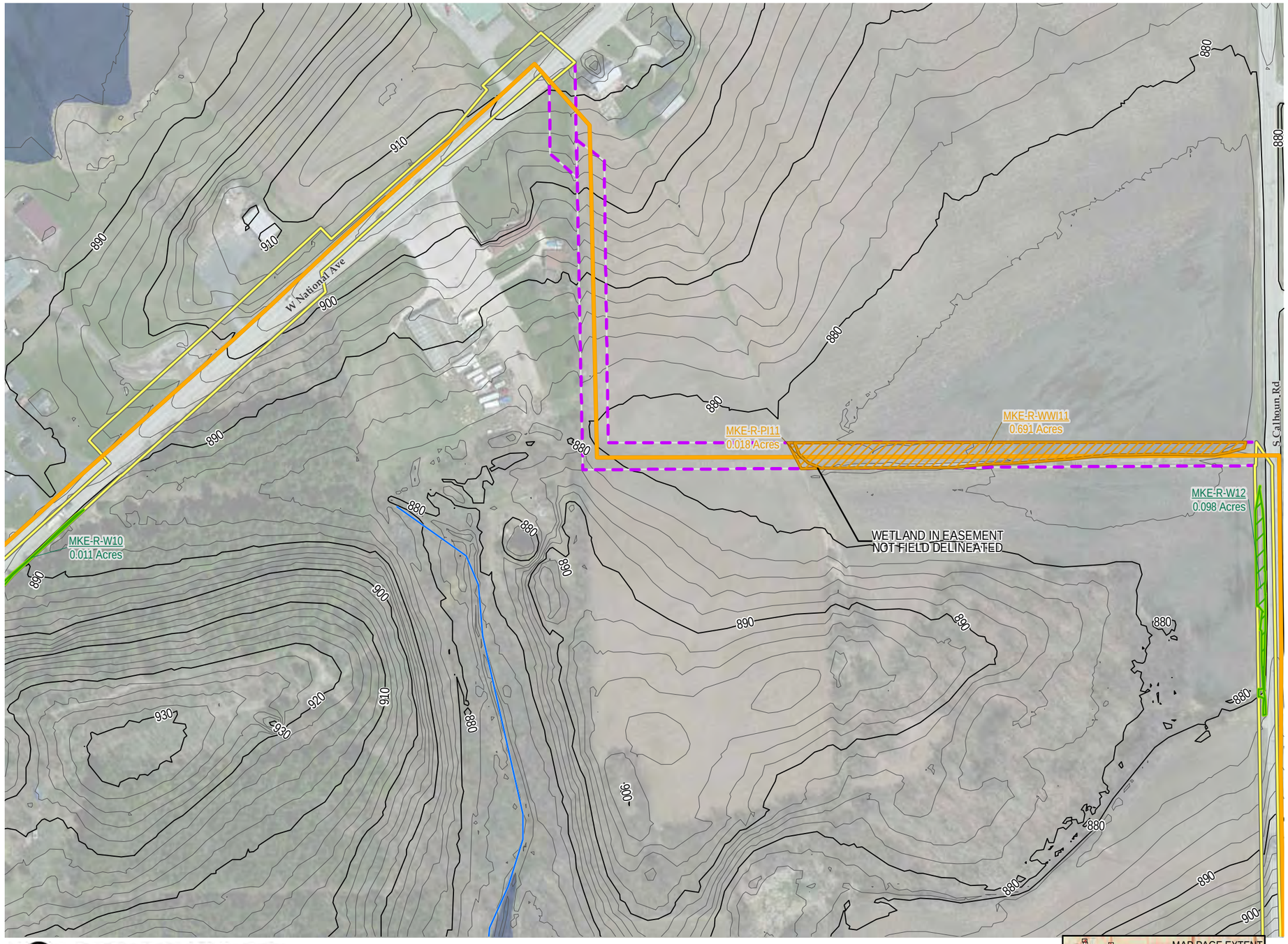

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- PHOTO INTERPRETED OR WWI WETLAND
- PARCEL WITH NEW EASEMENT
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- 100 YEAR FLOODZONE (A, AE)

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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1 " = 200 '

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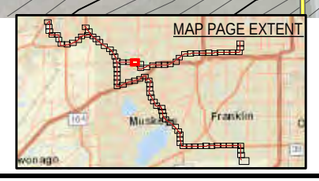

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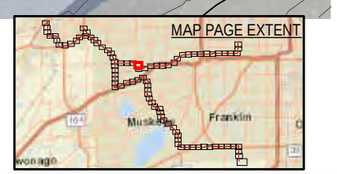

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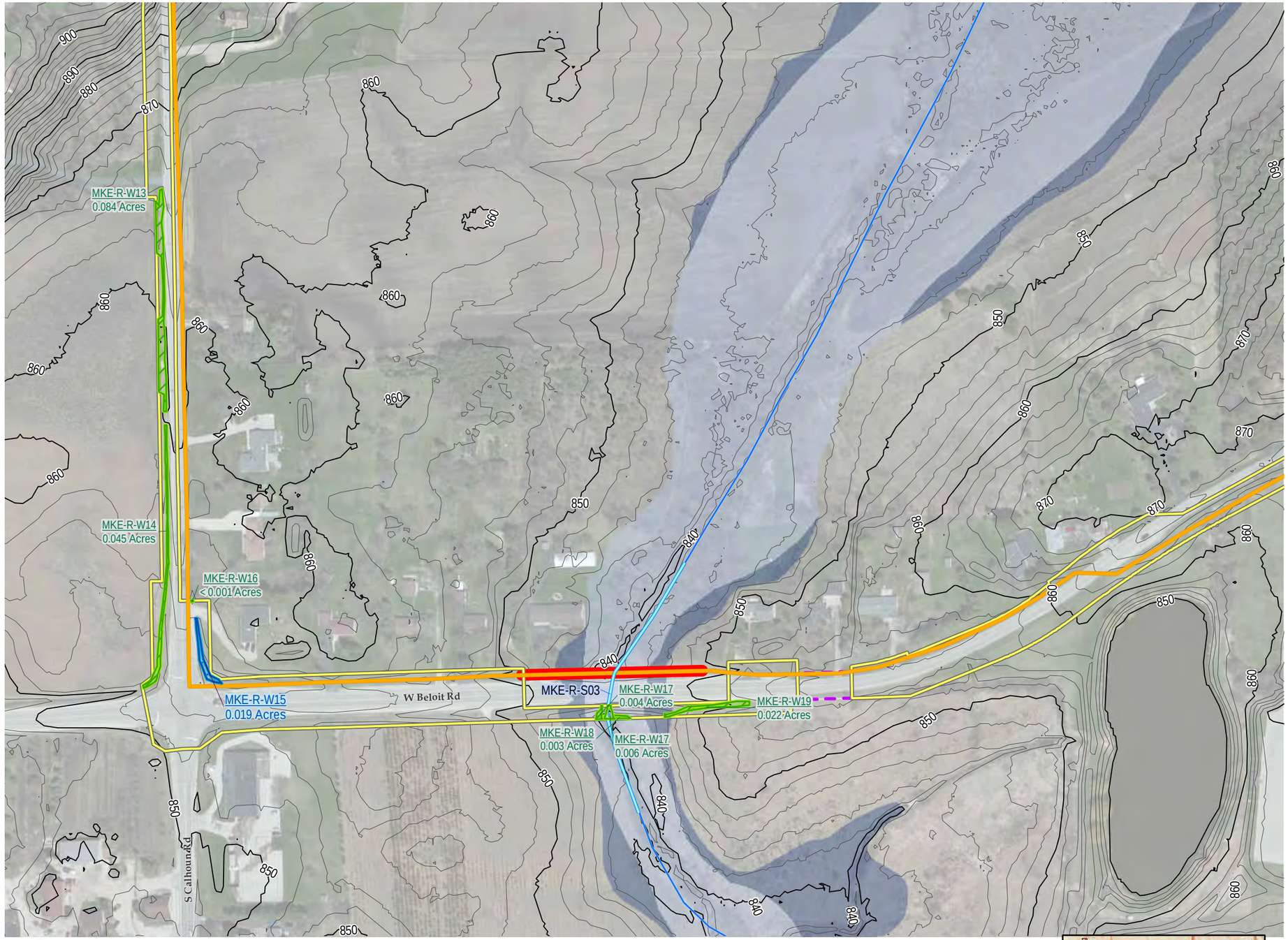

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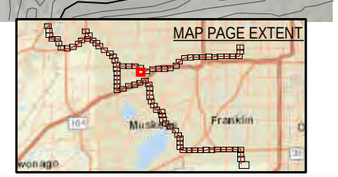

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- EXISTING RIGHT OF WAY (ROW)
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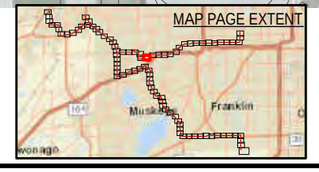

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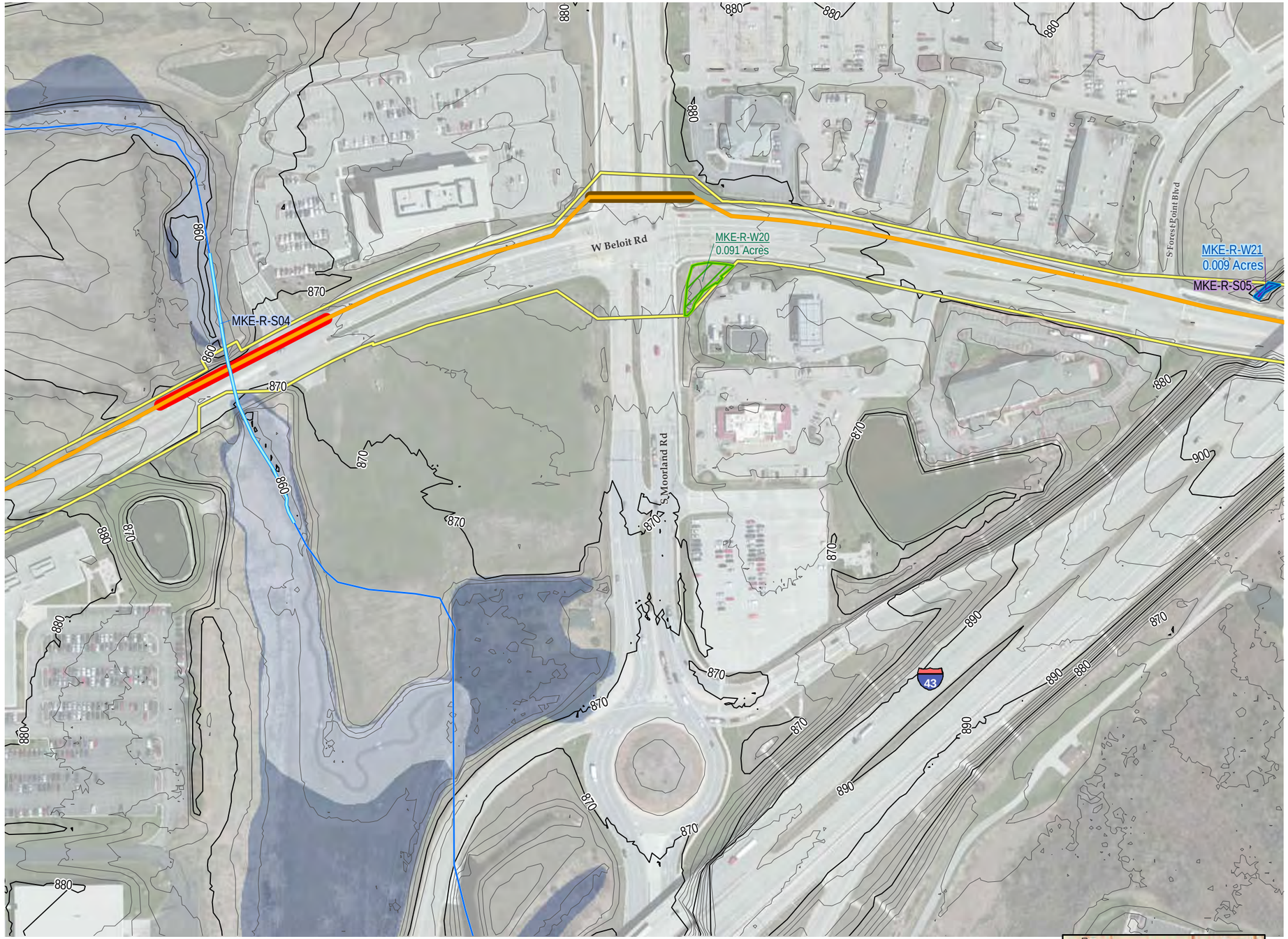

LEGEND

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- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
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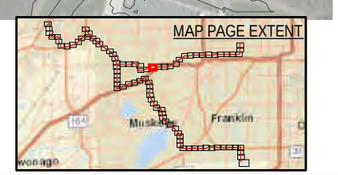

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- PROPOSED PROJECT PIPELINE
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- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)

TOPOGRAPHIC CONTOURS
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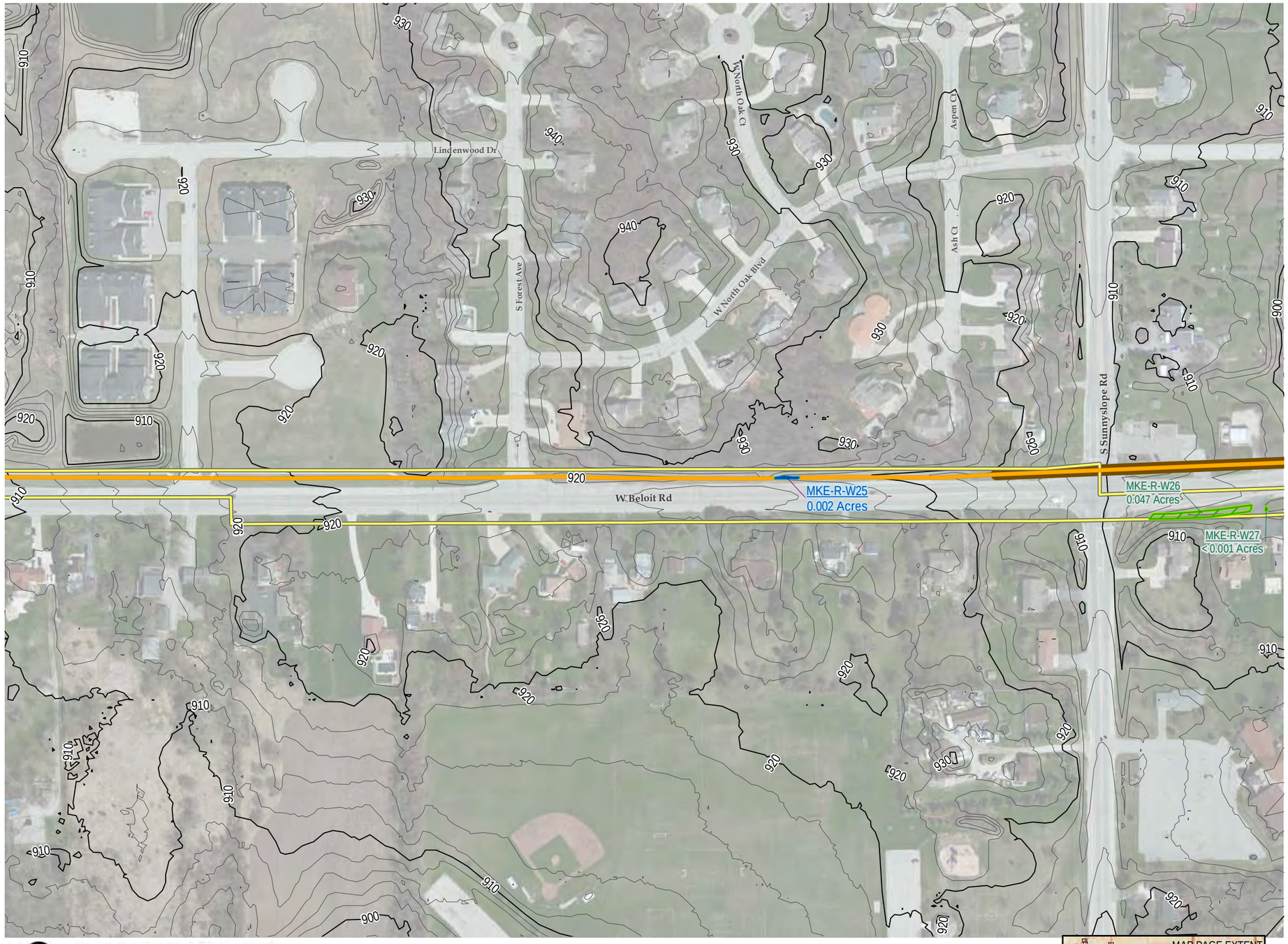

FIGURE NO. 1
SHEET 73 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- POTENTIAL JACK AND BORE PIPELINE

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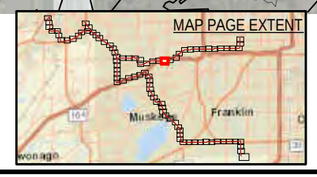

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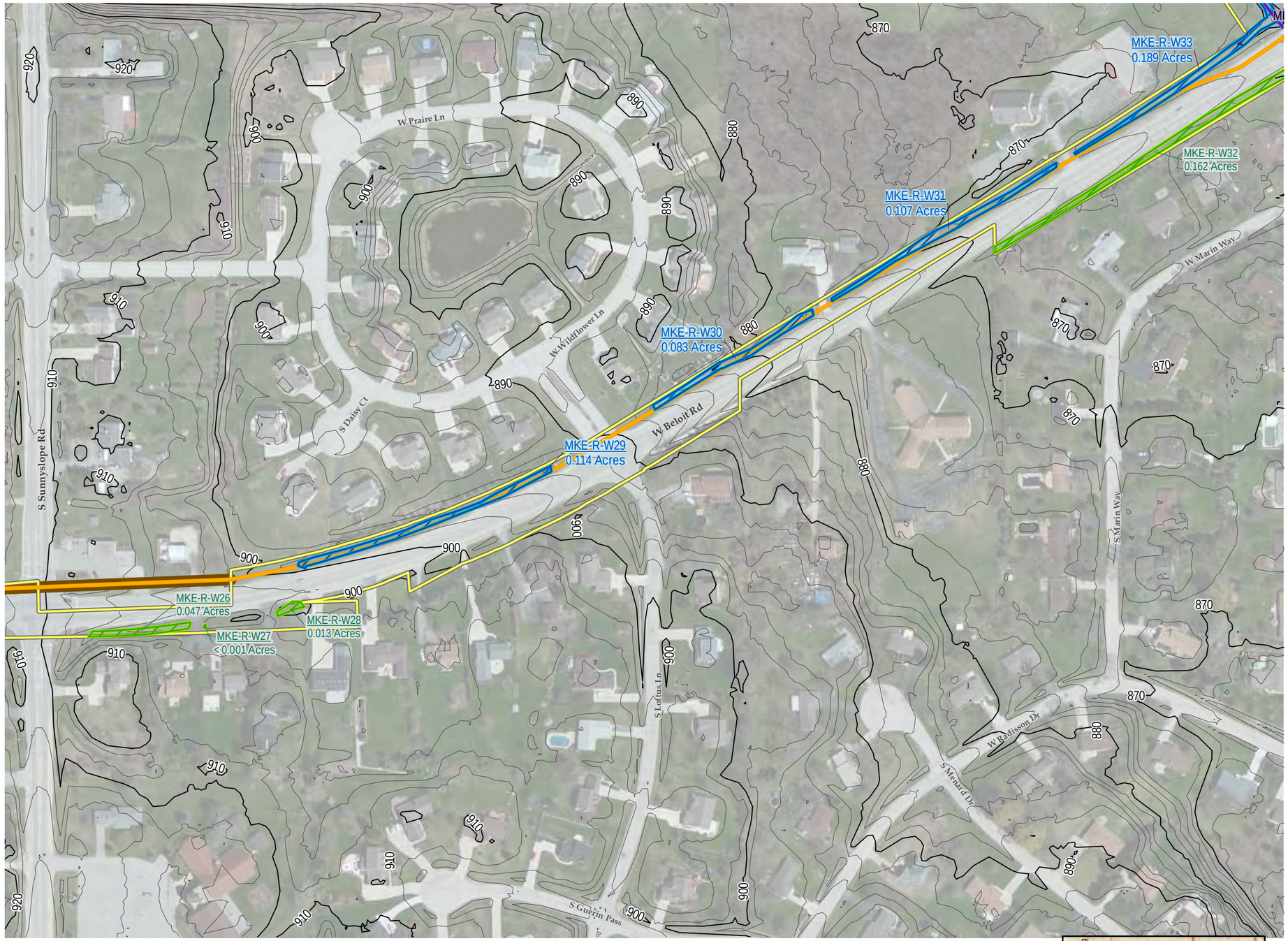

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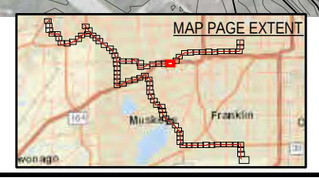

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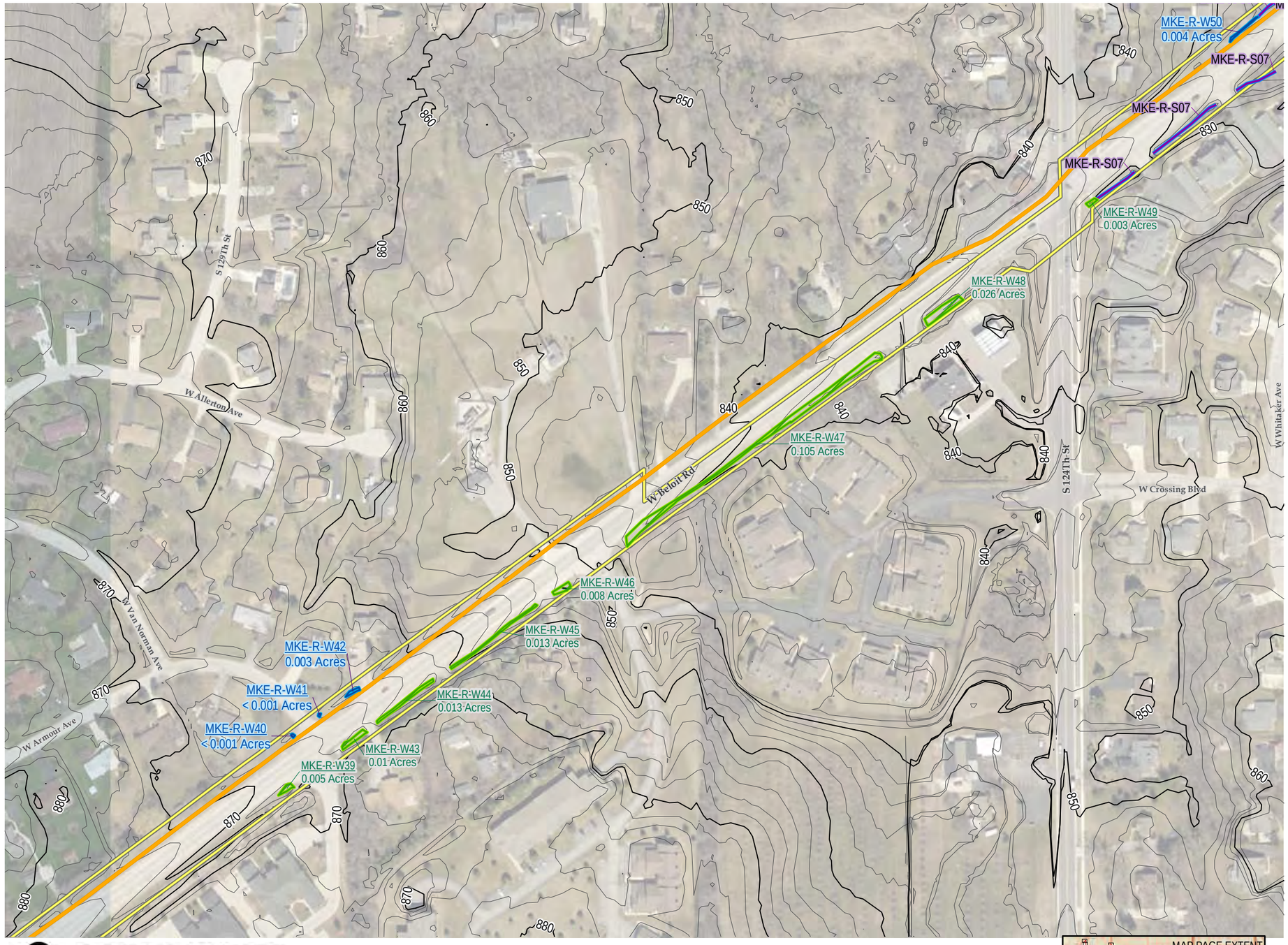

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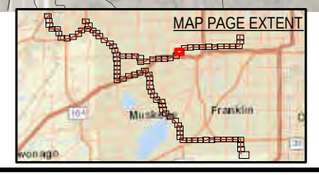

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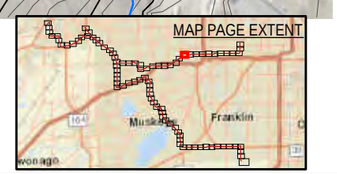

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

Plotted: 11/21/2017
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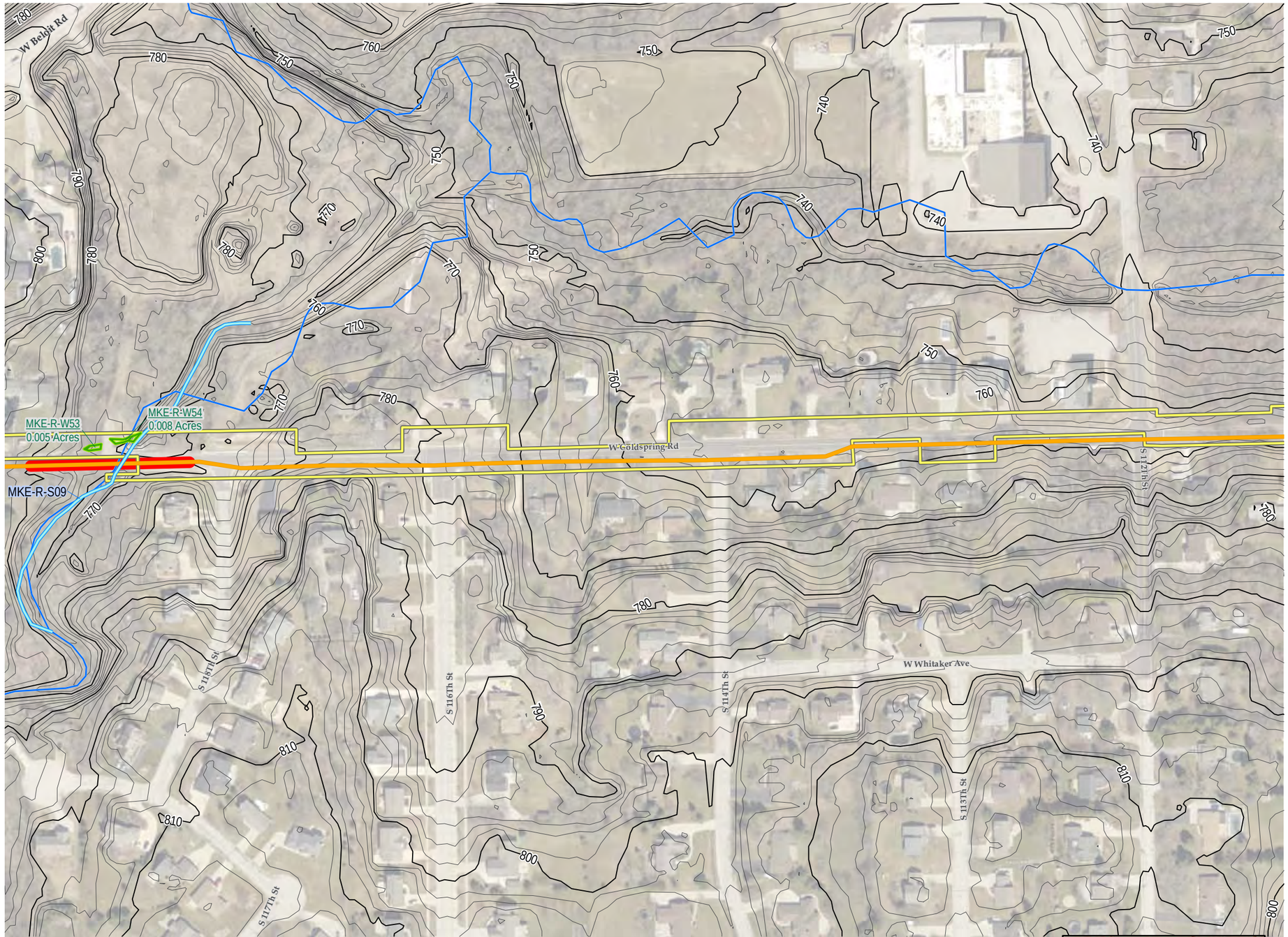

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

1. BASE MAP FROM ESRI, WORLD IMAGERY WEB BASEMAP SERVICE LAYER.
2. ACREAGES ARE REPRESENTATIVE OF WETLANDS THAT ARE ONLY IN THE RIGHT OF WAY (ROW) AND EASEMENTS.
3. FLOODPLAIN DATA FROM FEMA.
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1 " = 200 '

N

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741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186

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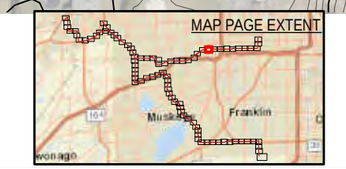

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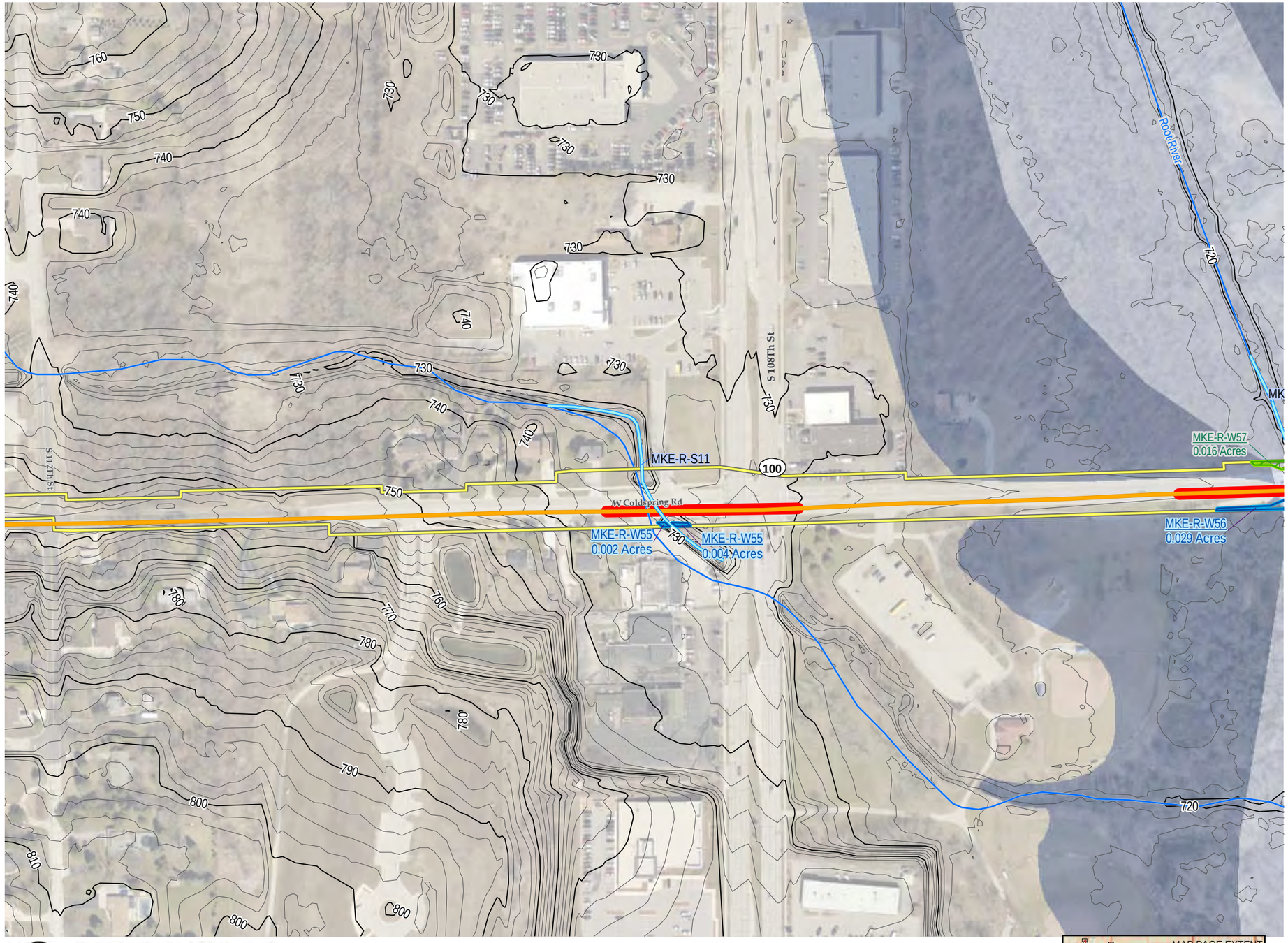

LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

NOTES

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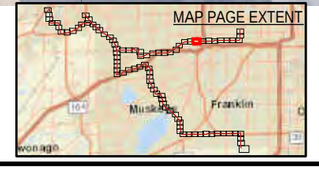

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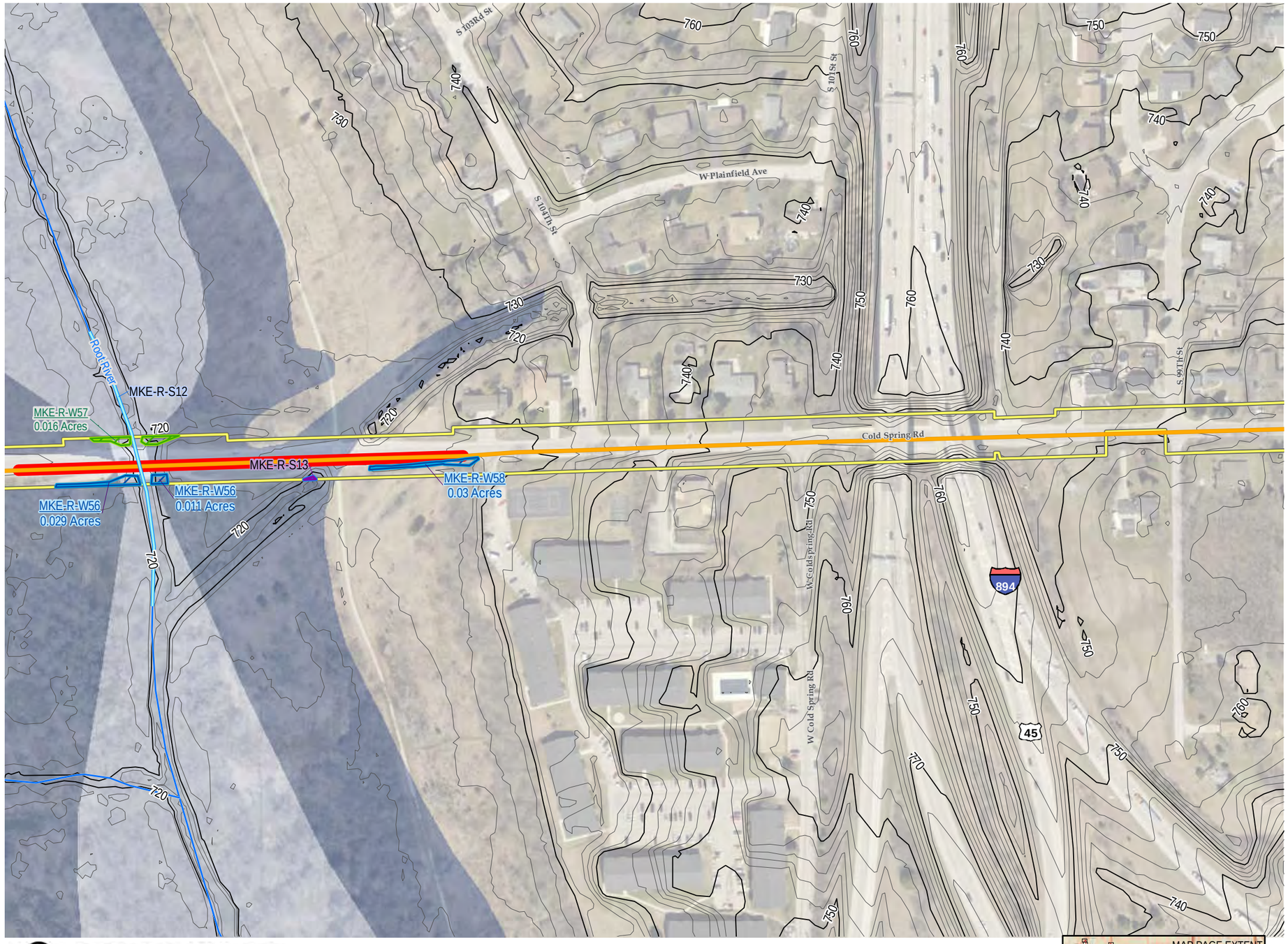
FIGURE NO. 1
SHEET 80 OF 88



LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- NON-IMPACTED POTENTIAL WATERWAYS (NON-NHD)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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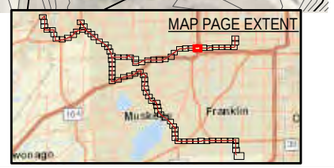

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LEGEND

- PROPOSED PROJECT PIPELINE
- NON-IMPACTED TRC DELINEATED WETLANDS
- EXISTING RIGHT OF WAY (ROW)

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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MKE-R-W59
0.001 Acres

MKE-R-W60
0.008 Acres

MKE-R-W61
0.003 Acres

W Plainfield Ave
W Coldspring Rd
W Bottsford Ave
S 98Th St
S 97Th St
S 96Th St
S 95Th St
S 94Th St
S 93Rd St
S 92Nd St

1 " = 200 '

N

MAP PAGE EXTENT

Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

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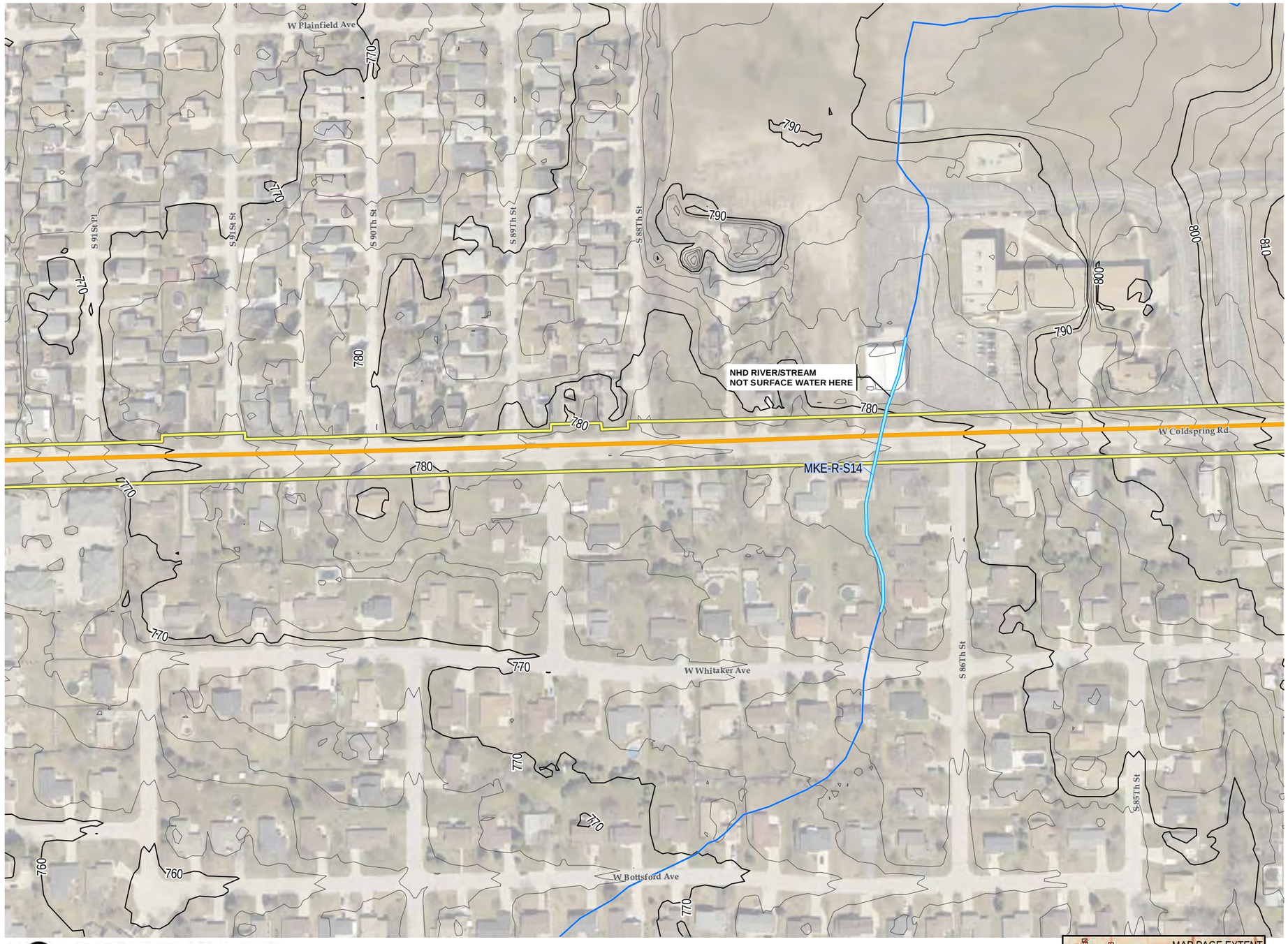

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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1 " = 200 '

N

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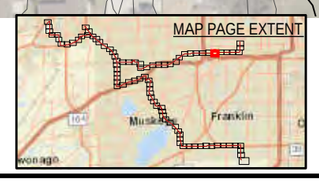

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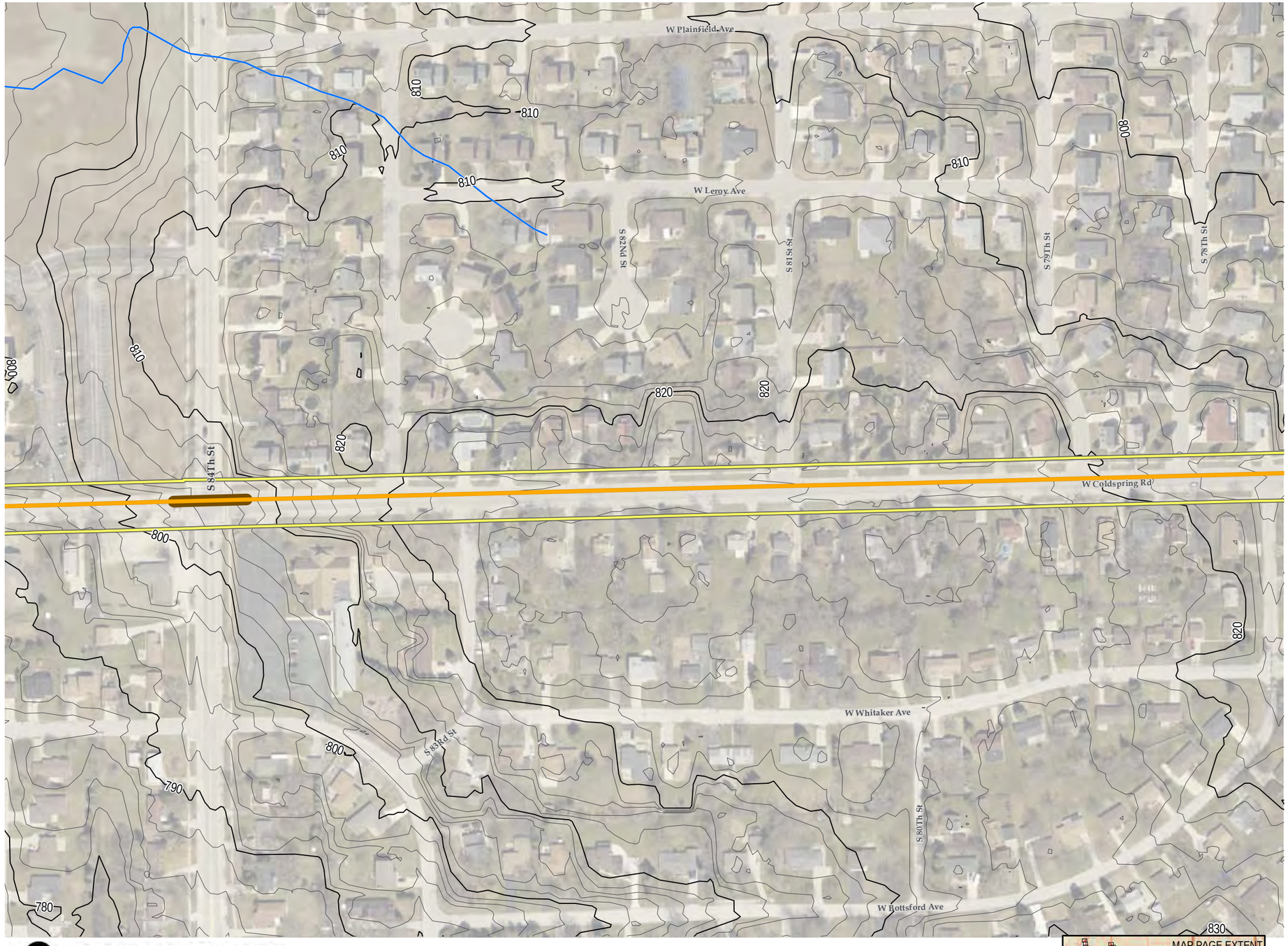

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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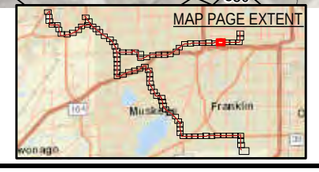

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FIGURE NO. 1
SHEET 84 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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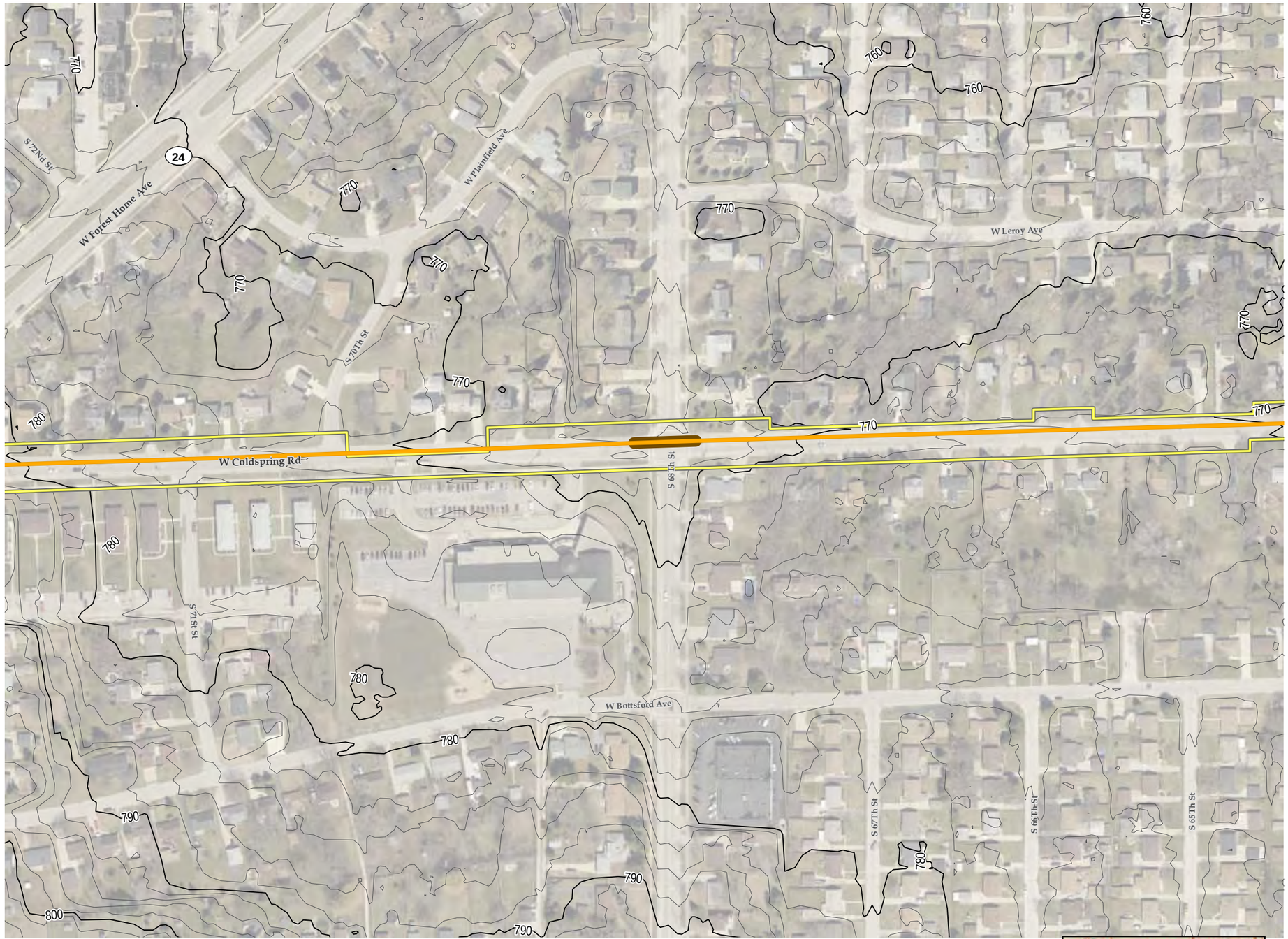

FIGURE NO. 1
SHEET 85 OF 88

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- POTENTIAL JACK AND BORE PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
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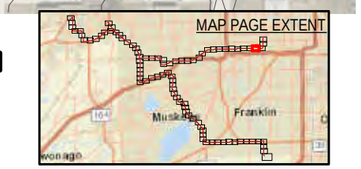

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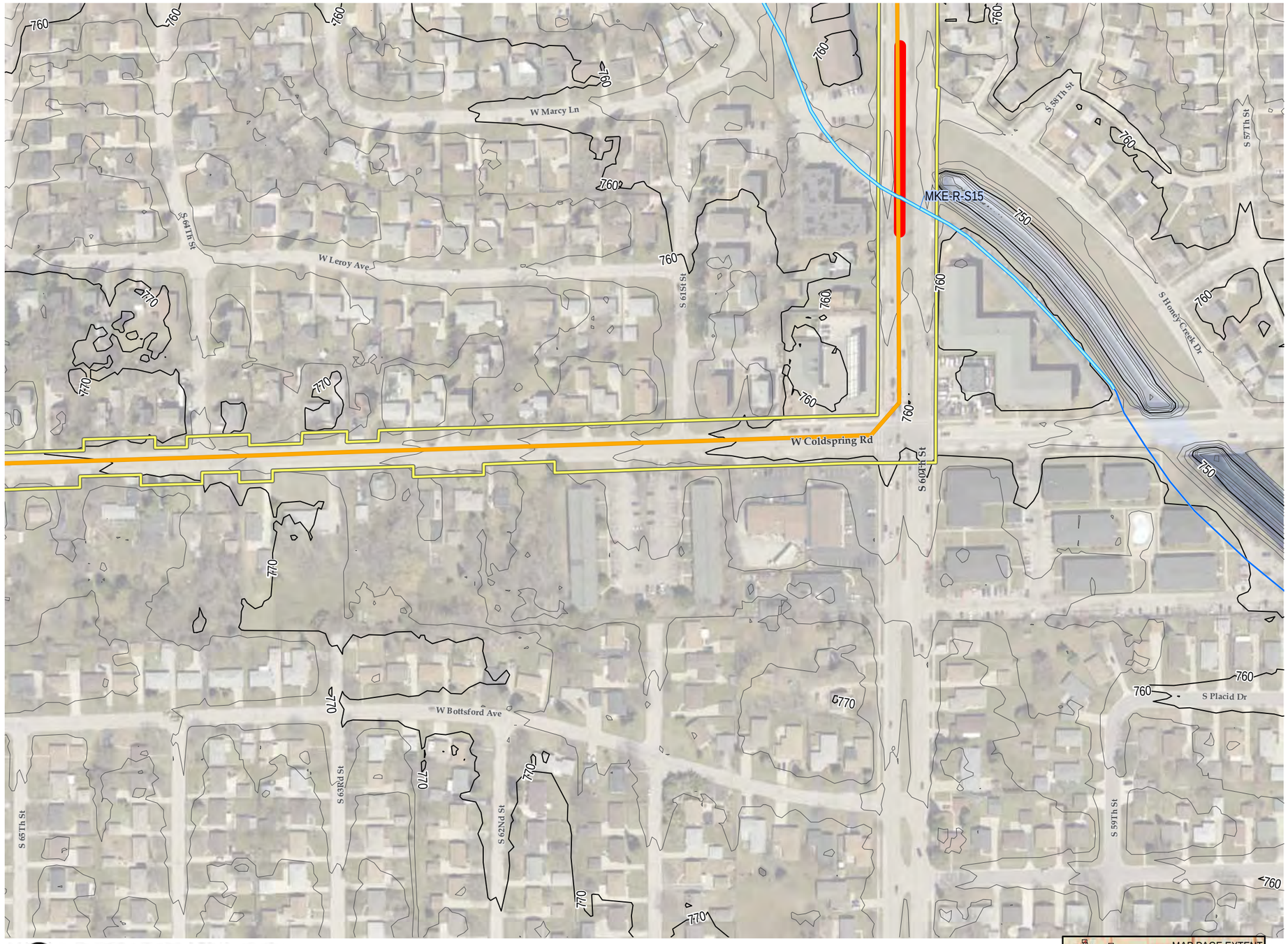

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
- 100 YEAR FLOODZONE (A, AE)
- FLOODWAY
- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS
- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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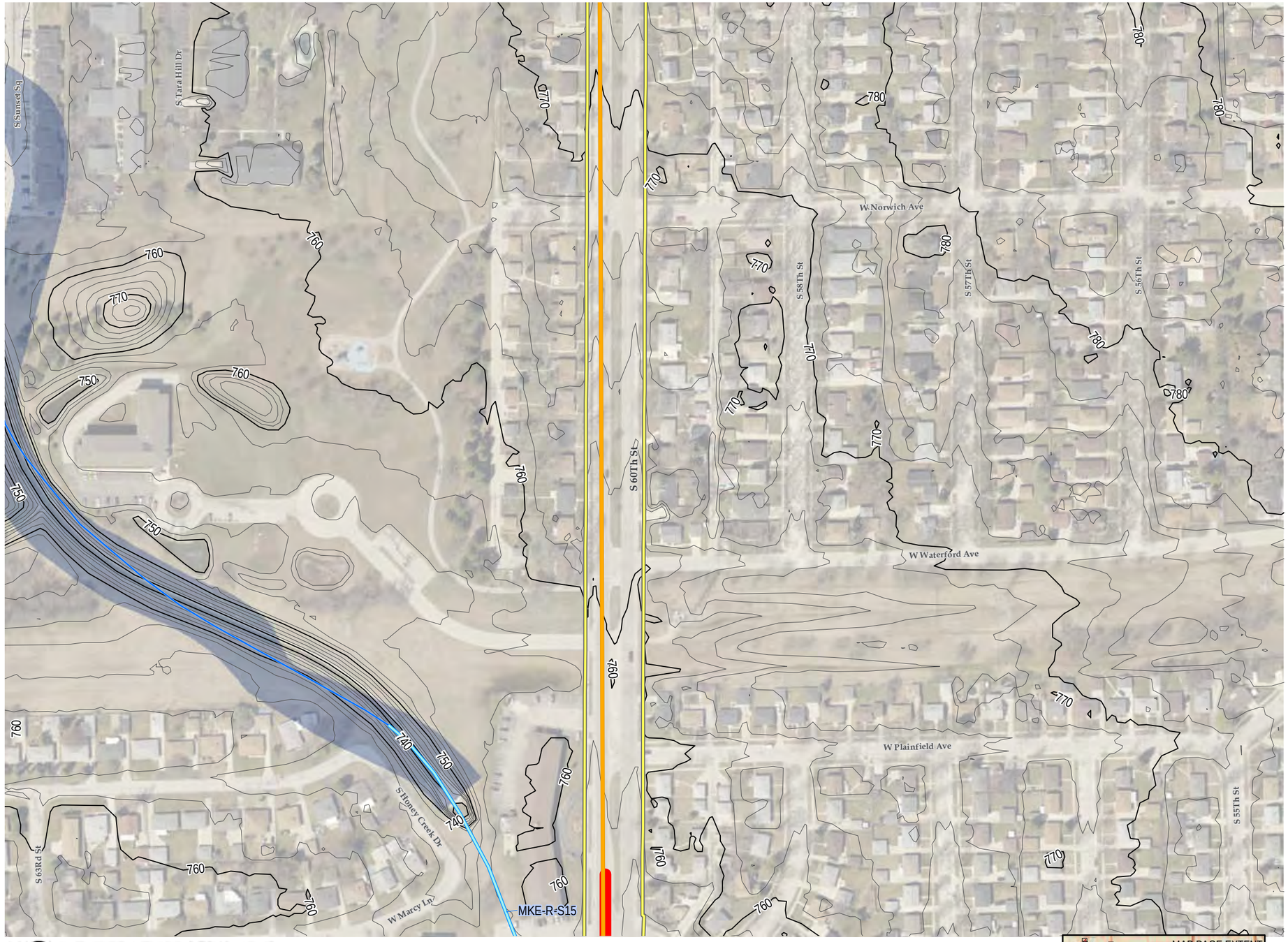

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- EXISTING RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- NON-IMPACTED WATERWAYS (BASED ON NHD INFORMATION)
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- POTENTIAL HDD PIPELINE

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
- 10' CONTOUR INTERVAL

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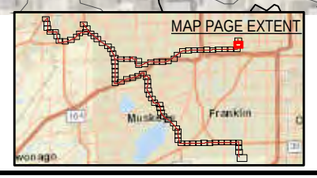

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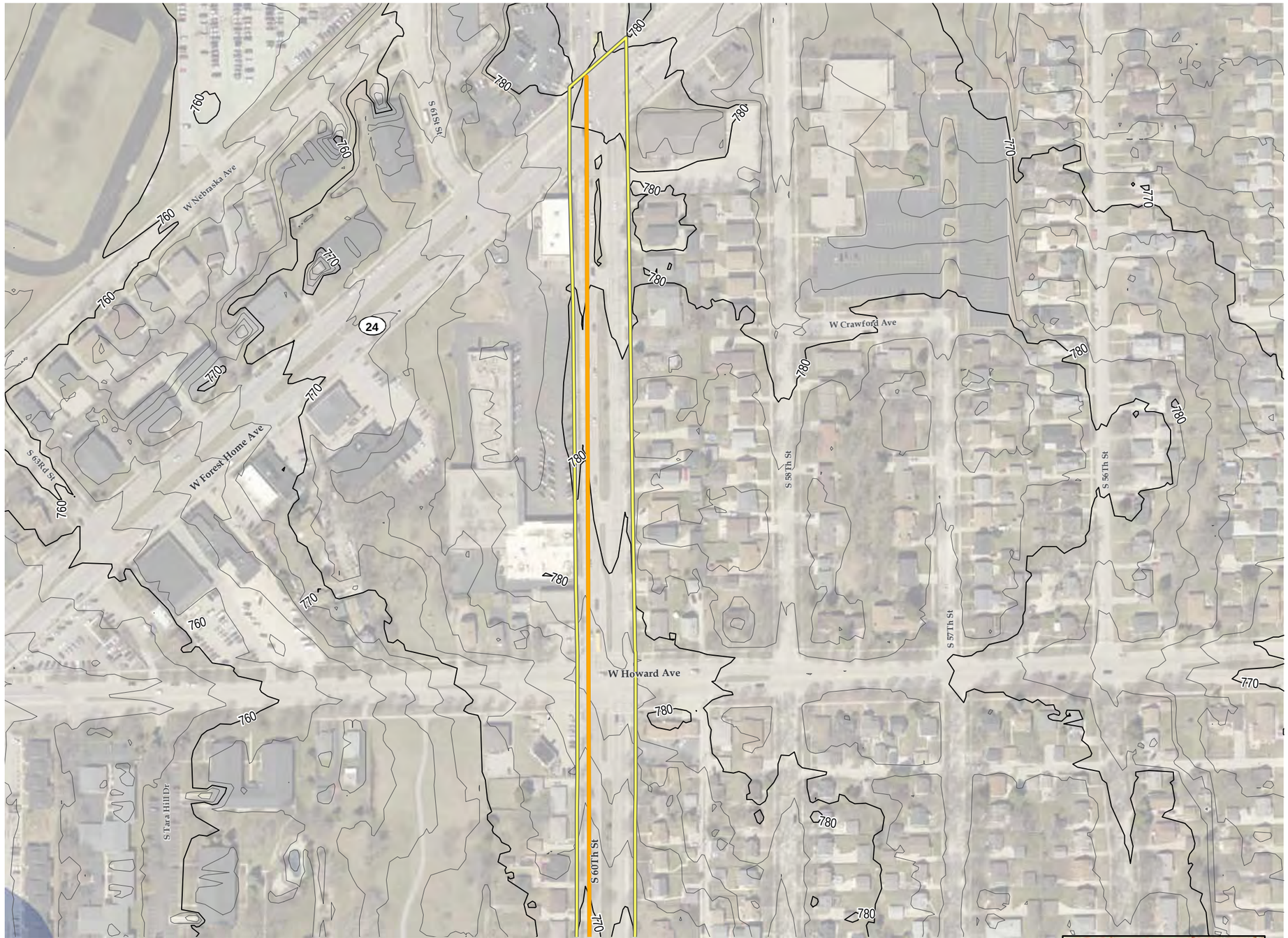

LEGEND

- PROPOSED PROJECT PIPELINE
- EXISTING RIGHT OF WAY (ROW)
- 100 YEAR FLOODZONE (A, AE)

TOPOGRAPHIC CONTOURS

- 2' CONTOUR INTERVAL
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TRC
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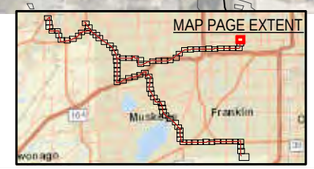
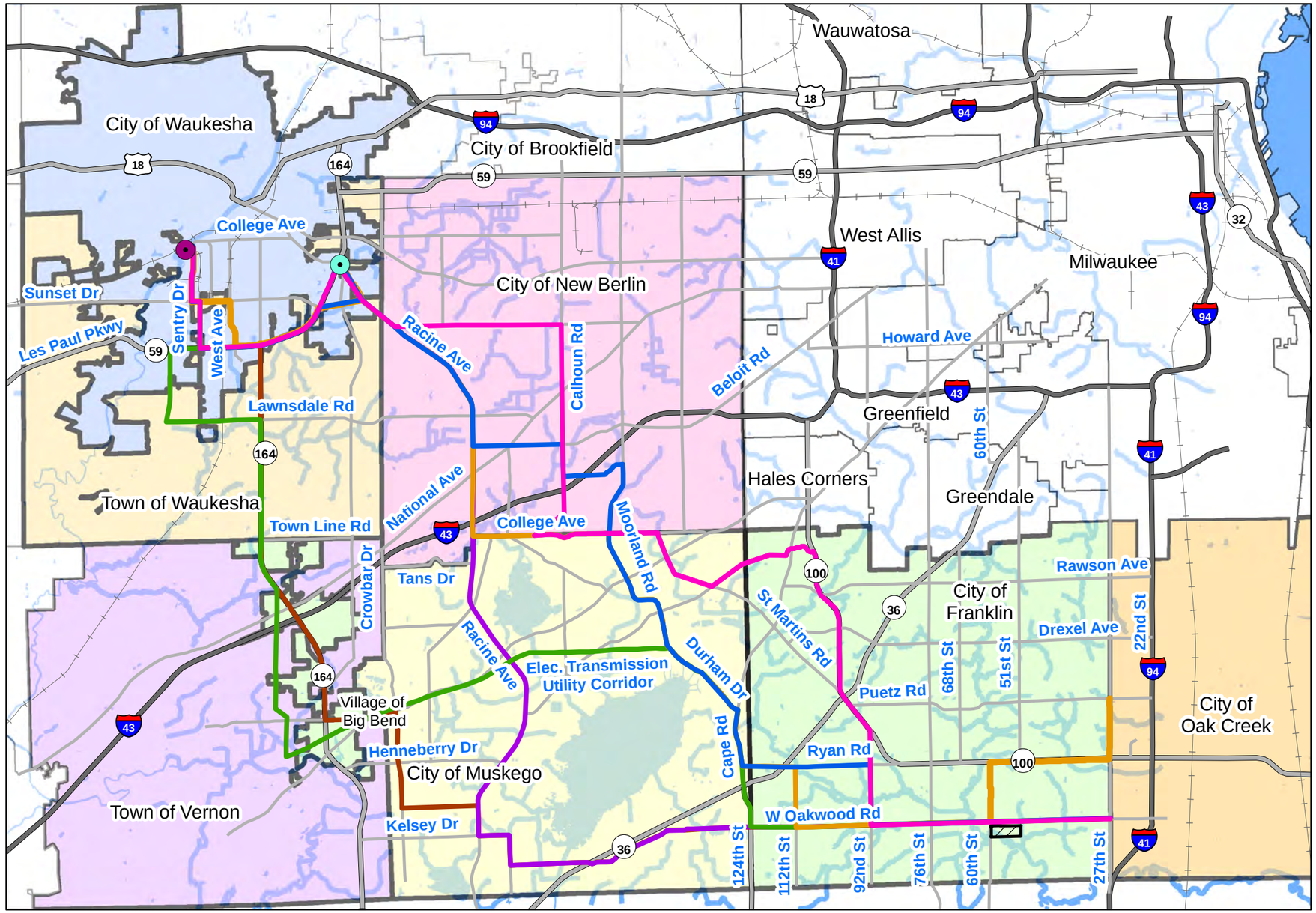


Waukesha, Wisconsin
Great Lakes Water Supply Program
PROPOSED PROJECT-POTENTIAL WETLAND IMPACTS
Date: 11/21/2017

Plotted: 11/21/2017
Document Path: E:\WetlandsGeneralWaukeshaPipeline\2016_263344\263344-GHv2-MKErouteProjMB.mxd

Appendix 2 – Program Development and Alternatives

2-1 Program Alternatives Maps – Overview of 6 Oak Creek Routes



Legend

- Route Alternative 1
- Route Alternative 2
- Route Alternative 3
- Route Alternative 4
- Route Alternative 5
- Route Alternative 6
- Return Flow Pumping Station
- Connection to Distribution System
- Return Flow Pipeline Permitted Discharge to Root River

Municipal Stakeholders

- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

0 5,000 10,000 20,000

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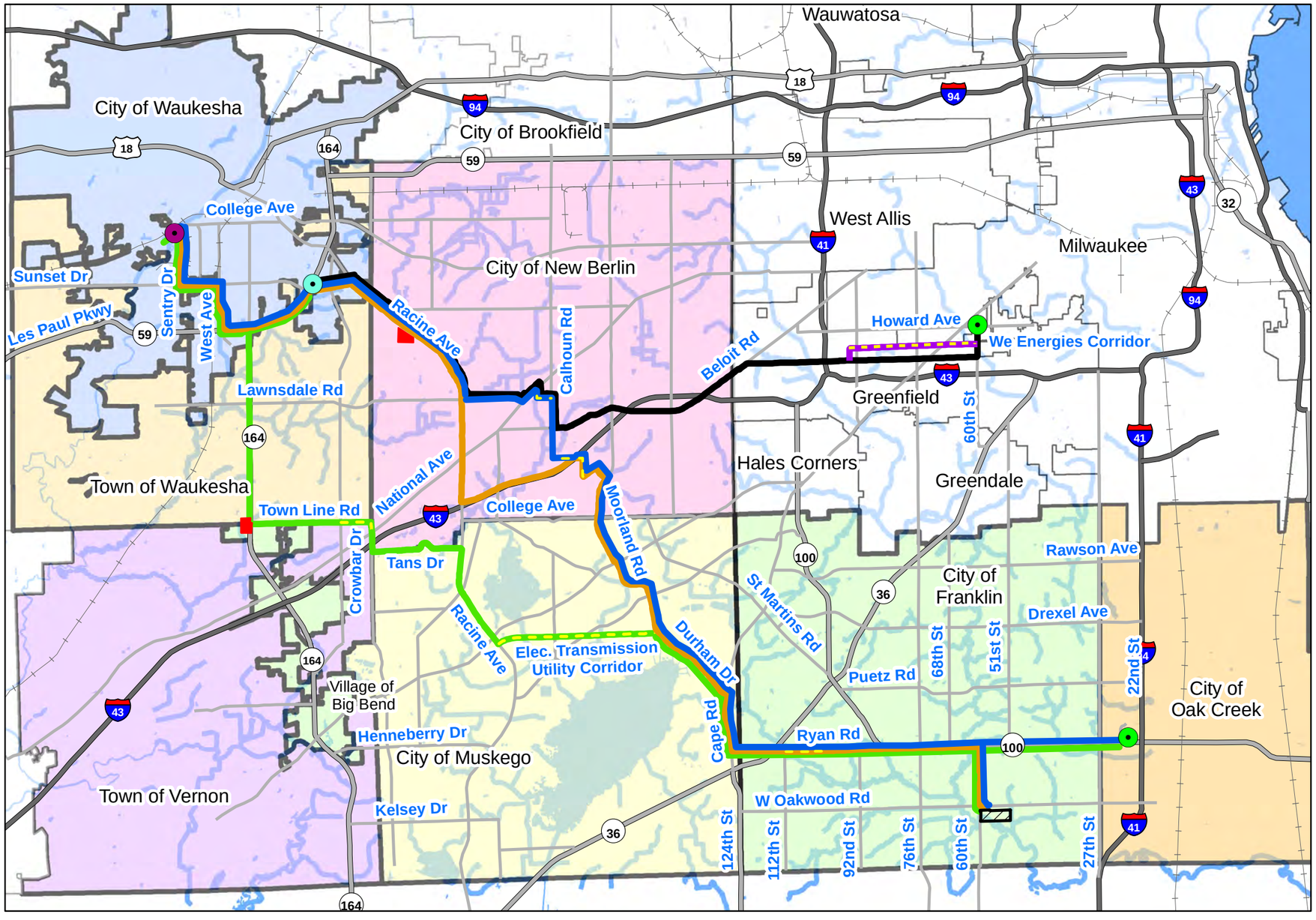
Great Lakes Water Supply Program
Phase 1 Route Alternatives
Date: 9/28/2017

Plotted: 9/28/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.01_Exhibits\Phase_2\Route Study\Aesthetics\Community Map\P1_SixRoute_06072017.mxd

2-2 Program Alternatives Maps – Overview of Oak Creek and Milwaukee Potential Supply and Return Flow Routes



Legend

- Oak Creek Route 2
- Oak Creek Route 2, Easement Required
- Oak Creek Route 3
- Oak Creek Route 3, Easement Required
- Oak Creek Route 4
- Oak Creek Route 4, Easement Required
- Milwaukee Supply Route
- Milwaukee Supply Route Sub-Alternative
- Milwaukee Supply Route Sub-Alternative, Easement Required
- Water Supply Pumping Station
- Storage and Booster Pumping Station
- Return Flow Pumping Facility
- Connection to Distribution System
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

1 " = 9,938 '

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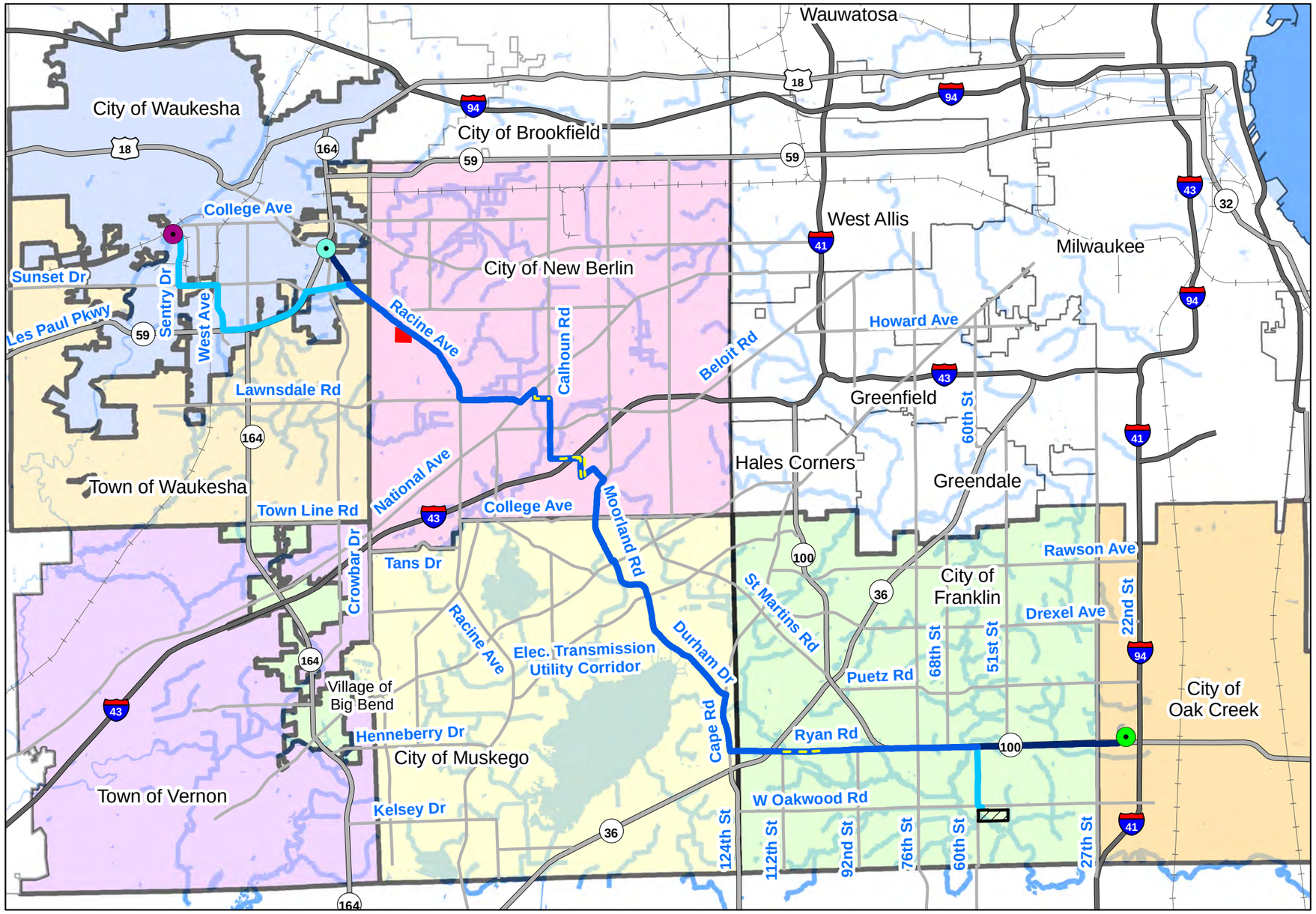
Great Lakes Water Supply Program

Figure 1: Potential Supply and Return Routes

Date: 10/31/2017

Plotted: 10/31/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.05_Working_MXDs\3Routes_10_17_17_EIS.mxd

2-3 Program Alternatives Maps – Route 2



Legend

- Route 2 Both Pipelines
- Route 2 Return Pipeline
- Route 2 Supply Pipeline
- Route 2, Easement Required
- Water Supply Pumping Station
- Storage and Booster Pumping Station
- Return Flow Pumping Facility
- Connection to Distribution System
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

1 " = 10,000 '

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Plotted: 10/6/2017
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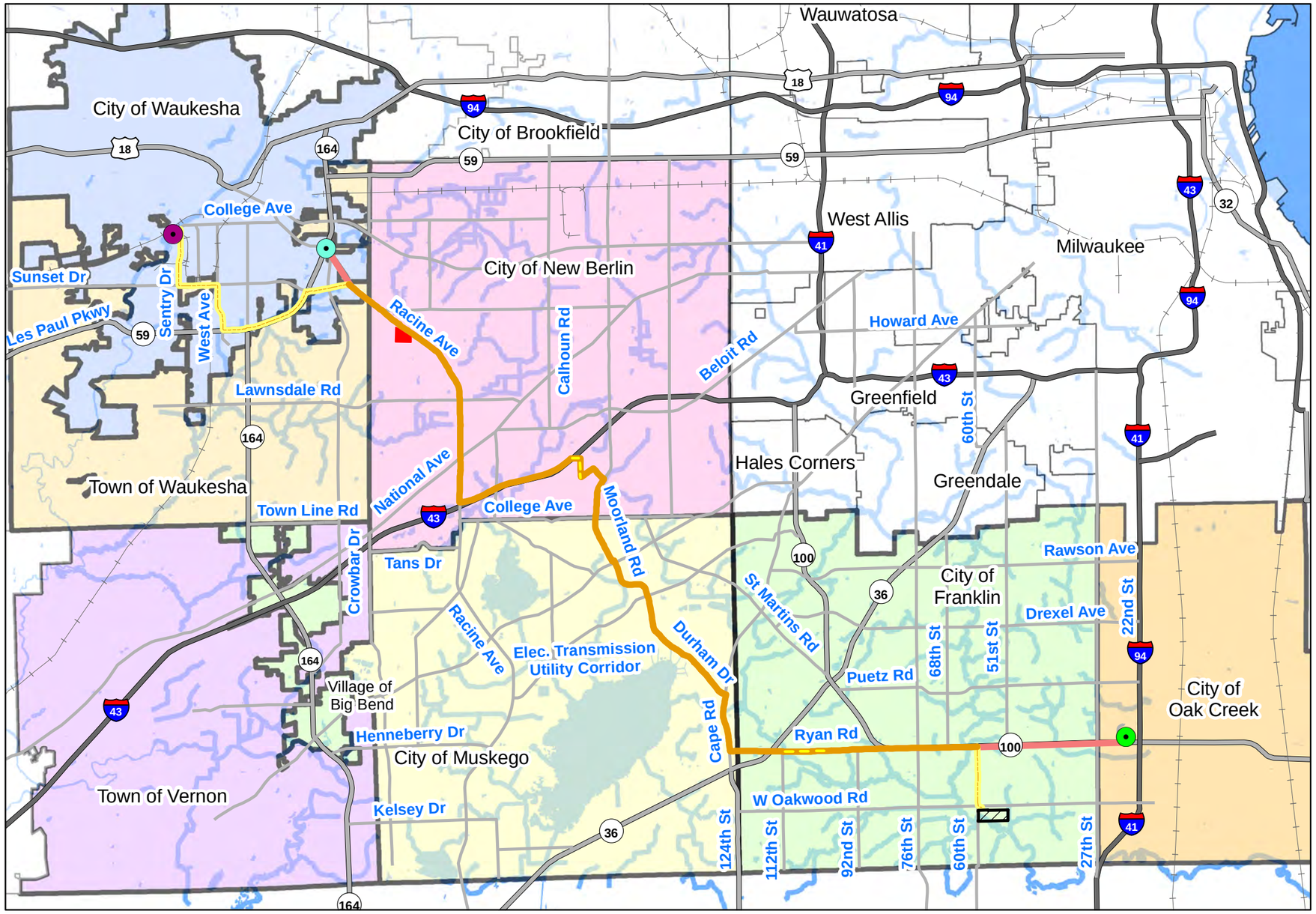
Waukesha, Wisconsin
Great Lakes Water Supply Program
Route Alternative 2
Date: 10/6/2017

2-4 Program Alternatives Maps – Route 3



Legend

- Route 3 Both Pipelines
- Route 3 Return Pipeline
- Route 3 Supply Pipeline
- Route 3, Easement Required
- Water Supply Pumping Station
- Storage and Booster Pumping Station
- Return Flow Pumping Facility
- Connection to Distribution System
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

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Plotted: 10/6/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.01_Exhibits\Phase_2\Route Study\Aesthetics\Community Map\3Routes_EIS_10_04_17.mxd

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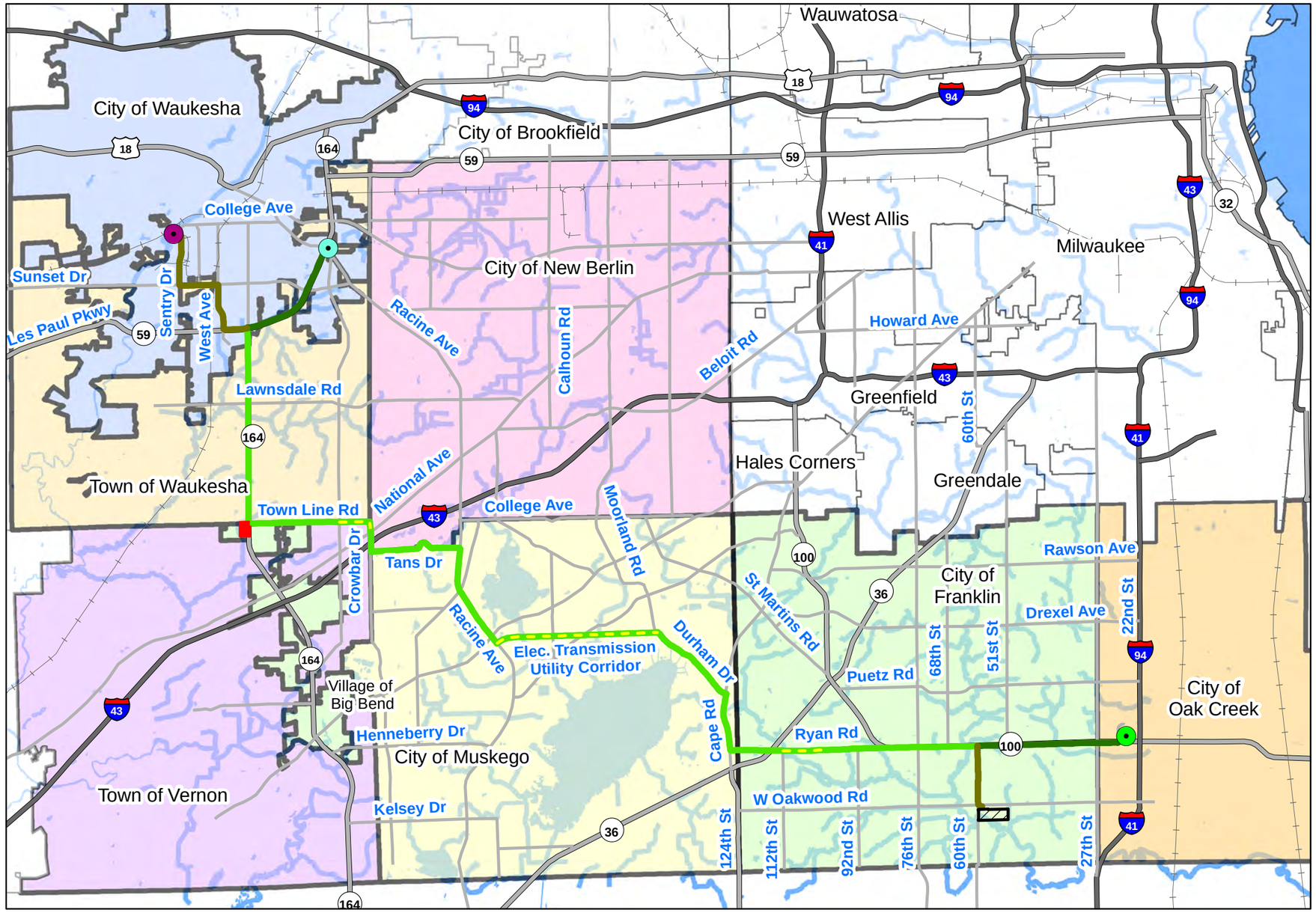
Great Lakes Water Supply Program
Route Alternative 3
Date: 10/6/2017

2-5 Program Alternatives Maps – Route 4



Legend

- Route 4 Both Pipelines
- Route 4 Return Pipeline
- Route 4 Supply Pipeline
- Route 4, Easement Required
- Water Supply Pumping Station
- Storage and Booster Pumping Station
- Return Flow Pumping Facility
- Connection to Distribution System
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

1 " = 10,000 '

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Waukesha, Wisconsin
Great Lakes Water Supply Program
Route Alternative 4
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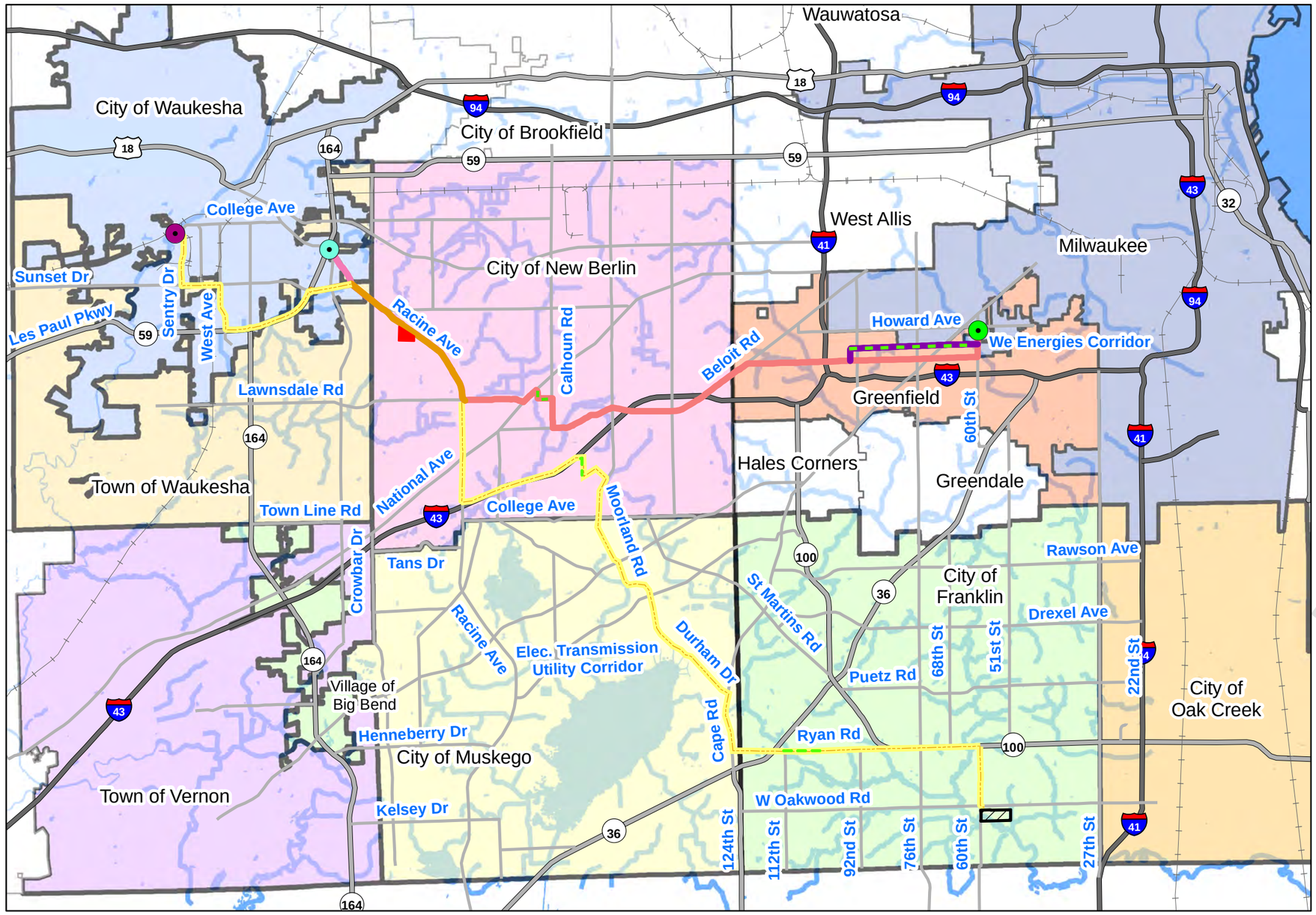
Plotted: 10/6/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.01_Exhibits\Phase_2\Route Study\Aesthetics\Community Map\3Routes_EIS_10_04_17.mxd

2-6 Program Alternatives Maps – Milwaukee Routes



Legend

- Milwaukee Route Both Pipelines
- Milwaukee Route Return Pipeline
- Milwaukee Route Supply Pipeline
- Milwaukee Route Supply Pipeline Sub-Alternative
- Milwaukee Route, Easement Required
- Water Supply Pumping Station
- Return Flow Pumping Facility
- Potential Connection to Distribution System
- Storage and Booster Pumping Station
- Return Flow Pipeline Discharge to Root River

Municipal Stakeholders

- City of Milwaukee
- City of Muskego
- City of New Berlin
- City of Waukesha
- City of Franklin
- City of Oak Creek
- Town of Vernon
- Town of Waukesha
- Village of Big Bend
- Village of Greenfield

Significant Features

- Interstates
- State Highways
- Local Roads
- Railroads
- Surface Waters

0 5,000 10,000 20,000

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Waukesha, Wisconsin
Great Lakes Water Supply Program
Milwaukee Route Alternatives
Date: 11/14/2017

Plotted: 11/14/2017
Document Path: G:\15310-Waukesha Great Lakes Water Supply PM-CM\24 GIS\24.05_Working_MXDs\To CH2M\Preffered Route Railroad Crossings - Copy.mxd

2-7 Wetland and Waterway Resources Desktop Review for Route Alternatives

2-7: Part 1 - Proposed Milwaukee Supply Alternative

Great Lakes Water Supply Program

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4-130 D3 Wetland and Waterway Technical Memorandum

January 2018

Waukesha Water Utility
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PROGRAM TEAM MEMBER CONSULTANTS:

EXECUTIVE SUMMARY

TRC Environmental Corporation (TRC) conducted a desktop evaluation of wetlands and waterways for the 13.63-mile Alternate Supply Route under consideration as of the date this technical memorandum. The evaluation was conducted via a desktop review of maps and aerial imagery including the Wisconsin Department of Natural Resources (WDNR) Wisconsin Wetland Inventory (WWI) maps, United States Geological Survey (USGS) topographic maps, Natural Resource Conservation Service (NRCS) Soils maps, and recent and historical aerial photographs. Utilizing these resources, potential wetlands and waterways were identified and mapped on recent aerial photographs.

The wetlands and waterway evaluation was conducted September of 2017 by TRC's wetland scientists and GIS mapping specialists. The Study Area included the road right-of-way for the route alternative, several easements located outside the right-of-way, an alternate segment within an electrical transmission utility corridor, and a 50-foot buffer extending beyond the edge of these features on either side. Wetland data for the non-right-of-way easements are reported separate from the right-of-way wetland data. The wetland data for the buffer is included herein for informational purposes only and was not taken into consideration to determine route preference, since impacts to wetlands are not anticipated in the buffer.

To summarize:

The extent of the potential wetland impacts and number of waterway crossings varies slightly between the Alternate Supply Route and the Alternate Supply Route Sub-Alternative through the electrical transmission utility corridor. The Alternate Supply Route Sub-Alternative adds approximately 0.90 acres of wetlands, which are primarily herbaceous plant dominated wetlands. There are no additional waterway crossings associated with the Alternate Supply Route Sub-Alternative.

SECTION 1 Introduction

1.1 Wetland and Waterway Desktop Review

The wetlands and waterways evaluation for this phase of the Great Water Alliance (Program) was conducted September 2017 by TRC Environmental Corporation (TRC) wetland scientists and GIS mapping specialists. The Study Area included the road right-of-way of the route alternative, several easements located outside the right-of-way, an alternate segment within an electrical transmission utility corridor, and a 50-foot buffer extending beyond the edge of these features on either side. The width of the right-of-way varied from 30 to 300 feet and a width of 50 feet was used in areas where the route alternative(s) did not follow an existing road. Wetland data for the non-easements are reported separate from the right-of-way wetland data. Please note that future technical memorandum and reports may provide additional details on these or other route alternatives as the planning and design of the Program evolves.

1.2 Agency Regulatory Authority

The wetlands and/or waterways identified in this technical memorandum may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of Wisconsin Department of Natural Resources (WDNR), and local jurisdiction under county, town, city, or village.

SECTION 2 Methodology

Using Digital Wetland Inventory (DWI) data, purchased from the WDNR for the purposes of this Program, TRC measured and categorized the WWI mapped wetlands within the Alternate Supply Route and Alternate Supply Route Sub-Alternative corridors. The route alternative corridors are defined as the road right-of-way, easement outside of road right-of-way, an electrical transmission utility corridor, and an additional 50-foot buffer on either side. The quantity of wetlands measured are based on the location and extent of WWI wetlands mapped within the corridor. The area of each wetland overlaying the corridor was measured and summarized for each route alternative. These data were further subdivided into four subcategories: 1) wetland area within the road right-of-way, 2) wetland area with a private easement, 3) wetland area within the electrical transmission utility corridor, and 4) wetland area within the 50-foot buffer.

Using aerial imagery from recent years, Google Earth street view, mapped hydric soils, and county GIS topographic data, TRC also performed photo-interpretation to identify potential wetlands that were not mapped WWI wetlands. This primarily included wetlands that may occur in roadside ditches and agricultural fields.

Wetlands were classified using the Wisconsin Wetland Classification System as was provided as attribute data with the DWI from the WDNR. Emergent wetlands identified through photo-interpretation were further divided into several subcategories: roadside swales, agricultural, and natural.

The mapping convention used for assigning wetland tag numbers was done such that all wetlands along the route alternatives were assigned their own unique tag number.

Waterways were evaluated for each route alternative using the National Hydrography Dataset (NHD) from the USGS. The number and linear feet of each waterway within each corridor was measured and is reported herein. All streams along the route alternatives were assigned their own unique tag number.

SECTION 3 Wetland and Waterway Desktop Review Results

3.1 Wetland and Waterway Results

Details on each route alternative (the Alternate Supply Route and Alternate Supply Route Sub-Alternative) and each wetland are provided in Appendix D-1, Table 1 through Table 8. The locations of mapped WWI wetlands and photo-interpreted wetlands are shown in Appendix D-2, Figure 1 through 2G. There are a total of 119 potential wetlands within the right-of-way, easements, electrical transmission utility corridor, and 50-foot buffer for the proposed route alternative and sub-alternate route. Each of the 119 potential wetlands were assigned their own unique tag number and are labeled W-0 though W-118 on the figures in Appendix D-2.

Details on each route alternative and each waterway are provided in Appendix D-1 Table 6 through Table 7. The locations of mapped NHD waterway are also shown in Appendix D-2, Figures 1 and Figure 3.

The following sections provide a summary of the quantity and general types of wetlands for each route alternative. The following sections also provide a summary of the quantity of waterways and their names, if named, for each route alternative. Wetland data for the non-right-of-way easements are reported separate from the right-of-way wetland data. The wetland data for the buffer is included herein for informational purposes only and not taken into consideration to determine route alternative preference, since impacts to wetlands are not anticipated in the buffer.

SECTION 4 Wetland and Waterway Desktop Review Summary

4.1 Alternate Supply Route

4.1.1 Alternate Supply Route Wetlands

The length of the Alternate Supply Route is approximately 13.63 miles. Based on the mapped WWI and photo-interpreted wetlands, there are approximately 0.11 and 0.17 acres of wetland per mile, respectively, within the right-of-way. These numbers include wetlands within the non-right-of-way easements, but not the wetland acreage within the buffer.

4.1.1.1 Alternate Supply Route Right-of-Way

The right-of-way for the Alternate Supply Route contains a total of 79 potential wetlands based on 16 mapped WWI wetlands and 63 photo-interpreted wetlands. There are a total of 0.90 acres of mapped wetlands per the WWI data, and an additional 2.30 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 92% are herbaceous plant dominated wetlands, and 8% are partially or fully forested or shrub dominated.

4.1.1.2 Alternate Supply Route Non-Right-of-Way Easement

The non-right-of-way easement for the Alternate Supply Route contains a total of three potential wetlands based on two mapped WWI wetlands and one photo-interpreted wetland. There are 0.69 acres of mapped wetlands per the WWI data and an additional 0.02 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, they are primarily farmed wetlands.

4.1.1.3 Alternate Supply Route 50-foot Buffer

The 50-foot buffer contains a total of 87 potential wetlands based on 37 mapped WWI wetlands and 50 photo-interpreted wetlands. There are 10.17 acres of mapped wetlands per the WWI data, and an additional 2.13 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 25% are herbaceous plant dominated wetlands, 52% are partially or fully forested or shrub dominated, and 23% are in agriculture.

4.1.2 Alternate Supply Route Waterways

The right-of-way of the Alternative Supply Route crosses eight waterways, including the Root River and seven other unnamed tributaries. The non-right-of-way easement crosses no waterways. The 50-foot buffer crosses the same waterways with one additional unnamed tributary. There is approximately 0.11 miles of waterways within the right-of-way, and 0.19 miles of waterway within the 50-foot buffer.

4.2 Alternate Supply Route Sub-Alternative

4.2.1 Alternate Supply Route Sub-Alternative Wetlands

4.2.1.1 Alternate Supply Route Sub-Alternative Right-of-Way

The right-of-way for the Alternate Supply Route Sub-Alternative contains a total of six potential wetlands based on one mapped WWI wetlands and five photo-interpreted wetlands. There are 0.20 acres of mapped wetlands per the WWI data and an additional 0.70 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 77% are herbaceous plant dominated wetlands, and 23% are partially or fully forested or shrub dominated.

4.2.1.2 Alternate Supply Route Sub-Alternative 50-foot Buffer

The 50-foot buffer contains one potential wetland based on mapped WWI wetlands and no photo-interpreted wetlands. There are 0.03 acres of mapped wetlands per the WWI data. The mapped wetland feature is classified as open water.

4.2.2 Alternate Supply Route Sub-Alternative Waterways

The right-of-way of the Alternate Supply Route Sub-Alternative crosses one unnamed waterway. The 50-foot buffer crosses the same waterway. Within the right-of-way and 50-foot buffer, there are approximately 0.07 and 0.03 miles of waterways, respectively.

SECTION 5 Route Alternative Preference Determination

The extent of the potential wetland impacts and number of waterway crossings varies slightly between the Alternate Supply Route and the Alternate Supply Route Sub-Alternative. The Alternate Supply Route Sub-Alternative adds approximately 0.90 acres of wetlands, which are primarily herbaceous plant dominated wetlands. There are no additional waterway crossings with the Alternate Supply Route Sub-Alternative. Based on the desktop review, it appears that the Alternate Supply Route and the Alternate Supply Route Sub-Alternative will have comparable permanent impacts to wetlands and waterway crossings.

The wetlands and waterway data that were used to reach this determination can be found in Appendices D-1 and Appendix D-2.

SECTION 6 Desktop Review Uses and Limitations

The results of this research will aid in determining the amount and type of wetlands that are potentially located within each route alternative right-of-way, non-right-of-way easements, and 50-foot buffer of each route alternative. Based on this information, some assumptions may be made to determine which route alternative could potentially result in the least amount of impacts to waterways and wetlands. In general, the route alternative with the least amount of acreage of WWI-mapped wetlands and mapped waterways, and photo-interpreted wetlands may result in the least amount of impacts to wetlands and waterways. The results of this technical memorandum will also aid in determining the potential amount of permanent versus temporary impacts. In areas mapped as having forested or shrub dominated wetlands, impacts would be considered permanent. In areas mapped as having emergent / herbaceous plant dominated wetlands, temporary trenching activities, followed by restoration, have the potential to be treated as a temporary type of wetland impact.

The amount of wetlands along each route alternative is summarized in this technical memorandum on a per route basis, and does not include a formal delineation or in-depth assessment nor provide detail of the amount and type of wetlands on each side of the road. The locations of wetlands on each side of the roadways within the corridor are shown in Appendix D-2, Figure 1 through Figure 2G, but not summarized.

The desktop review is limited to available data and the location of routes supplied to TRC as of the date of this technical memorandum. Adjustments to route alignments or creation of new routes will likely result in changes to the quantity, extents, and types of waterways and wetlands reported herein. Due to the inherent limitations of aerial imagery and available wetland databases, on-site field investigations will likely result in changes to the quantity, extents, and types of wetlands reported herein. It is anticipated that the changes will be nominal.

Appendix D-1 – Tables

Table 1. Wisconsin Wetland Inventory (WWI) Wetlands Summary

Route Alternative	Route Length (miles)	Number of Wetlands	Total WWI Area (Acres)	WWI (Acres/Mile)
Alternate Supply Route - Right-Of-Way	13.63	16	0.90	*0.06*
Alternate Supply Route - Easement	13.63	2	0.69	*0.05*
Alternate Supply Route - Buffer	13.63	37	10.17	*0.74*
Alternate Supply Route Sub-Alternative - Right-Of-Way	2.34	1	0.20	*0.08*
Alternate Supply Route Sub-Alternative - Buffer	2.34	1	0.03	*0.01*

Table 2. Photo-Interpreted (PI) Potential Wetlands Summary

Route	Route Length (miles)	Number of Wetlands	Total Wetland Area (Acres)	Wetland (Acres/Mile)
Alternate Supply Route - Right-Of-Way	13.63	63	2.30	*0.17*
Alternate Supply Route - Easement	13.63	1	0.02	*0.00*
Alternate Supply Route - Buffer	13.63	50	2.13	*0.16*
Alternate Supply Route Sub-Alternative - Right-Of-Way	2.34	5	0.70	*0.30*
Alternate Supply Route Sub-Alternative - Buffer	2.34	0	0.00	*0.00*

Table 3. WWI and Photo-Interpreted (PI) Potential Wetlands Summary

Route	Route Length (miles)	WWI Wetland Area (Acres)	PI Wetland Area (Acres)	TOTAL Wetlands (Acres)	Total Wetlands per Route (Acres)	Total Wetland (Acres/Mile)
Alternate Supply Route - Right-Of-Way	13.63	0.90	2.30	3.20	14.21	*1.04*
Alternate Supply Route - Easement	13.63	0.69	0.02	0.71		
Alternate Supply Route - Buffer	13.63	10.17	2.13	10.30		
Alternate Supply Route Sub-Alternative - Right-Of-Way	2.34	0.20	0.70	0.90	0.93	*0.40*
Alternate Supply Route Sub-Alternative - Buffer	2.34	0.03	0.00	0.03		

Table 4. WWI Wetlands Summary by Wetland Class (Acres)

Route	E	E/W	F	S	S/E	T	T/E	T/S	W	$	$/E
Alternate Supply Route - Right-Of-Way	0.69	--	0.03	--	0.01	0.17	--*	--	--	--	--
Alternate Supply Route - Easement	--	--	0.69	--	--	--	--	--*	--	--	--
Alternate Supply Route - Buffer	1.37	0.04	1.82	0.13	1.53	1.49	1.71	1.83	0.25	--	--

--* acreage is less than 0.01

Table 5. Photo-Interpreted Potential Wetlands by Wetland Class (Acres)									
Route	E			S	S/E	T	T/E	T/S	W
	Natural	Agricultural	Roadside Swale						
Alternate Supply Route - Right-Of-Way	0.11	--*	2.11	0.03	--	0.04	--	--	--
Alternate Supply Route - Easement	--	0.02	--	--	--	--	--	--	--
Alternate Supply Route - Buffer	0.62	0.60	0.55	0.06	--	0.30	--	--	0.01

--* acreage is less than 0.01

Wisconsin Wetland Classification System (Class Only)

Legend

E	Emergent/wet meadow
E/W	Emergent/wet meadow, Open water
F	Flats/unvegetated wet soil
S	Scrub/shrub
S/E	Scrub/shrub, Emergent/wet meadow
T	Forested
T/E	Forested, Emergent/wet meadow
T/S	Forested/Scrub shrub
W	Open water
$	Filled/drained
$/E	Filled/drained, emergent/wet meadow

Table 6. NHD/Route Centerline Crossing Summary			
Route	Total Crossings	Root River Crossings	Other Unnamed Crossings
Alternate Supply Route - Right-Of-Way	8	1	7
Alternate Supply Route- Easement	--	--	--
Alternate Supply Route- Buffer	9	1	8
Alternate Supply Route Sub-Alternative - Right-Of-Way	1	--	1
Alternate Supply Route Sub-Alternative - Buffer	1		1

Table 7. NHD Flowline Summary			
Route	Route Length (miles)	Total NHD Length (feet)	Total NHD Length (miles)
Alternate Supply Route - Right-Of-Way	13.63	599.52	0.11
Alternate Supply Route - Easement	13.63	--	--
Alternate Supply Route - Buffer	13.63	1036.05	0.19
Alternate Supply Route Sub-Alternative - Right-Of-Way	2.34	381.14	0.07
Alternate Supply Route Sub-Alternative - Buffer	2.34	166.24	0.03

Table 8. Wetland Identification by Route				
Wetland ID	WWI or PI	Acreage	WWI Wetland Type	PI Emergent Wetland Type
W-0	WWI	0.04	E2/W0H	
W-1	PI	0.07		Roadside Swale
W-2	WWI	0.01	F0Hf	
W-3	PI	0.04		Natural
W-4	PI	0.04		Natural
W-5	PI	0.24		Natural
W-6	WWI	0.04	E1K	
W-7	WWI	0.36	F0Kf	
W-8	WWI	0.41	E1H	
W-9	WWI	0.04	T3K	
W-10	WWI	0.14	F0Kf	
W-11	PI	0.11		Agricultural
W-12	PI	0.11		Agricultural
W-13	PI	0.11		Agricultural
W-14	PI	0.11		Agricultural
W-15	PI	0.13		Natural
W-16	WWI	0.14	T3K	
W-17	WWI	1.30	S3/E2K	
W-18	WWI	1.46	E2K	
W-19	PI	0.02		Roadside Swale
W-20	WWI	0.10	W0Hx	
W-21	WWI	0.18	S3/E2K	
W-22	WWI	0.30	T3/E2K	
W-23	WWI	0.04	W0Hx	
W-24	PI	0.06		Roadside Swale
W-25	PI	0.02		Roadside Swale

Table 8. Wetland Identification by Route				
Wetland ID	WWI or PI	Acreage	WWI Wetland Type	PI Emergent Wetland Type
W-26	PI	0.01		Roadside Swale
W-27	WWI	0.32	F0Kf	
W-28	PI	0.06		Natural
W-29	PI	0.06		Natural
W-30	WWI	0.07	T3/S3K	
W-31	WWI	0.13	T3/S3K	
W-32	PI	0.08		Agricultural
W-33	WWI	1.71	F0Kf	
W-34	PI	0.09		Agricultural
W-35	PI	0.04		Natural
W-36	PI	0.01		Roadside Swale
W-37	PI	0.01		Roadside Swale
W-38	WWI	0.17	T3K	
W-39	PI	0.03		Roadside Swale
W-40	WWI	0.09	E1K	
W-41	WWI	0.01	T3/E2K	
W-42	PI	0.06		Roadside Swale
W-43	PI	0.08		Roadside Swale
W-44	WWI	0.06	S3/E2K	
W-45	PI	0.03		Scrub-shrub
W-46	PI	0.05		Stormwater
W-47	PI	0.06		Scrub-shrub
W-48	PI	0.01		Roadside Swale
W-49	PI	0.06		Roadside Swale
W-50	PI	0.04		Roadside Swale
W-51	WWI	0.03	T3/E2K	
W-52	WWI	0.15	T3/E2K	
W-53	PI	0.06		Roadside Swale
W-54	WWI	0.40	T3K	
W-55	WWI	0.11	W0Hx	
W-56	PI	0.06		Forested
W-57	PI	0.07		Roadside Swale
W-58	PI	0.12		Forested
W-59	PI	0.07		Roadside Swale
W-60	PI	0.05		Roadside Swale
W-61	PI	0.01		Roadside Swale

Table 8. Wetland Identification by Route

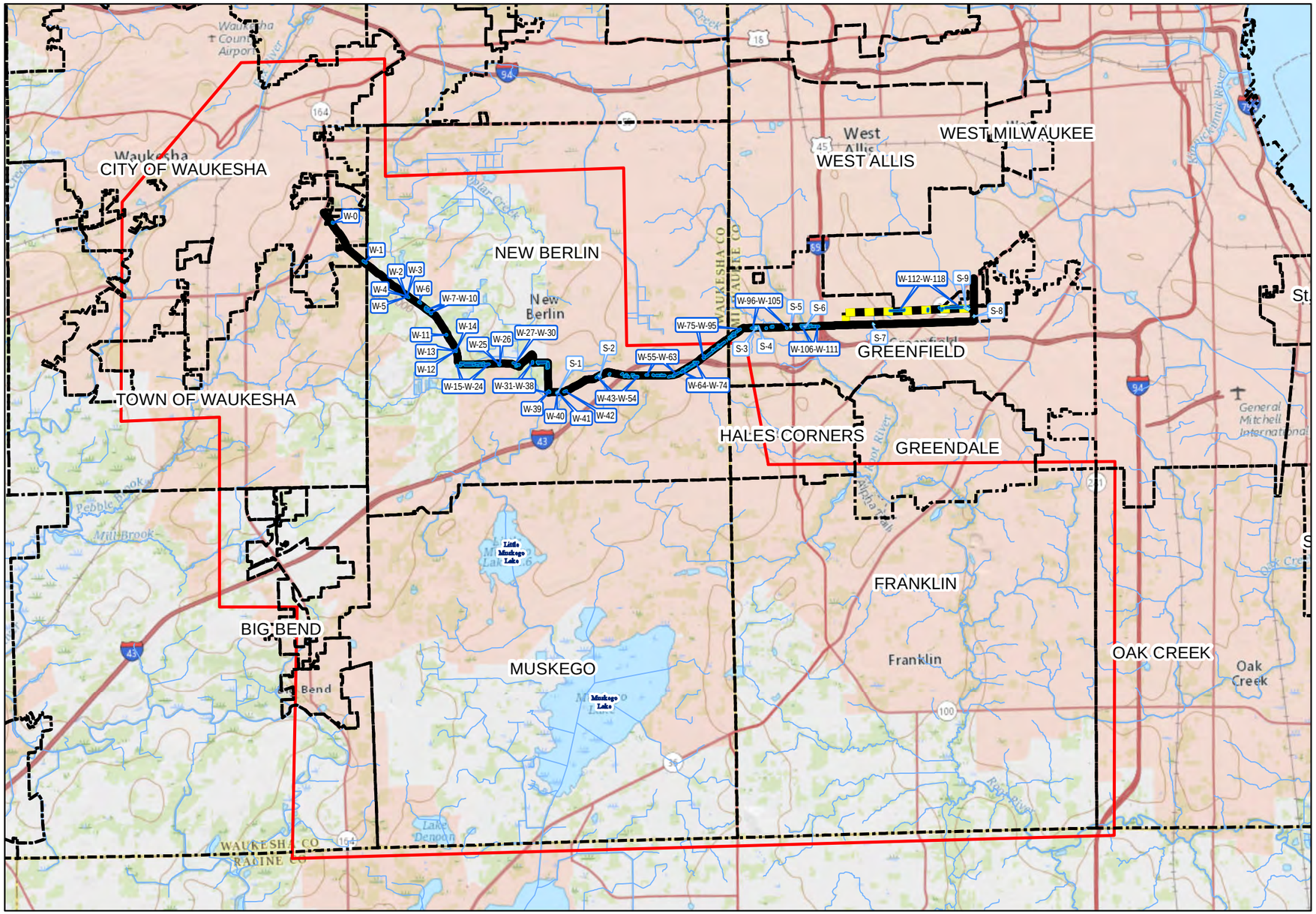
Wetland ID	WWI or PI	Acreage	WWI Wetland Type	PI Emergent Wetland Type
W-62	PI	0.01		Roadside Swale
W-63	PI	0.14		Roadside Swale
W-64	PI	0.06		Roadside Swale
W-65	PI	0.01		Natural
W-66	PI	0.11		Roadside Swale
W-67	PI	0.02		Roadside Swale
W-68	PI	0.02		Forested
W-69	PI	0.11		Roadside Swale
W-70	PI	0.23		Roadside Swale
W-71	PI	0.16		Roadside Swale
W-72	PI	0.03		Natural
W-73	PI	0.02		Roadside Swale
W-74	PI	0.07		Roadside Swale
W-75	PI	0.07		Roadside Swale
W-76	PI	0.09		Forested
W-77	PI	0.01		Roadside Swale
W-78	PI	0.15		Roadside Swale
W-79	PI	0.01		Roadside Swale
W-80	PI	0.01		Roadside Swale
W-81	PI	0.02		Roadside Swale
W-82	PI	0.03		Roadside Swale
W-83	PI	0.07		Natural
W-84	WWI	0.07	E2Kx	
W-85	PI	0.15		Roadside Swale
W-86	PI	0.02		Roadside Swale
W-87	PI	0.03		Roadside Swale
W-88	PI	0.05		Roadside Swale
W-89	PI	0.02		Roadside Swale
W-90	PI	0.04		Roadside Swale
W-91	PI	0.05		Roadside Swale
W-92	WWI	0.29	T3K	
W-93	WWI	0.13	T3K	
W-94	PI	0.03		Roadside Swale
W-95	PI	0.06		Roadside Swale
W-96	PI	0.02		Roadside Swale
W-97	PI	0.03		Roadside Swale

Table 8. Wetland Identification by Route				
Wetland ID	WWI or PI	Acreage	WWI Wetland Type	PI Emergent Wetland Type
W-98	WWI	0.08	T3K	
W-99	WWI	0.13	T3K	
W-100	WWI	0.27	T3K	
W-101	PI	0.05		Roadside Swale
W-102	PI	0.02		Roadside Swale
W-103	PI	0.02		Roadside Swale
W-104	PI	0.01		Roadside Swale
W-105	PI	0.01		Pond
W-106	WWI	0.74	T3/E2K	
W-107	WWI	0.48	T3/E2K	
W-108	WWI	0.13	S3K	
W-109	PI	0.04		Roadside Swale
W-110	PI	0.03		Roadside Swale
W-111	PI	0.03		Roadside Swale
W-112	PI	0.57		Natural
W-113	PI	0.03		Natural
W-114	PI	0.02		Roadside Swale
W-115	PI	0.02		Natural
W-116	PI	0.06		Natural
W-117	WWI	1.84	T3/S3K	
W-118	WWI	0.03	W0Hx	

W-112 through W-118 are in the electrical transmission utility corridor.

Appendix D-2 – Figures

FIGURE NO. 1



Legend

- W## — WETLANDS TAG NO.
- S## — NHD STREAM/RIVER CROSSING TAG NO.
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
- MUNICIPALITIES
- STUDY BOUNDARY
- NHD STREAM/RIVER

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
3. WISCONSIN WETLANDS INVENTORY (WWI) DATA PURCHASED FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, WISCONSIN DIGITAL WETLAND. (DWI)
4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 10,000 '

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Date: 2/9/2018

FIGURE NO. 2A

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
- RIGHT OF WAY (ROW)
- EASEMENT
- BUFFER
- NHD STREAM/RIVER

Notes

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1 " = 1,000 '

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FIGURE NO. 2B

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
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1 " = 1,000 '

0 500 1,000 2,000

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Plotted: 2/15/2018
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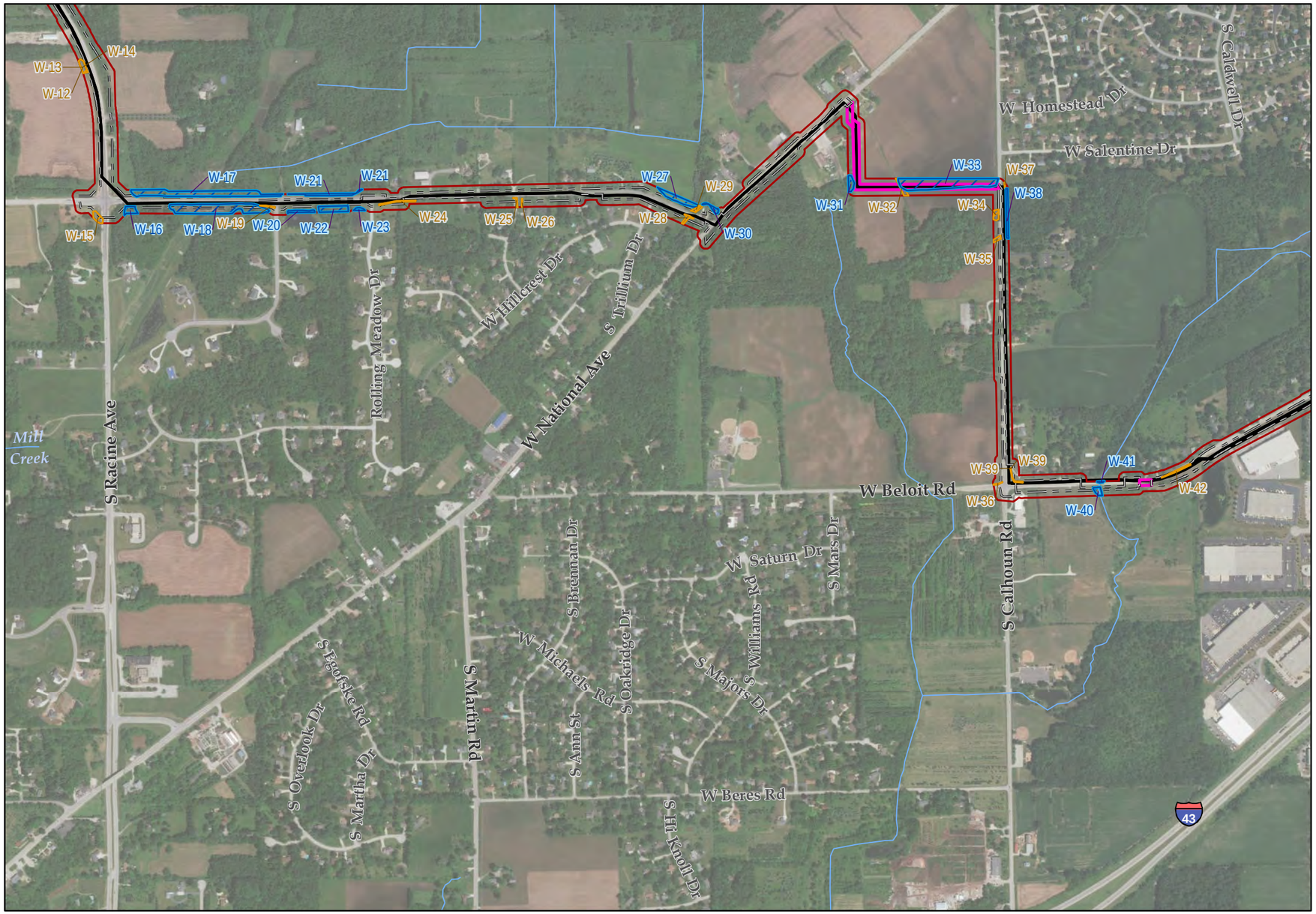
FIGURE NO. 2C



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
- RIGHT OF WAY (ROW)
- EASEMENT
- BUFFER
- NHD STREAM/RIVER

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

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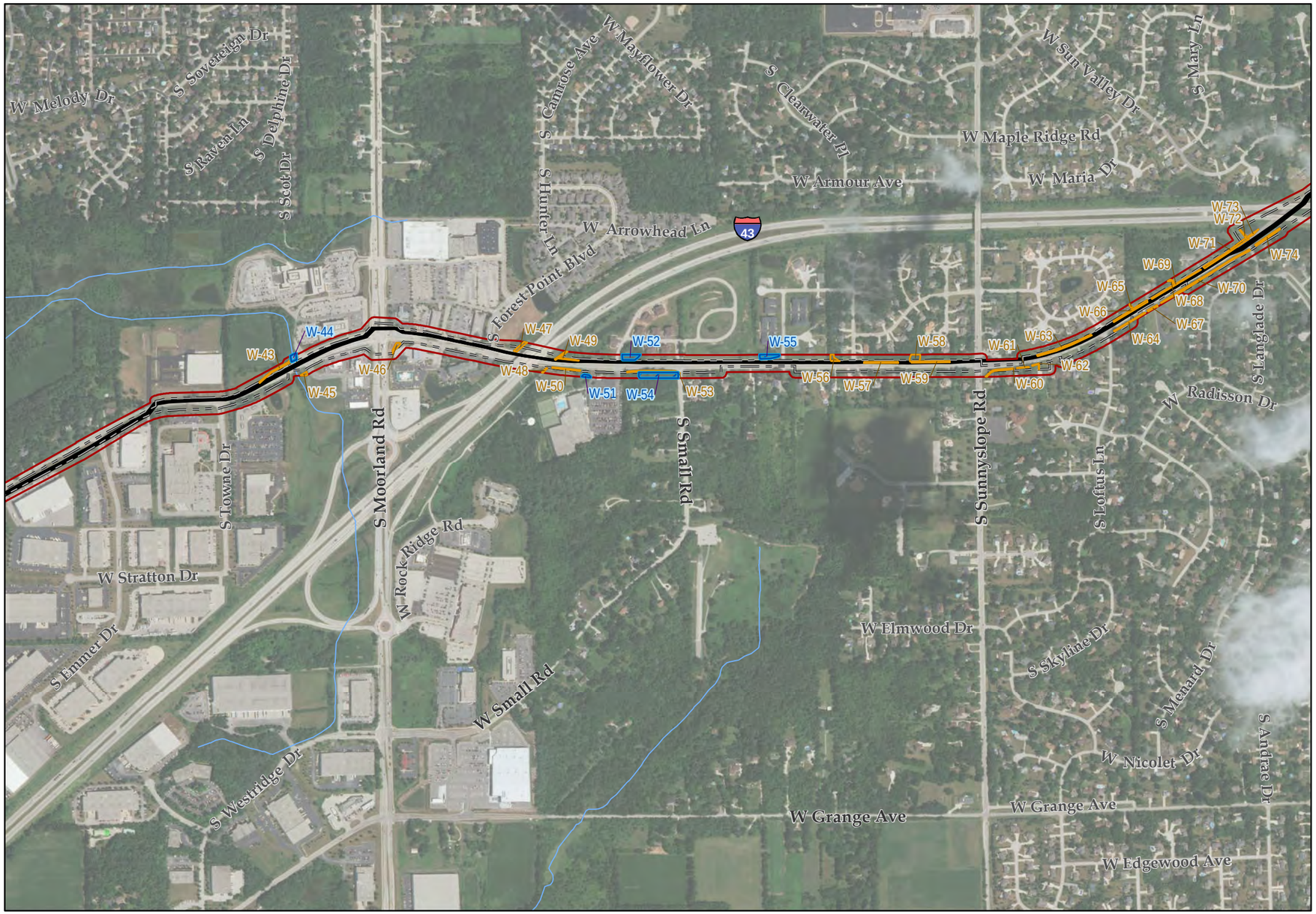
FIGURE NO. 2D



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
- RIGHT OF WAY (ROW)
- EASEMENT
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- NHD STREAM/RIVER

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

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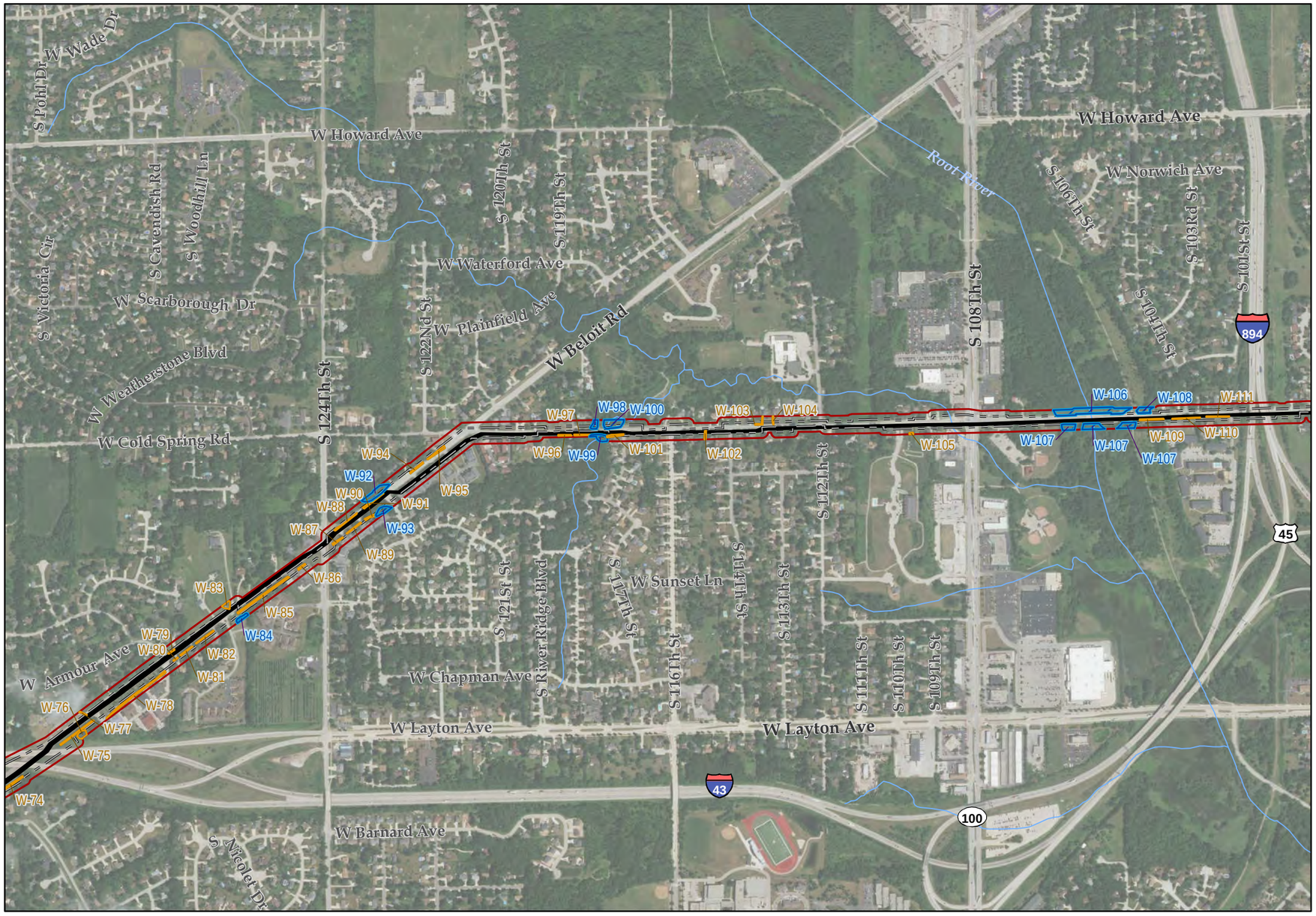
FIGURE NO. 2E



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

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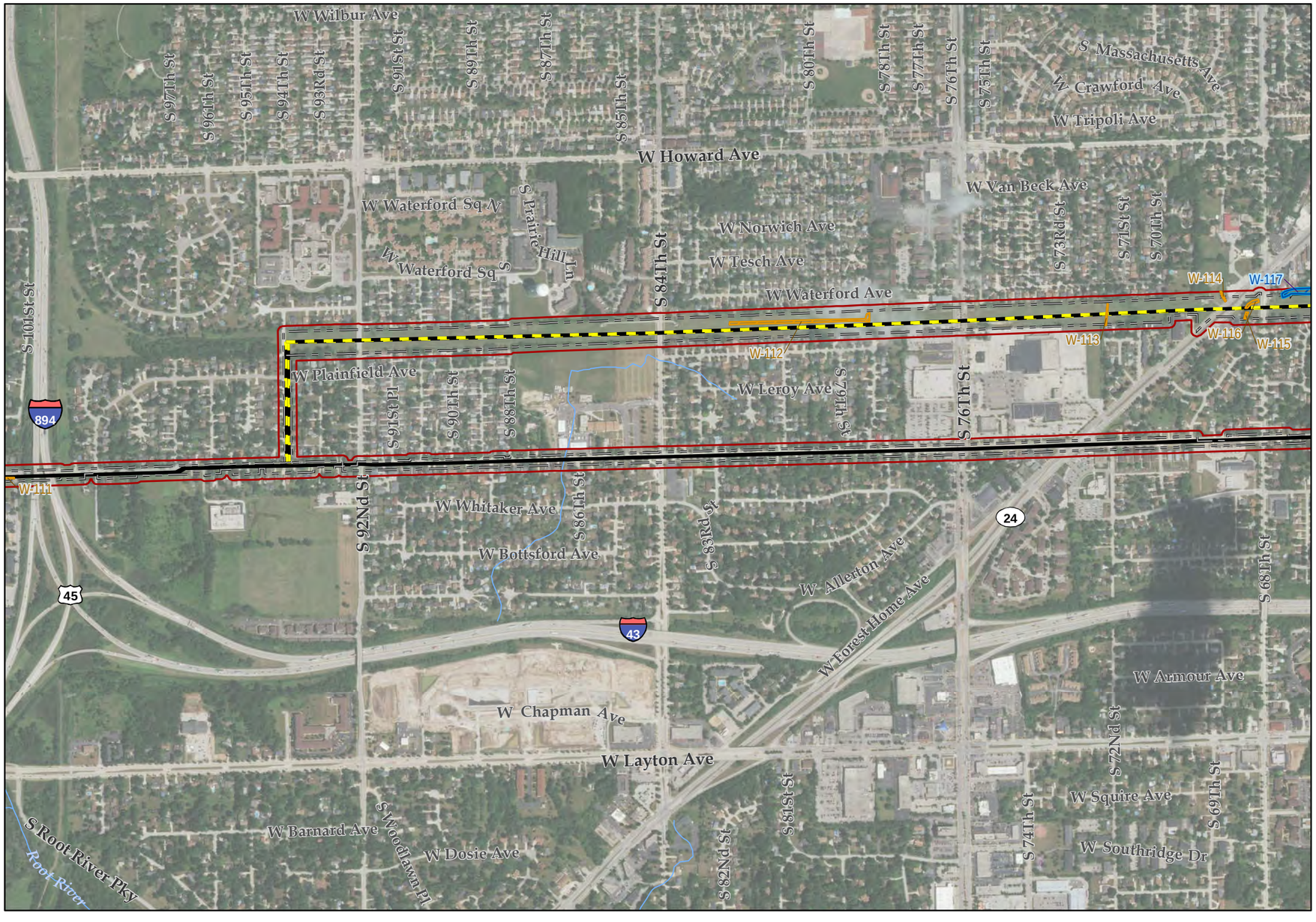
FIGURE NO. 2F



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
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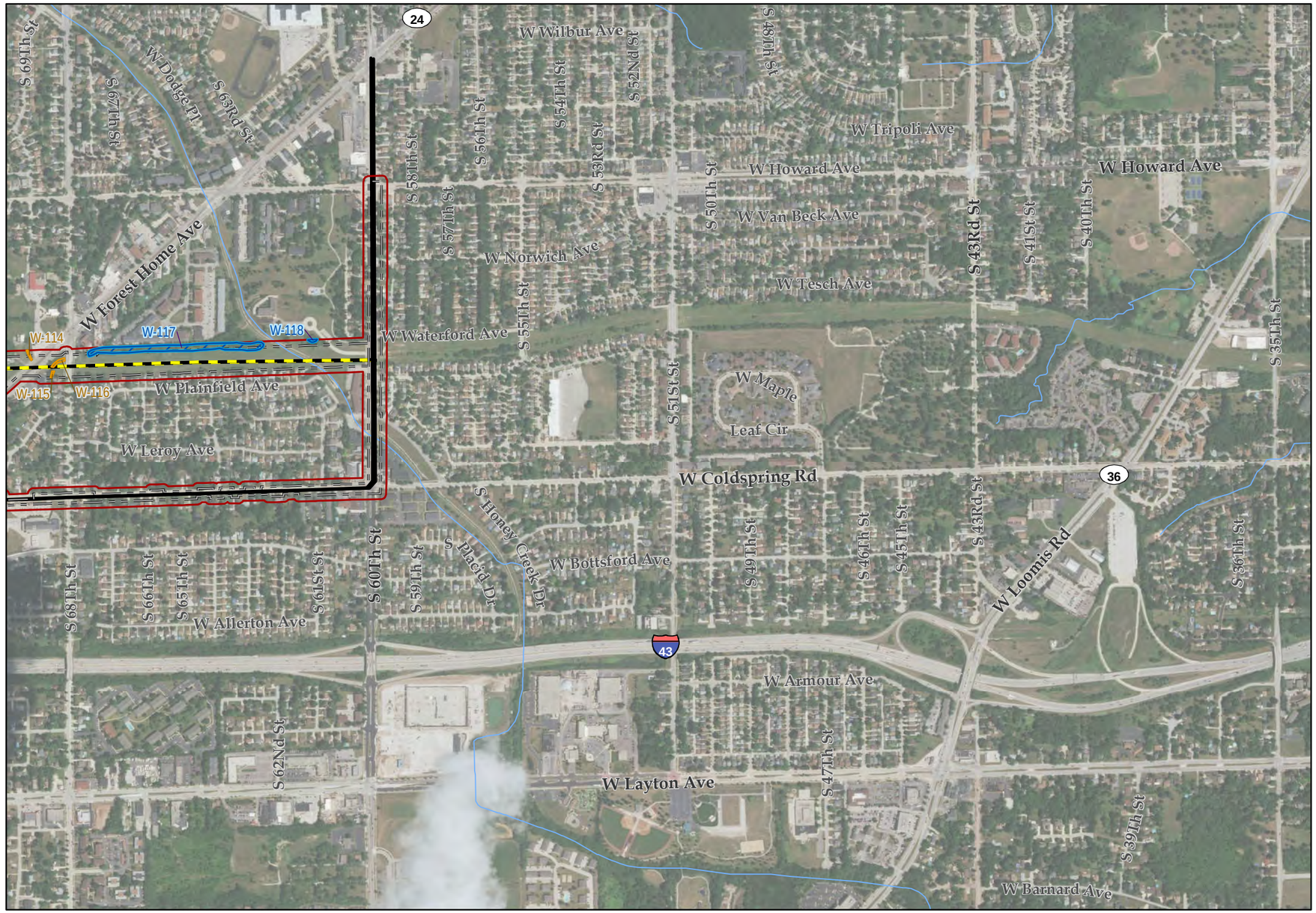
FIGURE NO. 2G



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
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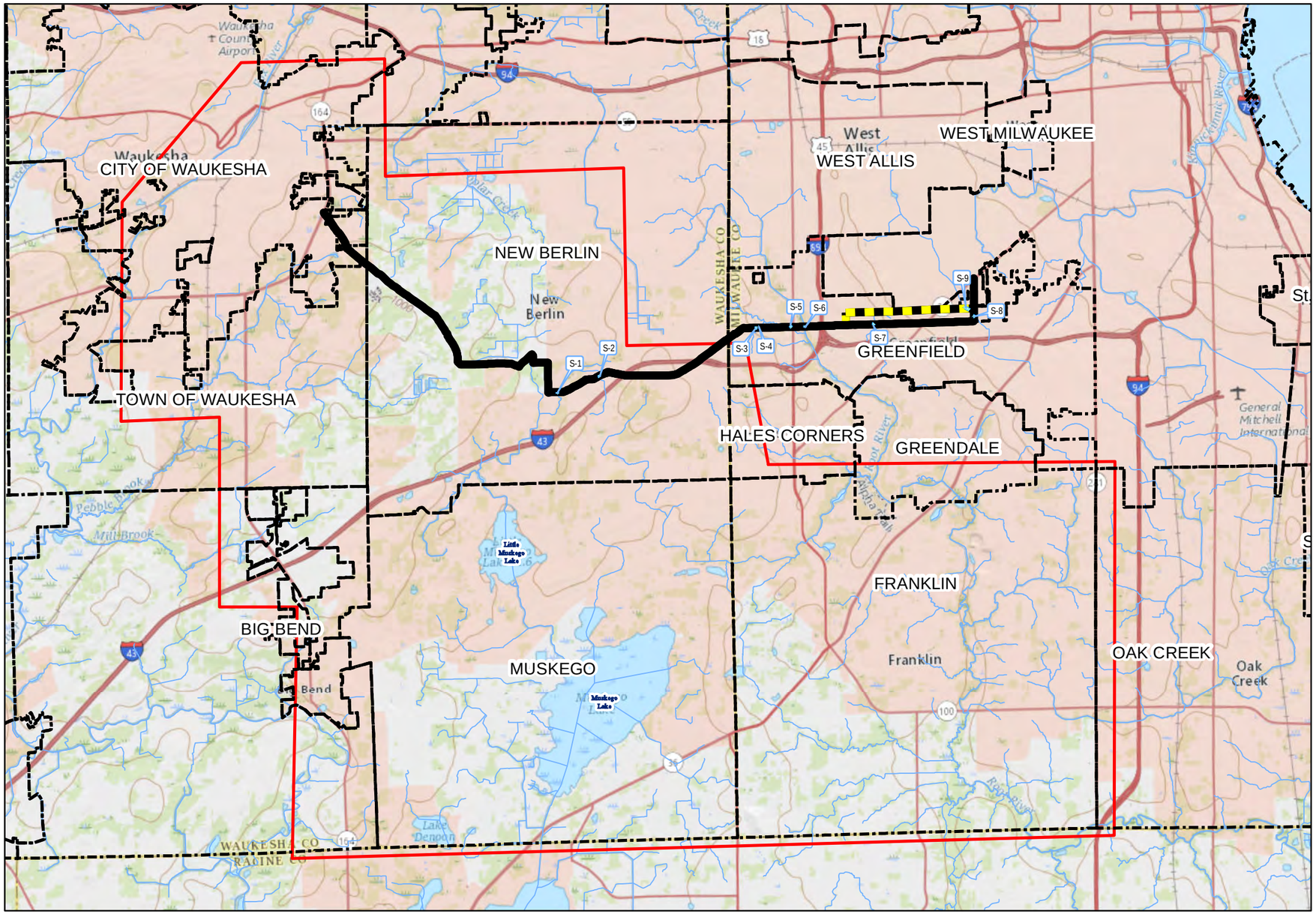
FIGURE NO. 3



Legend

- S## — NHD STREAM/RIVER CROSSING TAG NO.
- ALTERNATE SUPPLY ROUTE
- ALTERNATE SUPPLY ROUTE SUB-ALTERNATIVE
- MUNICIPALITIES
- STUDY BOUNDARY
- NHD STREAM/RIVER

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 10,000 '

0 5,000 10,000 20,000

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2-7: Part 2 - Proposed Milwaukee Return Flow Alternative and Other Alternatives Considered

Great Lakes Water Supply Program

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4-130 D1 Wetland and Waterway Technical Memorandum

January 2018

Waukesha Water Utility
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PROGRAM TEAM MEMBER CONSULTANTS:

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EXECUTIVE SUMMARY

TRC Environmental Corporation (TRC) conducted a desktop evaluation of wetlands and waterways for three route alternatives under consideration as of the date of this technical memorandum. The evaluation was conducted via a desktop review of maps and aerial imagery including the Wisconsin Department of Natural Resources (WDNR) Wisconsin Wetland Inventory (WWI) maps, U.S. Geological Service (USGS) topographic maps, Natural Resource Conservation Service (NRCS) Soils maps, and recent and historical aerial photographs. Utilizing these resources, potential wetlands and waterways were identified and mapped on recent aerial photographs.

The wetlands and waterway evaluation was conducted April and May of 2017 by TRC's wetland scientists and GIS mapping specialists. The Study Area included the road right-of-way for each of the three proposed route alternatives, several easements located outside the right-of-way, an electrical transmission utility corridor, and a 50-foot buffer extending beyond the edge of these features on either side. Wetland data for the non- right-of-way easements are reported separate from the right-of-way wetland data. The wetland data for the buffer is included herein for informational purposes only and was not taken into consideration to determine route alternative preference, since impacts to wetlands are not anticipated in the buffer.

To summarize:

- Route Alternative 2 and Route Alternative 3 have comparable WWI mapped wetlands and photo-interpreted wetlands within both the right-of-way and non- right-of-way easements (see Appendix D-1, Tables 1, 2, and 3). Route Alternative 2 contains 23.04 acres and Route Alternative 3 contains 23.48 acres.
- Route Alternative 4 contains the most WWI mapped wetlands and photo-interpreted wetlands within both the right-of-way and non- right-of-way easements, including the electrical transmission utility corridor at a total of 29.53 acres (see Appendix D-1, Tables 1, 2, and 3).
- Route Alternative 2 contains the least waterway crossings, at 12 crossings in the right-of way; Route Alternative 3 has 16 crossings; and Route Alternative 4 has the most waterway crossings, at 19 crossings in the right-of way (see Appendix D-1, Table 6).

Based on the desktop review, it appears that Route Alternative 2 will have less permanent impacts to wetlands and fewer waterway crossings. Route Alternative 3 wetland impacts are comparable to Route Alternative 2; however, Route Alternative 3 has several additional waterway crossings. Route Alternative 4 has the greatest amount of wetland acreage and more waterway crossings than Route Alternatives 2 and 3. Therefore, Route Alternative 4 is the least preferred with respect to potential wetland and waterway impacts.

SECTION 1 Introduction

1.1 Wetland and Waterway Desktop Review

The wetlands and waterways evaluation for this phase of the Great Water Alliance (Program) was conducted April and May of 2017 by TRC's wetland scientists and GIS mapping specialists. The Study Area included the road right-of-way of each of the three proposed route alternatives, several easements located outside the right-of-way, an electrical transmission utility corridor, and a 50-foot buffer extending beyond the edge of these features on either side. The width of the right-of-way varied from 30 to 300 feet and a width of 50 feet was used in areas where the proposed route alternative(s) did not follow an existing road. Please note that future assessments and reports may provide additional details on these or other route alternatives as the planning and design of the Program evolves.

1.2 Agency Regulatory Authority

The wetlands and/or waterways identified in this technical memorandum may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers, state regulation under the jurisdiction of Wisconsin Department of Natural Resources (WDNR), and local jurisdiction under local, county, town, city, or village.

SECTION 2 Methodology

Using Digital Wetland Inventory (DWI) data, purchased from the WDNR for the purposes of this Program, TRC measured and categorized the WWI mapped wetlands within each of the three route alternatives. The route alternative corridors are defined as the road right-of-way, easement outside of road right-of-way, an electrical transmission utility corridor, and an additional 50-foot buffer on either side. The quantity of wetlands measured are based on the location and extent of WWI wetlands mapped within the corridor. The area of each wetland overlaying the corridor was measured and summarized for each route alternative. These data were further subdivided into four subcategories: 1) wetland area within the road right-of-way, and 2) wetland area with a private easement, 3) wetland area within the electrical transmission utility corridor, and 4) wetland area within the 50-foot buffer.

Using aerial imagery from recent years, Google Earth street view, mapped hydric soils, and county GIS topographic data, TRC also performed photo-interpretation to identify potential wetlands that were not mapped WWI wetlands. This primarily included wetlands that may occur in roadside ditches and agricultural fields.

Wetlands were classified using the Wisconsin Wetland Classification System as was provided as attribute data with the DWI from the WDNR. Emergent wetlands identified through photo-interpretation were further divided into several subcategories: roadside swales, agricultural, and natural.

The mapping convention used for assigning wetlands tag numbers was done such that all wetlands along all three route alternatives were assigned their own unique tag number.

Waterways were evaluated for each route alternative using the National Hydrography Dataset (NHD) from the U.S. Geological Survey. The number and linear feet of each waterway within the corridor was measured and is reported herein.

SECTION 3 Wetland and Waterway Desktop Review Results

3.1 Wetland and Waterway Results

Details on each alternative route (Route Alternatives 2, 3, and 4) and each wetland are provided in a series of tables in Appendix D-1. The locations of mapped WWI wetlands and photo-interpreted wetlands are shown on a series of maps in Appendix D-2. There are a total of 395 potential wetlands within the right-of-way, easements, electrical transmission utility corridor, and 50-foot buffer for all three route alternatives. Each of the 395 potential wetlands were assigned their own unique tag number and are labeled W-1 though W-395 on the figures in Appendix D-2. Wetland identification by route alternative is included on Table 8, Appendix D-1.

Details on each route alternative and each waterway are provided in a series of tables in Appendix D-1. The locations of mapped NHD waterway are also shown on the series of maps in Appendix D-2.

The following sections provide a summary of the quantity and general types of wetlands for each route alternative. The following sections also provide a summary of the quantity of waterways and their names, if named, for each route alternative. Wetland data for the non-right-of-way easements are reported separate from the right-of-way wetland data. The wetland data for the buffer is included herein for informational purposes only and not taken into consideration to determine route alternative preference, since impacts to wetlands are not anticipated in the buffer.

SECTION 4 Wetland and Waterway Desktop Review Summary

4.1 Route Alternative 2

4.1.1 Route Alternative 2 Wetlands

The length of Route Alternative 2 is approximately 25.69 miles. Based on the mapped WWI and photo-interpreted wetlands, there are approximately 0.52 and 0.34 acres of wetland per mile, respectively within the right-of-way. These numbers include wetlands within the non-right-of-way easements, but not the wetland acreage within the buffer.

4.1.1.1 Route Alternative 2 Right-of-Way

The right-of-way for Route Alternative 2 contains a total of 173 potential wetlands based on mapped WWI wetlands (72) and photo-interpreted wetlands (101). There are 13.27 acres of mapped wetlands per the WWI data and an additional 8.78 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 56% are herbaceous plant dominated wetlands, and 44% are partially or fully forested or shrub dominated.

4.1.1.2 Route Alternative 2 Non Right-of-Way Easement

The non-right-of-way easement for Route Alternative 2 contains a total of seven potential wetlands based on mapped WWI wetlands (4) and photo-interpreted wetlands (3). There are 0.94 acres of mapped wetlands per the WWI data and an additional 0.05 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, the amount of herbaceous plant dominated wetlands is comparable to partially or fully forested or shrub dominated wetlands.

4.1.1.3 Route Alternative 2 50-foot Buffer

The 50-foot buffer contains a total of 213 potential wetlands based on mapped WWI wetlands (114) and photo-interpreted wetlands (99). There are 27.68 acres of mapped wetlands per the WWI data and an additional 5.93 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 39% are herbaceous plant dominated wetlands, and 61% are partially or fully forested or shrub dominated.

4.1.2 Route Alternative 2 Waterways

The right-of-way of Route Alternative 2 crosses twelve waterways, including Ryan Creek, Pebble Brook at two locations, the Root River, Oak Creek, and seven other unnamed tributaries. The non-right-of-way easement crosses one waterway at Ryan Creek. The 50-foot buffer crosses the same waterways with one additional unnamed tributary. There is approximately 0.49 miles of waterways within the right-of-way, 0.01 miles of waterways in the non-right-of-way easement, and 0.61 miles of waterway within the 50-foot buffer.

4.2 Route Alternative 3

4.2.1 Route Alternative 3 Wetlands

4.2.1.1 Route Alternative 3 Right-of-Way

The right-of-way for Route Alternative 3 contains a total of 174 potential wetlands based on mapped WWI wetlands (76) and photo-interpreted wetlands (98). There are 13.55 acres of mapped wetlands per the WWI data and an additional 9.64 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 55% are herbaceous plant dominated wetlands, and 46% are partially or fully forested or shrub dominated.

4.2.1.2 Route Alternative 3 Non Right-of-Way Easement

The non-right-of-way easement for Route Alternative 3 contains a total of four potential wetlands based on mapped WWI wetlands (2) and photo-interpreted wetlands (2). There are 0.25 acres of mapped wetlands per the WWI data and an additional 0.04 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, the amount of herbaceous plant dominated wetlands is comparable to partially or fully forested or shrub dominated wetlands.

4.2.1.3 Route Alternative 3 50-foot Buffer

The 50-foot buffer contains a total of 213 potential wetlands based on mapped WWI wetlands (117) and photo-interpreted wetlands (96). There are 28.73 acres of mapped wetlands per the WWI data and an additional 5.85 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 45% are herbaceous plant dominated wetlands, and 55% are partially or fully forested or shrub dominated.

4.2.2 Route Alternative 3 Waterways

The right-of-way of Route Alternative 3 crosses sixteen waterways, including Ryan Creek, Pebble Brook at two locations, Root River, Oak Creek, and eleven other unnamed tributaries. The non-right-of-way easement crosses one waterway at Ryan Creek. The 50-foot buffer crosses the same waterways with two additional unnamed tributaries and crosses the Root River twice. Within the right-of-way, non-right-of-way easement, and 50-foot buffer, there are approximately 0.82, 0.01, and 0.92 miles of waterways, respectively.

4.3 Route Alternative 4

4.3.1 Route Alternative 4 Wetlands

4.3.1.1 Route Alternative 4 Right-of-Way

The right-of-way for Route Alternative 4 contains a total of 167 potential wetlands based on mapped WWI wetlands (76) and photo-interpreted wetlands (91). There are 15.08 acres of mapped wetlands per the WWI data and an additional 10.14 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 57% are herbaceous plant dominated wetlands, and 43% are partially or fully forested or shrub dominated.

4.3.1.2 Route Alternative 4 Non Right-of-Way Easement

The non-right-of-way easement for Route Alternative 4 contains a total of six potential wetlands based on mapped WWI wetlands (3) and photo-interpreted wetlands (3). There are 0.55 acres of mapped wetlands per the WWI data and an additional 0.06 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, the amount of herbaceous plant dominated wetlands is comparable to partially or fully forested or shrub dominated wetlands.

4.3.1.3 Route Alternative 4 Electrical Transmission Utility Corridor Easement

The electrical transmission utility corridor for Route Alternative 4 contains a total of 24 potential wetlands based on mapped WWI wetlands (7) and photo-interpreted wetlands (17). There are 1.50 acres of mapped wetlands per the WWI data and an additional 2.20 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, the amount of herbaceous plant dominated wetlands is somewhat greater than the partially or fully forested or shrub dominated wetlands.

4.3.1.4 Route Alternative 4 50-foot Buffer

The 50-foot buffer contains a total of 233 potential wetlands based on mapped WWI wetlands (123) and photo-interpreted wetlands (110). There are 37.35 acres of mapped wetlands per the WWI data and an additional 5.48 acres of potential wetlands, based on desktop photo-interpretation. Of these mapped wetland features, approximately 35% are herbaceous plant dominated wetlands, and 65% are partially or fully forested or shrub dominated.

4.3.2 Route Alternative 4 Waterways

The right-of-way of Route Alternative 4 crosses nineteen waterways, including Ryan Creek, Mill Creek, Pebble Brook at three locations, the Root River, Oak Creek, Redwing Creek, and eleven other unnamed tributaries. The non-right-of-way easement crosses one waterway at Ryan Creek. The 50-foot buffer crosses the same waterways with one additional unnamed tributary and crosses the Root River twice. Within the right-of-way, non-right-of-way easement, and 50-foot buffer, there are approximately 0.77, 0.01, and 0.71 miles of waterways, respectively.

SECTION 5 Route Alternative Preference Determination

All three route alternatives will have impacts to wetlands and cross some waterways. The extent of the potential wetland impacts and number of waterway crossings varies amongst each route alternative. The amount of wetland acreage associated with wetland type (emergent, shrub, and forested), and waterway crossing type (named or unnamed) also varies based on the proposed route alternative.

Route Alternatives 2 and 3 have the least amount of wetland acreage within the right-of-way (13.27 acres and 13.55 acres, respectively). Wetland acreage with the non-right-of-way easements for both route alternatives are comparably nominal. Based on the total acres of wetland and considering the potential margin of error by using off-site resources, Route Alternatives 2 and 3 are fairly comparable to one another. Taking into consideration the amount of potentially forested or shrub dominated wetlands versus herbaceous dominated wetlands, as a factor of quality and potential for temporary impacts, Route Alternative 2 has slightly less forested/shrub dominated wetlands than Route Alternative 3 within the right-of-way. Incorporating the number of waterway crossings, as a factor of the ability to avoid and minimize impacts to other aquatic resources, conversely Route Alternative 2 has fewer waterway crossings than Route Alternative 3. Based on the desktop review, it appears that Route Alternative 2 will have less permanent impacts to wetlands and fewer waterway crossings.

In contrast to Route Alternatives 2 and 3, Route Alternative 4 has the greatest amount of wetland acreage within both the right-of-way and non-right-of-way easements, including the electrical transmission utility corridor, with greater than six acres of wetland than Route Alternatives 2 and 3. Route Alternative 4 also has more waterway crossings than Route Alternatives 2 and 3 and crosses Pebble Brook three times. Compared to Route Alternatives 2 and 3, Route Alternative 4 is the least favorable with respect to potential wetland and waterway impacts.

Using the factors discussed above, the routes were ranked in order of favorability (from highest to lowest) as follows:

1. Route Alternative 2
2. Route Alternative 3
3. Route Alternative 4

The wetlands and waterway data that were used to reach this determination can be found in Appendix D-1.

SECTION 6 Desktop Review Uses and Limitations

The results of this research will aid in determining the amount and type of wetlands that are potentially located within each route alternative right-of-way, non-right-of-way easements, and 50-foot buffer. Based on this information, some assumptions may be made to determine which route alternative could potentially result in the least amount of impacts to waterways and wetlands. In general, the route alternative with the least amount of acres of WWI-mapped wetlands and mapped waterways, and photo-interpreted wetlands may result in the least amount of impacts to wetlands and waterways. The results of this assessment will also aid in determining the potential amount of permanent versus temporary impacts. In areas mapped as having forested or shrub dominated wetlands, impacts would be considered permanent. In areas mapped as having emergent / herbaceous plant dominated wetlands, temporary trenching activities, followed by restoration, have the potential to be treated as a temporary type of wetland impact.

The amount of wetlands along each route alternative is summarized in this technical memorandum on a per route alternative basis, and does not include a formal delineation or in-depth assessment nor provide detail of the amount and type of wetlands on each side of the road. The locations of wetlands on each side of the roadways within the corridor are shown on the figures in Appendix D-2, but not summarized.

The desktop review is limited to available data and the location of route alternatives supplied to TRC at the time this assessment was conducted. Adjustments to route alternative alignments or creation of new route alternatives will likely result in changes to the quantity, extents, and types of waterways and wetlands reported herein. Due to the inherent limitations of aerial imagery and available wetland databases, on-site field investigations will likely result in changes to the quantity, extents, and types of wetlands reported herein. It is anticipated that the changes will be nominal.

Appendix D-1 - Tables

Table 1. WWI Wetlands Summary				
Route Alternative	Route Length (miles)	Number of Wetlands	Total WWI Area (Acres)	WWI Acres/Mile
Route Alternative 2 - Right-of-Way	25.69	72	13.27	*0.52*
Route Alternative 2 - Easement	25.69	4	0.94	*0.04*
Route Alternative 2 - Buffer	25.69	114	27.68	*1.08*
Route Alternative 3 - Right-of-Way	26.94	76	13.55	*0.50*
Route Alternative 3 - Easement	26.94	2	0.25	*0.01*
Route Alternative 3 - Buffer	26.94	117	28.73	*1.06*
Route Alternative 4 - Right-of-Way	26.54	76	15.08	*0.57*
Route Alternative 4 - Easement	26.54	3	0.55	*0.02*
Route Alternative 4 – Electrical transmission utility corridor	26.54	7	1.50	*0.05*
Route Alternative 4 - Buffer	26.54	123	37.35	*1.29*

Table 2. Photo-Interpreted Potential Wetlands Summary				
Route Alternative	Route Length (miles)	Number of Wetlands	Total Wetland Area (Acres)	Wetland Acres/Mile
Route Alternative 2 - Right-of-Way	25.69	101	8.78	*0.34*
Route Alternative 2 - Easement	25.69	2	0.05	*0.00*
Route Alternative 2 - Buffer	25.69	99	5.93	*0.23*
Route Alternative 3 - Right-of-Way	26.94	98	9.64	*0.36*
Route Alternative 3 - Easement	26.94	2	0.04	*0.00*
Route Alternative 3 - Buffer	26.94	96	5.85	*0.22*
Route Alternative 4 - Right-of-Way	26.54	91	10.14	*0.38*
Route Alternative 4 - Easement	26.54	3	0.06	*0.00*
Route Alternative 4 – Electrical transmission utility corridor	26.54	17	2.20	*0.08*
Route Alternative 4 - Buffer	26.54	110	5.48	*0.21*

Table 3. WWI and Photo-Interpreted (PI) Potential Wetlands Summary						
Route Alternative	Route Length (miles)	WWI Wetland Area (Acres)	PI Wetland Area (Acres)	TOTAL Wetlands (Acres)	Total Wetlands per Route (Acres)	Total Wetland Acres/Mile
Route Alternative 2 – Right-of-Way	25.69	13.27	8.78	22.05	23.04	*0.90*
Route Alternative 2 - Easement	25.69	0.94	0.05	0.99		
Route Alternative 3 – Right-of-Way	26.94	13.55	9.64	23.19	23.48	*0.87*
Route Alternative 3 - Easement	26.94	0.25	0.04	0.29		
Route Alternative 4 – Right-of-Way	26.54	15.08	10.14	25.22	29.53	*1.11*
Route Alternative 4 - Easement	26.54	0.55	0.06	0.61		
Route Alternative 4 – Electrical transmission utility corridor Easement	26.54	1.5	2.2	3.70		

Table 4. WWI Wetlands Summary by Wetland Class (Acres)											
Route Alternative	E	E/W	F	S	S/E	T	T/E	T/S	W	$	$/E
Route Alternative 2 - Right-of-Way	3.65	--*	0.35	0.09	2.29	0.26	4.55	0.07	0.04	1.22	0.74
Route Alternative 2 - Buffer	7.88	0.04	3.66	0.32	6.25	2.22	5.04	0.60	1.32	0.33	--
Route Alternative 3 – Right-of-Way	3.11	--	0.35	0.09	2.29	0.39	5.22	0.10	0.04	1.22	0.74
Route Alternative 3 - Buffer	6.42	0.04	2.32	0.33	4.78	2.66	5.70	1.15	1.00	0.33	--
Route Alternative 4 - Right-of-Way	2.45	--	0.32	0.13	4.10	0.14	4.63	1.26	0.04	1.22	0.78
Route Alternative 4 - Buffer	11.13	--	2.65	0.71	8.01	2.08	5.01	2.21	0.49	0.43	0.05

--* acreage is less than 0.01
E – Emergent, S – Shrub, T – Forested, W – Water, and $ - filled wetland

Table 5. Photo-Interpreted Potential Wetlands by Wetland Class (Acres)									
Route Alternative	E			S	S/E	T	T/E	T/S	W
	Natural	Agricultural	Roadside Swale						
Route Alternative 2 - Right-of-Way	2.72	0.94	5.07	--	--	--	--	--	0.02
Route Alternative 2 - Buffer	1.19	2.43	1.51	0.31	0.01	0.29	--	0.03	0.12
Route Alternative 3 - Right-of-Way	3.13	0.94	5.50	--	--	--	--	--	0.02
Route Alternative 3 - Buffer	1.27	2.28	1.47	0.28	0.05	0.35	--	--	0.12
Route Alternative 4 - Right-of-Way	5.55	0.20	6.12	0.01	0.14	0.02	0.21	--	0.04
Route Alternative 4 - Buffer	1.00	1.36	1.65	0.27	0.01	0.12	--	--	0.02

--* acreage is less than 0.01
E – Emergent, S – Shrub, T – Forested, W – Water, and $ - filled wetland

Table 6. NHD/Route Centerline Crossing Summary								
Route	TOTAL Crossings	Ryan Creek	Mill Creek	Pebble Brook	Root River	Oak Creek	Redwing Creek	Other Unnamed Crossings
Route 2 - Right-of-Way	12	1		2	1	1		7
Route2 - Easement	1	1						
Route 2 - Buffer	13	1		2	2	1		8
Route 3 - Right-of-Way	16	1		2	1	1		11
Route 3 - Easement	1	1						0
Route 3 - Buffer	19	1		2	2	1		13
Route 4 - Right-of-Way	19	1	1	3	1	1	1	11
Route 4 - Easement	1	1						0
Route 4 - Buffer	21	1	1	3	2	1	1	12

Note: NHD = U.S. Geological Survey – National Hydrography Dataset

Table 7. NHD Flowline Summary			
Route	Route Length (miles)	Total NHD Length (ft)	Total NHD Length (miles)
Route 2 - Right-of-Way	25.69	2622.51	0.49
Route 2 - Easement	25.69	50.37	0.01
Route 2 - Buffer	25.69	3240.91	0.61
Route 3 - Right-of-Way	26.94	4356.75	0.82
Route 3 - Easement	26.94	50.37	0.01
Route 3 - Buffer	26.94	4891.68	0.92
Route 4 - Right-of-Way	26.55	4097.89	0.77
Route 4 - Easement	26.55	50.99	0.01
Route 4 - Buffer	26.55	3771.17	0.71

Table 8. Wetland Identification by Route Alternative							
Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-1	PI	0.009421	PEM	Roadside Swale	2	3	4
W-2	PI	0.042309	PEM	Natural	2	3	4
W-3	PI	0.035363	PEM	Roadside Swale	2	3	4
W-4	PI	0.105114	PEM	Natural	2	3	4
W-5	PI	0.095607	PEM	Natural	2	3	4
W-6	PI	0.030568	PEM	Natural	2	3	4
W-7	PI	0.01919	PEM	Other	2	3	4
W-8	PI	0.022681	PUBH		2	3	4
W-9	PI	0.020698	PSS		2	3	4
W-10	PI	0.114561	PEM	Natural	2	3	4
W-11	WWI	0.114968	E2Ka		2	3	4
W-12	PI	0.183757	PSS		2	3	4
W-13	WWI	0.118134	S3K		2	3	4
W-14	WWI	1.323088	E2K		2	3	4
W-15	PI	0.443534	PEM	Roadside Swale	2	3	4
W-16	PI	0.031821	PFO		2	3	4
W-17	WWI	1.628593	T3/E2K		2	3	4
W-18	PI	0.023413	PSS		2	3	4
W-19	WWI	0.920617	$T3/E2K		2	3	4
W-20	PI	0.056893	PEM	Roadside Swale	2	3	4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-21	PI	0.016437	PSS				4
W-22	PI	0.028976	PEM	Natural			4
W-23	PI	0.071247	PEM	Natural	2	3	4
W-24	WWI	0.419638	T3K				4
W-25	WWI	1.211756	E2H				4
W-26	WWI	0.466685	E2H				4
W-27	PI	0.059619	PEM	Roadside Swale			4
W-28	WWI	0.093903	F0Kf				4
W-29	WWI	0.868662	E2K				4
W-30	WWI	0.735541	S3/E1K				4
W-31	WWI	0.324173	S3/E2H				4
W-32	WWI	0.163435	S3/E2K				4
W-33	WWI	0.180028	T2/S3K				4
W-34	WWI	0.296529	T2/S3K				4
W-35	PI	1.028327	PEM	Natural			4
W-36	WWI	0.696082	T3/E1K				4
W-37	WWI	0.215948	S3/E2K				4
W-38	PI	0.640954	PEM	Roadside Swale			4
W-39	PI	0.059534	PEM	Natural			4
W-40	PI	0.079243	PEM	Roadside Swale			4
W-41	PI	0.65815	PEM	Roadside Swale			4
W-42	PI	0.145195	PEM	Roadside Swale			4
W-43	PI	0.135759	PEM	Roadside Swale			4
W-44	WWI	0.994209	S3/E2K				4
W-45	WWI	0.792095	S3/E2K				4
W-46	WWI	0.462293	T3/S3K				4
W-47	WWI	1.283635	T3/S3K				4
W-48	WWI	1.470235	S3/E2K				4
W-49	PI	0.0679	PEM	Roadside Swale			4
W-50	WWI	0.150297	E1K				4
W-51	PI	0.28153	PEM	Roadside Swale			4
W-52	WWI	0.094909	$E2K				4
W-53	PI	0.015565	PEM	Agricultural			4
W-54	WWI	0.103107	S3/E2K				4
W-55	PI	0.106585	PEM	Roadside Swale			4
W-56	WWI	0.714259	T3/E2K				4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-57	PI	0.10557	PEM	Roadside Swale	2	3	4
W-58	WWI	0.776487	T3/S3K				4
W-59	WWI	1.64974	S3/E1K		2	3	4
W-60	WWI	0.436374	E2Ka				4
W-61	WWI	0.042088	S3/E2K				4
W-62	WWI	0.274447	E2K		2	3	4
W-63	WWI	0.166771	E2K		2	3	4
W-64	WWI	5.461112	T5/E2K		2	3	4
W-65	WWI	0.026229	T3/S3K		2	3	4
W-66	WWI	0.189195	E2K				4
W-67	WWI	0.026842	T3/S3K		2	3	4
W-68	PI	0.217478	PEM	Roadside Swale	2	3	4
W-69	WWI	0.19465	T3/S3K		2	3	4
W-70	WWI	0.17306	S3/E2K		2	3	4
W-71	PI	1.760829	PEM	Natural	2	3	4
W-72	PI	0.507806	PEM	Roadside Swale	2	3	4
W-73	WWI	0.301338	S3/E2K				4
W-74	PI	0.049613	PEM	Agricultural			4
W-75	WWI	0.065145	T3/S3K		2	3	4
W-76	WWI	2.952436	S3/E2K		2	3	4
W-77	WWI	0.164945	T3/S3K		2	3	4
W-78	PI	0.120209	PEM	Roadside Swale	2	3	4
W-79	WWI	0.060089	S3/E2K		2	3	4
W-80	PI	0.717744	PEM	Natural	2	3	4
W-81	WWI	0.848902	E2K		2	3	4
W-82	PI	0.022843	PEM	Natural			4
W-83	WWI	0.130963	S3K				4
W-84	WWI	0.426225	E2K				4
W-85	WWI	0.2649	S3K				4
W-86	WWI	1.008864	E2K				4
W-87	WWI	0.077125	F0Kf				4
W-88	WWI	0.043609	E2/W0H		2	3	
W-89	PI	0.025944	PEM	Natural			4
W-90	WWI	0.570571	E2K				4
W-91	WWI	0.955465	F0Kf				4
W-92	PI	0.080852	PEM	Agricultural			4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-93	PI	0.074467	PEM		2	3	
W-94	PI	0.120005	PEM	Roadside Swale			4
W-95	PI	0.034509	PEM	Agricultural			4
W-96	WWI	0.00684	F0Hf		2	3	
W-97	WWI	0.040807	E1K		2	3	
W-98	WWI	0.355448	F0Kf		2	3	
W-99	WWI	0.409511	E1H		2	3	
W-100	WWI	0.041657	T3K		2	3	
W-101	WWI	0.144482	F0Kf		2	3	
W-102	WWI	0.162934	S3/E1K				4
W-103	WWI	0.159132	T3/E2K				4
W-104	WWI	0.138844	W0Hx				4
W-105	PI	0.109584	PEM		2	3	
W-106	PI	0.137783	PEM/PSS	Roadside Swale			4
W-107	WWI	0.023711	S3/E2K				4
W-108	WWI	0.006909	$S3/E2K				4
W-109	PI	0.112777	PEM			3	
W-110	WWI	0.442939	T3/S3K			3	
W-111	PI	0.001232	PEM	Agricultural			4
W-112	PI	0.000294	PEM	Agricultural			4
W-113	PI	0.208575	PEM	Roadside Swale			4
W-114	PI	0.136374	PEM	Agricultural			4
W-115	WWI	0.08381	S3K				4
W-116	PI	0.131671	PEM		2	3	
W-117	PI	0.03635	PEM/PSS			3	
W-118	PI	0.154644	PEM			3	
W-119	PI	0.146002	PEM	Roadside Swale			4
W-120	PI	0.174324	PEM			3	
W-121	PI	0.03113	PEM			3	
W-122	PI	0.036889	PEM			3	
W-123	PI	0.034976	PEM			3	
W-124	WWI	0.14434	T3K		2	3	
W-125	WWI	0.238268	T3K			3	
W-126	WWI	0.007133	W0Hx			3	
W-127	WWI	1.302456	S3/E2K		2		
W-128	WWI	1.458892	E2K		2		

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-129	WWI	0.024831	E2K			3	
W-130	PI	0.019959	PEM	Roadside Swale	2		
W-131	WWI	1.567966	E2H			3	
W-132	PI	0.009587	PEM	Roadside Swale			4
W-133	WWI	0.000427	$E2K		2		
W-134	PI	0.01069	PEM	Roadside Swale			4
W-135	WWI	0.095166	W0Hx		2		
W-136	PI	0.0348	PEM	Roadside Swale			4
W-137	WWI	1.540138	T3/E2K			3	
W-138	WWI	0.092972	$S3K				4
W-139	PI	0.033372	PEM	Roadside Swale			4
W-140	WWI	0.170583	S3/E2K		2		
W-141	WWI	0.297797	T3/E2K		2		
W-142	PI	0.013018	PEM	Roadside Swale			4
W-143	WWI	0.03727	W0Hx		2		
W-144	WWI	0.008607	S3/E2K		2		
W-145	PI	0.10168	PEM	Roadside Swale			4
W-146	PI	0.060105	PEM	Roadside Swale	2		
W-147	WWI	1.366793	E2K			3	
W-148	PI	0.119772	PEM	Roadside Swale			4
W-149	WWI	0.31936	E1K			3	
W-150	PI	0.012854	PEM	Roadside Swale			4
W-151	PI	0.027516	PEM	Roadside Swale			4
W-152	PI	0.03981	PEM	Roadside Swale			4
W-153	WWI	0.036396	E2K			3	
W-154	WWI	0.327341	T3/S3K			3	
W-155	WWI	0.000388	W0Hx				4
W-156	WWI	0.751357	E2H				4
W-157	PI	0.015752	PEM	Roadside Swale	2		
W-158	PI	0.00942	PEM	Roadside Swale	2		
W-159	PI	1.167634	PEM	Natural			4
W-160	WWI	1.886077	E2H				4
W-161	WWI	0.350852	T3K				4
W-162	WWI	0.103701	E1Ka			3	
W-163	WWI	0.000618	T3/E2K			3	
W-164	WWI	0.324603	F0Kf		2		

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-165	PI	0.056695	PEM	Natural	2		
W-166	PI	0.059519	PEM	Natural	2		
W-167	WWI	0.065631	T3/S3K		2		
W-168	WWI	0.088665	T3/E2K			3	
W-169	WWI	0.096627	W0Hx			3	
W-170	WWI	0.251335	T3K			3	
W-171	WWI	0.022199	W0Hx				4
W-172	WWI	0.139257	T3K				4
W-173	WWI	0.128724	T3/S3K		2		
W-174	WWI	0.003995	T3K				4
W-175	WWI	0.022689	$T3K				4
W-176	PI	0.080761	PEM	Agricultural	2		
W-177	PI	0.0517	PEM	Natural			4
W-178	WWI	1.709475	F0Kf				
W-179	PI	0.089989	PEM	Agricultural	2		
W-180	PI	0.04165	PEM	Natural	2		
W-181	PI	0.00857	PEM	Roadside Swale	2		
W-182	PI	0.027	PSS		2		
W-183	PI	0.007217	PEM	Roadside Swale	2		
W-184	WWI	0.170579	T3K		2		
W-185	PI	0.023952	PEM	Roadside Swale	2		
W-186	PI	0.031668	PSS/PFO		2		
W-187	PI	0.012256	PEM	Agricultural		3	
W-188	WWI	0.252693	T3K			3	
W-189	PI	0.33757	PEM/PFO	Natural			4
W-190	PI	0.672189	PEM	Natural			4
W-191	PI	0.023038	PEM	Roadside Swale			4
W-192	PI	0.032915	PEM	Natural			4
W-193	PI	0.006509	Riverine				4
W-194	PI	0.000267	Riverine				4
W-195	PI	0.004778	PEM	Natural			4
W-196	PI	0.006386	PEM	Natural			4
W-197	PI	0.020296	PEM/PFO	Natural			4
W-198	WWI	0.117211	W0Hx		2	3	
W-199	PI	0.00546	PEM	Agricultural	2	3	
W-200	WWI	0.202065	T3K		2	3	

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-201	WWI	0.015667	T3K		2	3	
W-202	PI	0.242611	PEM	Roadside Swale	2	3	
W-203	WWI	0.109908	T3K		2	3	
W-204	PI	0.439119	PEM	Roadside Swale	2	3	
W-205	PI	0.059789	PUBH				4
W-206	WWI	0.281029	S3/E2K		2	3	
W-207	PI	0.409831	PEM	Roadside Swale	2	3	
W-208	PI	0.058639	PSS				4
W-209	WWI	0.148795	E2K		2	3	
W-210	PI	0.122612	PFO		2	3	
W-211	WWI	0.013272	W0Hx		2	3	
W-212	WWI	0.831835	E1K		2	3	
W-213	PI	0.08463	PEM	Roadside Swale	2	3	
W-214	PI	0.053475	PEM	Natural			4
W-215	PI	0.11877	PEM	Roadside Swale	2	3	
W-216	WWI	0.077676	E2K		2	3	
W-217	WWI	0.002629	E2Kv		2	3	
W-218	PI	0.005279	PEM	Roadside Swale	2	3	
W-219	PI	0.124837	PEM		2	3	
W-220	PI	0.097958	PUBH		2	3	
W-221	PI	0.086541	PEM	Roadside Swale	2	3	
W-222	WWI	0.009091	E2K		2	3	
W-223	PI	0.024022	PFO		2	3	
W-224	WWI	0.25461	E2K		2	3	
W-225	PI	0.028203	PFO		2	3	
W-226	PI	0.965536	PEM	Agricultural	2	3	
W-227	PI	0.747875	PEM	Agricultural	2	3	
W-228	PI	0.144346	PEM	Natural			4
W-229	PI	0.225873	PEM	Roadside Swale	2	3	
W-230	WWI	0.193492	W0Hx		2	3	
W-231	WWI	0.190171	W0Hx		2	3	
W-232	PI	0.008437	PEM		2	3	
W-233	PI	0.030717	PSS		2	3	
W-234	WWI	0.052203	S3K		2	3	
W-235	WWI	0.014149	E2Kx		2	3	
W-236	WWI	0.046938	W0Hx				4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-237	WWI	0.785104	E1H				4
W-238	WWI	1.571822	E1K				4
W-239	WWI	0.274664	T3/E1K		2	3	
W-240	WWI	0.061543	W0Hx				4
W-241	PI	0.062353	PFO				4
W-242	PI	0.017829	PEM		2	3	
W-243	PI	0.00353	PEM		2	3	
W-244	WWI	0.053921	E1K		2	3	
W-245	WWI	0.043579	T3/E2K		2	3	
W-246	WWI	0.306485	T3/E2K				4
W-247	PI	0.022176	Riverine				4
W-248	PI	0.473737	PEM	Natural	2	3	4
W-249	PI	0.026001	PFO				4
W-250	WWI	0.028544	W0Hx		2	3	
W-251	WWI	0.628736	T3/E2Ka		2	3	
W-252	WWI	0.12636	T3/E2K		2	3	4
W-253	PI	0.013485	PFO		2	3	4
W-254	WWI	0.341288	E2Ka		2	3	4
W-255	WWI	0.111154	F0Kf		2		4
W-256	WWI	0.352433	T3K		2		4
W-257	WWI	0.059898	W0Hx		2		4
W-258	WWI	0.275674	F0Kf		2		4
W-259	WWI	0.407958	T3K		2		4
W-260	PI	0.012351	PEM	Roadside Swale	2	3	4
W-261	WWI	0.097449	E2K		2		4
W-262	PI	0.042518	PEM	Roadside Swale	2	3	4
W-263	PI	0.025478	PEM	Roadside Swale	2	3	4
W-264	WWI	0.087161	S3/E2K		2	3	4
W-265	PI	0.041342	PEM	Natural	2	3	4
W-266	PI	0.007624	PEM	Agricultural	2	3	4
W-267	PI	0.02375	PEM	Roadside Swale	2	3	4
W-268	PI	0.012865	PEM	Roadside Swale	2	3	4
W-269	PI	0.015758	PSS		2	3	4
W-270	WWI	0.240927	S3K		2	3	4
W-271	PI	0.019466	PEM	Roadside Swale	2	3	4
W-272	PI	0.013256	PEM	Roadside Swale	2	3	4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-273	WWI	0.341067	E2H		2	3	4
W-274	PI	0.016328	PEM	Agricultural	2	3	4
W-275	PI	0.012689	PEM/PSS	Natural	2	3	4
W-276	WWI	0.201836	S3/E2K		2	3	4
W-277	PI	0.032799	PEM	Roadside Swale	2	3	4
W-278	PI	0.002984	PEM	Roadside Swale	2	3	4
W-279	PI	0.005573	PEM	Roadside Swale	2	3	4
W-280	PI	0.023746	PEM	Roadside Swale	2	3	4
W-281	WWI	0.065763	W0Hx		2	3	4
W-282	WWI	0.096234	E2K		2	3	4
W-283	PI	0.016705	PEM	Agricultural	2	3	4
W-284	PI	0.011747	PEM	Roadside Swale	2	3	4
W-285	PI	0.012381	PSS	Roadside Swale	2	3	4
W-286	PI	0.012797	PEM	Roadside Swale	2	3	4
W-287	PI	0.08495	PEM	Roadside Swale	2	3	4
W-288	PI	0.014244	PEM	Roadside Swale	2	3	4
W-289	PI	0.007415	PEM	Roadside Swale	2	3	4
W-290	PI	0.009993	PEM	Roadside Swale	2	3	4
W-291	PI	0.031981	PEM	Agricultural	2	3	4
W-292	PI	0.009029	PEM	Roadside Swale	2	3	4
W-293	PI	0.020213	PEM	Roadside Swale	2	3	4
W-294	PI	0.00184	PEM	Roadside Swale	2	3	4
W-295	WWI	0.385043	T3/E2K		2	3	4
W-296	WWI	0.196724	T3/E2K		2	3	4
W-297	PI	0.077006	PEM	Natural	2	3	4
W-298	PI	0.014152	PFO		2	3	4
W-299	WWI	0.023692	E2H		2	3	4
W-300	WWI	0.255218	T3K		2	3	4
W-301	WWI	1.361527	S3/E2K		2	3	4
W-302	WWI	0.525238	F0Kf		2	3	4
W-303	PI	0.035755	PEM	Agricultural	2	3	4
W-304	WWI	0.201545	F0Kf		2	3	4
W-305	WWI	0.198685	E2K		2	3	4
W-306	WWI	1.103559	E2K		2	3	4
W-307	WWI	0.676521	E2K		2	3	4
W-308	WWI	0.069273	T3/E2K		2	3	4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-309	WWI	0.400231	E2K		2	3	4
W-310	WWI	0.587493	E2K		2	3	4
W-311	WWI	0.298977	E1K		2	3	4
W-312	PI	0.08888	PEM	Natural	2	3	4
W-313	PI	0.043553	PEM	Roadside Swale	2	3	4
W-314	PI	0.012126	PEM	Natural	2	3	4
W-315	WWI	0.022569	T3/E2K		2	3	4
W-316	PI	0.088129	PEM	Roadside Swale	2	3	4
W-317	WWI	0.122718	E2K		2	3	4
W-318	WWI	0.081662	T3K		2	3	4
W-319	PI	0.026861	PEM	Roadside Swale	2	3	4
W-320	PI	0.053269	PEM	Roadside Swale	2	3	4
W-321	PI	0.077741	PEM	Roadside Swale	2	3	4
W-322	PI	0.203345	PEM	Agricultural	2	3	4
W-323	PI	0.093438	PEM	Roadside Swale	2	3	4
W-324	PI	0.036972	PEM	Roadside Swale	2	3	4
W-325	PI	0.414476	PEM	Roadside Swale	2	3	4
W-326	PI	0.018093	PEM	Roadside Swale	2	3	4
W-327	PI	0.262	PEM	Roadside Swale	2	3	4
W-328	PI	0.289962	PEM	Roadside Swale	2	3	4
W-329	PI	0.01687	PEM	Roadside Swale	2	3	4
W-330	WWI	0.067779	E2K		2	3	4
W-331	WWI	0.296808	S3/E2Ka		2	3	4
W-332	PI	0.243316	PEM	Roadside Swale	2	3	4
W-333	PI	0.008846	PEM	Natural	2	3	4
W-334	PI	0.030155	PEM	Roadside Swale	2	3	4
W-335	PI	0.04926	PEM	Roadside Swale	2	3	4
W-336	PI	0.065936	PEM	Agricultural	2	3	4
W-337	PI	0.571427	PEM	Roadside Swale	2	3	4
W-338	PI	0.617855	PEM	Agricultural	2	3	4
W-339	WWI	0.700823	E1K		2	3	4
W-340	WWI	0.223675	T3K		2	3	4
W-341	WWI	0.00729	T3/E2K		2	3	4
W-342	PI	0.055621	Channel		2	3	4
W-343	WWI	0.312314	T3/E2K		2	3	4
W-344	WWI	0.739794	$E2K		2	3	4

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type	Route Alternative		
W-345	WWI	0.008499	T3/E2K		2	3	4
W-346	WWI	0.957313	E2Kf		2	3	4
W-347	WWI	0.339767	T3K		2	3	4
W-348	PI	0.236824	PEM	Natural	2	3	4
W-349	WWI	0.000603	T3/E2Ka		2	3	4
W-350	WWI	0.236535	T3K		2	3	4
W-351	WWI	0.462693	E2Ha		2	3	4
W-352	WWI	0.073316	F0Kf		2	3	4
W-353	PI	0.300536	PEM	Agricultural	2	3	4
W-354	WWI	0.009302	T3K		2	3	4
W-355	WWI	0.105631	$T3/E2K		2	3	4
W-356	PI	0.041508	PEM	Natural	2	3	4
W-357	PI	0.005611	PEM	Natural	2	3	4
W-358	PI	0.128703	PEM	Roadside Swale	2	3	4
W-359	PI	0.021073	PEM	Roadside Swale	2	3	4
W-360	PI	0.059747	PEM	Roadside Swale	2	3	4
W-361	PI	0.128278	PEM	Roadside Swale	2	3	4
W-362	PI	0.019275	PUBH		2	3	4
W-363	WWI	0.26021	W0Hx		2	3	4
W-364	PI	0.124846	PEM	Roadside Swale	2	3	4
W-365	PI	0.001655	PUBH		2	3	4
W-366	WWI	0.06307	T3/E2K		2	3	4
W-367	WWI	0.342408	$T3/E2K		2	3	4
W-368	WWI	0.062227	T3K		2	3	4
W-369	WWI	0.185913	$T3K		2	3	4
W-370	PI	0.017279	PFO		2	3	4
W-371	PI	0.023136	PFO		2	3	4
W-372	PI	0.015224	PFO		2	3	4
W-373	PI	0.018276	PFO		2	3	4
W-374	PI	0.006803	PEM	Natural	2	3	4
W-375	WWI	0.000019	W0Hx		2	3	4
W-376	WWI	0.006384	W0Hx		2	3	4
W-377	PI	0.032137	PEM	Roadside Swale	2	3	4
W-378	PI	0.006741	Riverine			3	
W-379	PI	0.017234	PEM			3	
W-380	PI	0.008242	PEM			3	

Table 8. Wetland Identification by Route Alternative

Wetland ID	WWI or PI	Acreage	Wetland Type	PEM Type		Route Alternative
W-381	PI	0.123149	PEM			3
W-382	PI	0.002663	PEM			3
W-383	PI	0.002656	PEM			3
W-384	PI	0.006351	PEM	Roadside Swale		3
W-385	PI	0.014205	PEM	Roadside Swale		3
W-386	PI	0.003862	PEM	Roadside Swale		3
W-387	PI	0.249592	PEM			3
W-388	PI	0.067806	PEM			3
W-389	PI	0.237472	PEM	Roadside Swale		3
W-390	PI	0.006445	PEM			3
W-391	WWI	0.042439	E2H			3
W-392	WWI	0.060052	T3K			3
W-393	PI	0.053395	PFO			3
W-394	WWI	0.222297	W0Hx		2	3
W-395	WWI	0.0787	W0Hx		2	3

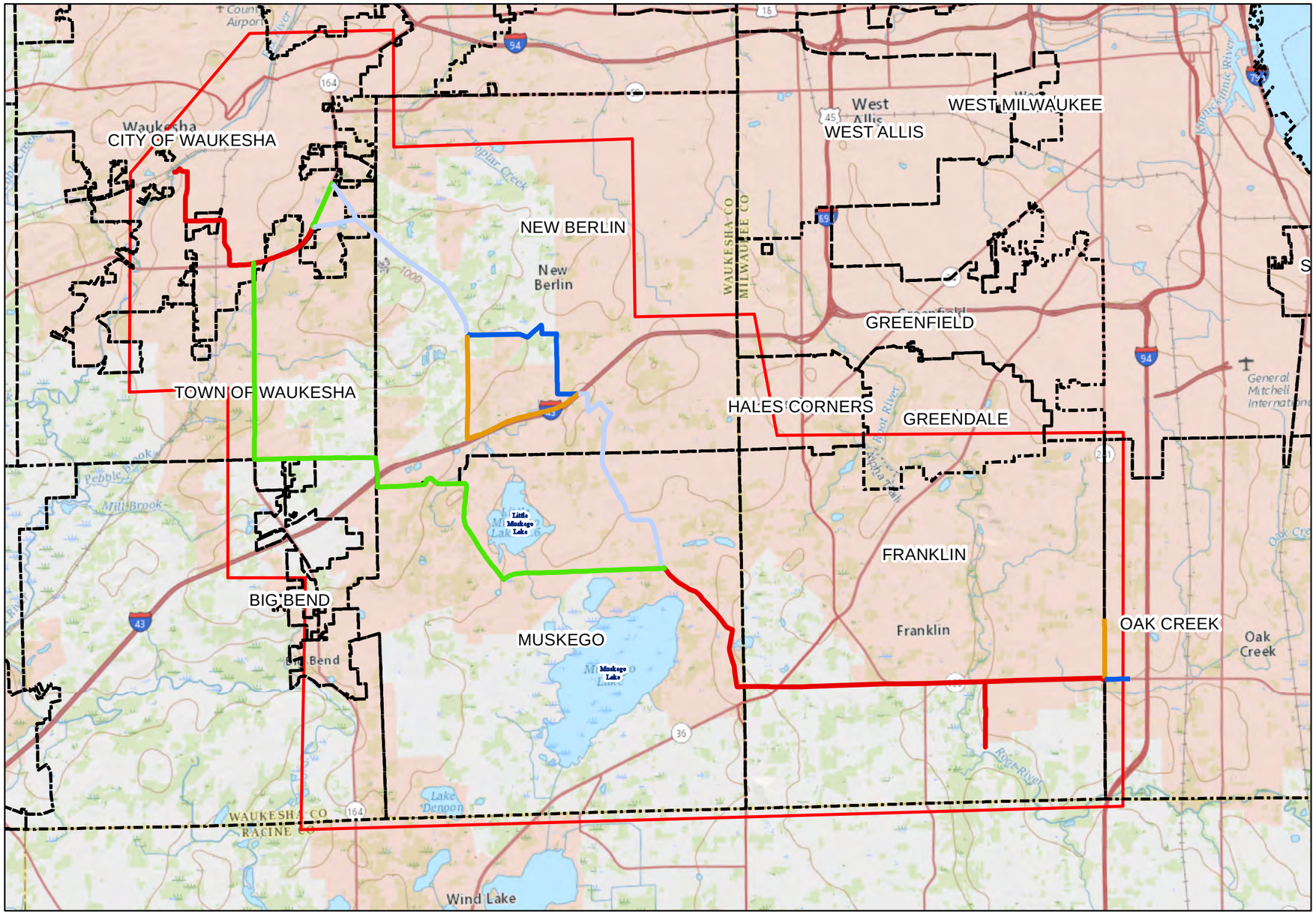
Wisconsin Wetland Classification System
(Class Only)

Legend

E	Emergent/wet meadow
E/W	Emergent/wet meadow, Open water
F	Flats/unvegetated wet soil
S	Scrub/shrub
S/E	Scrub/shrub, Emergent/wet meadow
T	Forested
T/E	Forested, Emergent/wet meadow
T/S	Forested/Scrub shrub
W	Open water
$	Filled/drained
$/E	Filled/drained, emergent/wet meadow
PEM	Palustrine Emergent
PSS	Palustrine Scrub-Shrub
PFO	Palustrine Forested
PUBH	Palustrine Unconsolidated Bottom

Appendix D-2 - Figures

FIGURE NO. 1



Legend

- ROUTE 2
- ROUTE 2 & 3
- ROUTE 2, 3 & 4
- ROUTE 3
- ROUTE 4
- MUNICIPALITIES
- STUDY BOUNDARY

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.

1 " = 10,000 '

0 5,000 10,000 20,000

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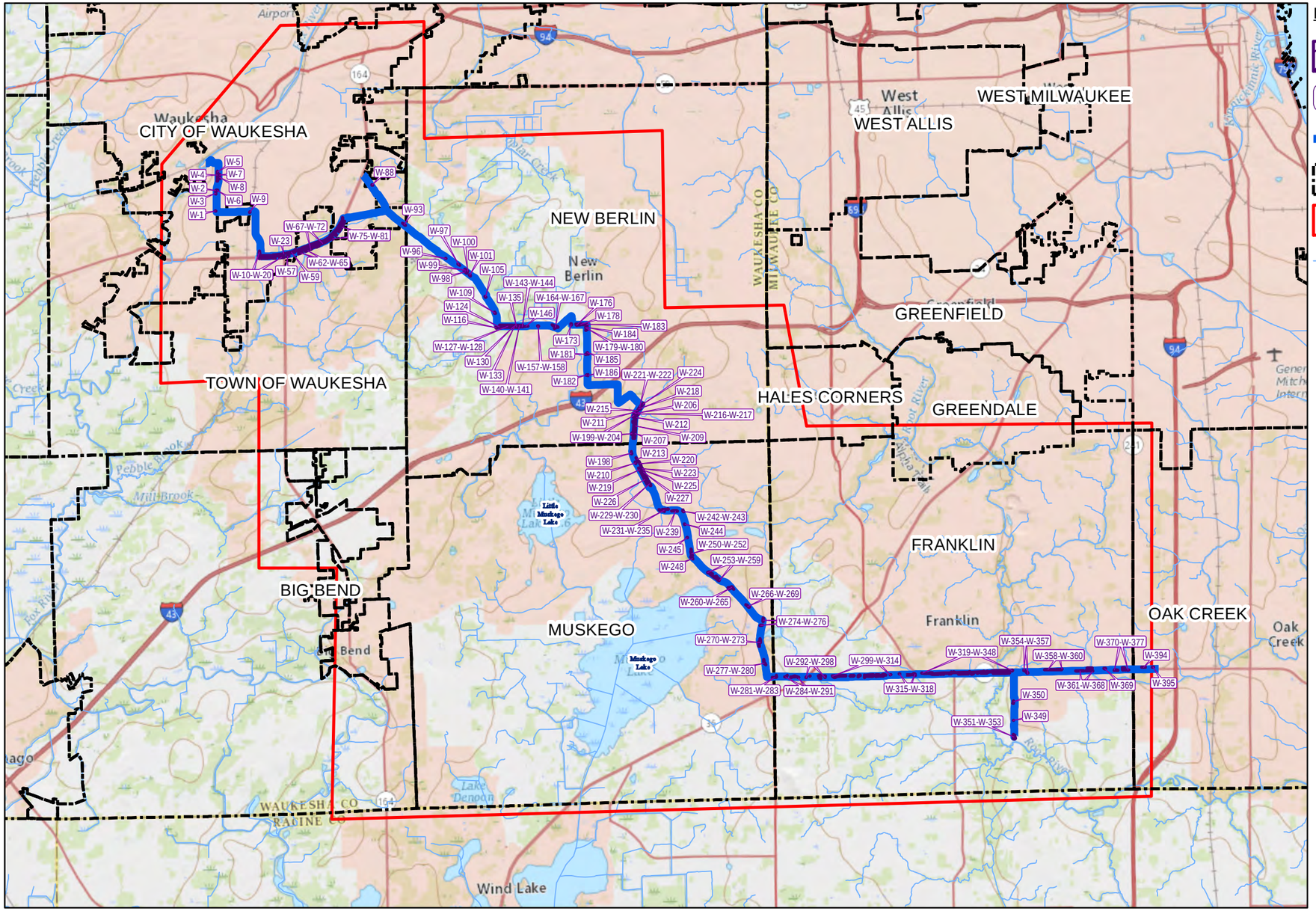
Great Lakes Water Supply Program
ALL ROUTES, OVERVIEW

Date: 7/18/2017

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-OverviewAllRTs.mxd

FIGURE NO. 2



Legend

- WETLANDS
- W## WETLANDS TAG NO.
- ROUTE 2
- MUNICIPALITIES
- STUDY BOUNDARY
- NHD STREAM/RIVER

N

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
3. WISCONSIN WETLANDS INVENTORY (WWI) DATA PURCHASED FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, WISCONSIN DIGITAL WETLAND. (DWI)
4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 10,000 '

0 5,000 10,000 20,000

Plotted: 7/19/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline2016_263344\263344-GHv2-Overview_RT2.mxd

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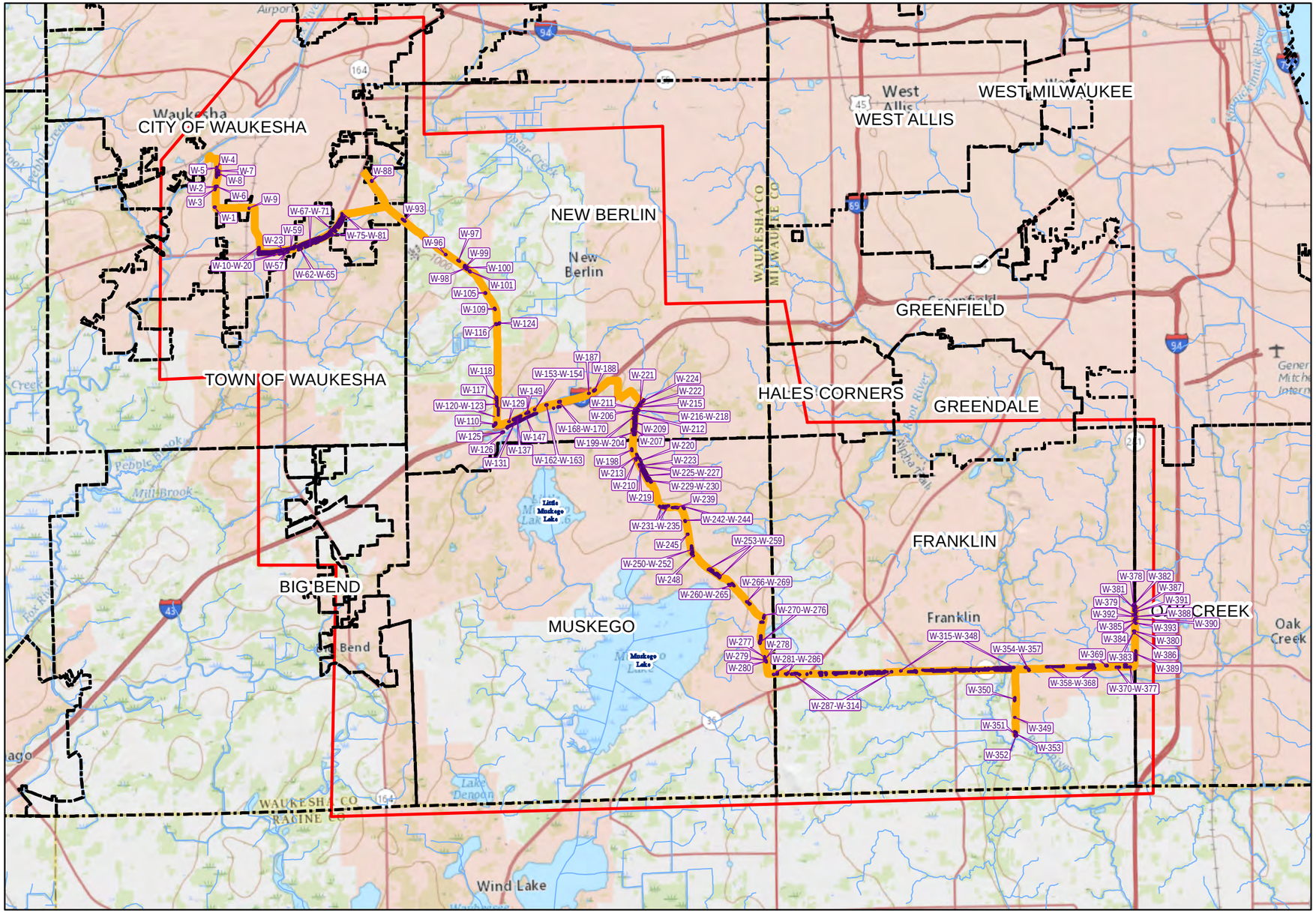
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 3



Legend

- WETLANDS
- W## WETLANDS TAG NO.
- ROUTE 3
- MUNICIPALITIES
- STUDY BOUNDARY
- NHD STREAM/RIVER

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
3. WISCONSIN WETLANDS INVENTORY (WWI) DATA PURCHASED FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, WISCONSIN DIGITAL WETLAND. (DWI)
4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 10,000 '

0 5,000 10,000 20,000

Plotted: 7/19/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-Overview_RT3.mxd

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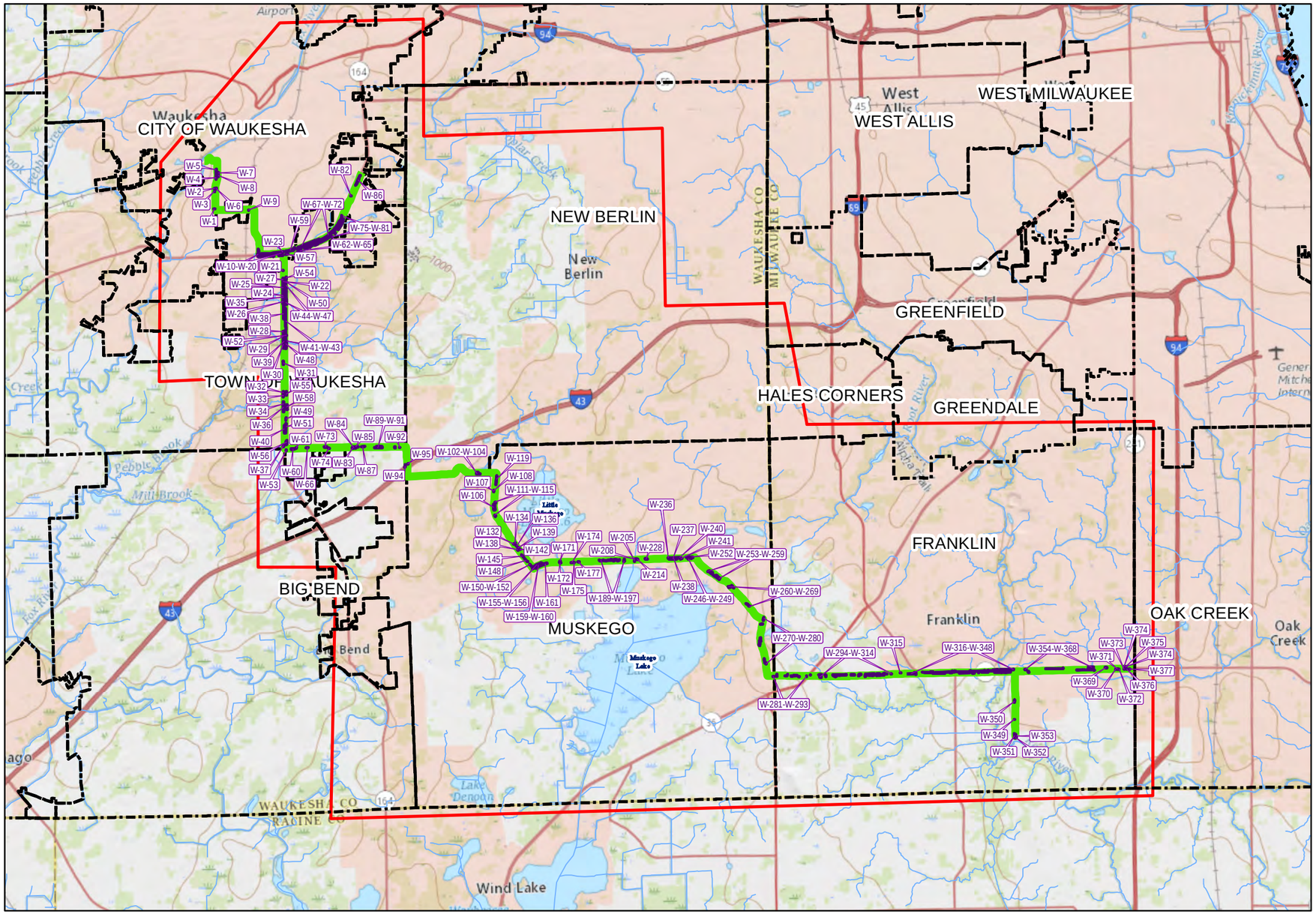
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 4



Legend

- WETLANDS
- W## WETLANDS TAG NO.
- ROUTE 4
- MUNICIPALITIES
- STUDY BOUNDARY
- NHD STREAM/RIVER

N

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 10,000 '

0 5,000 10,000 20,000

Plotted: 7/19/2017
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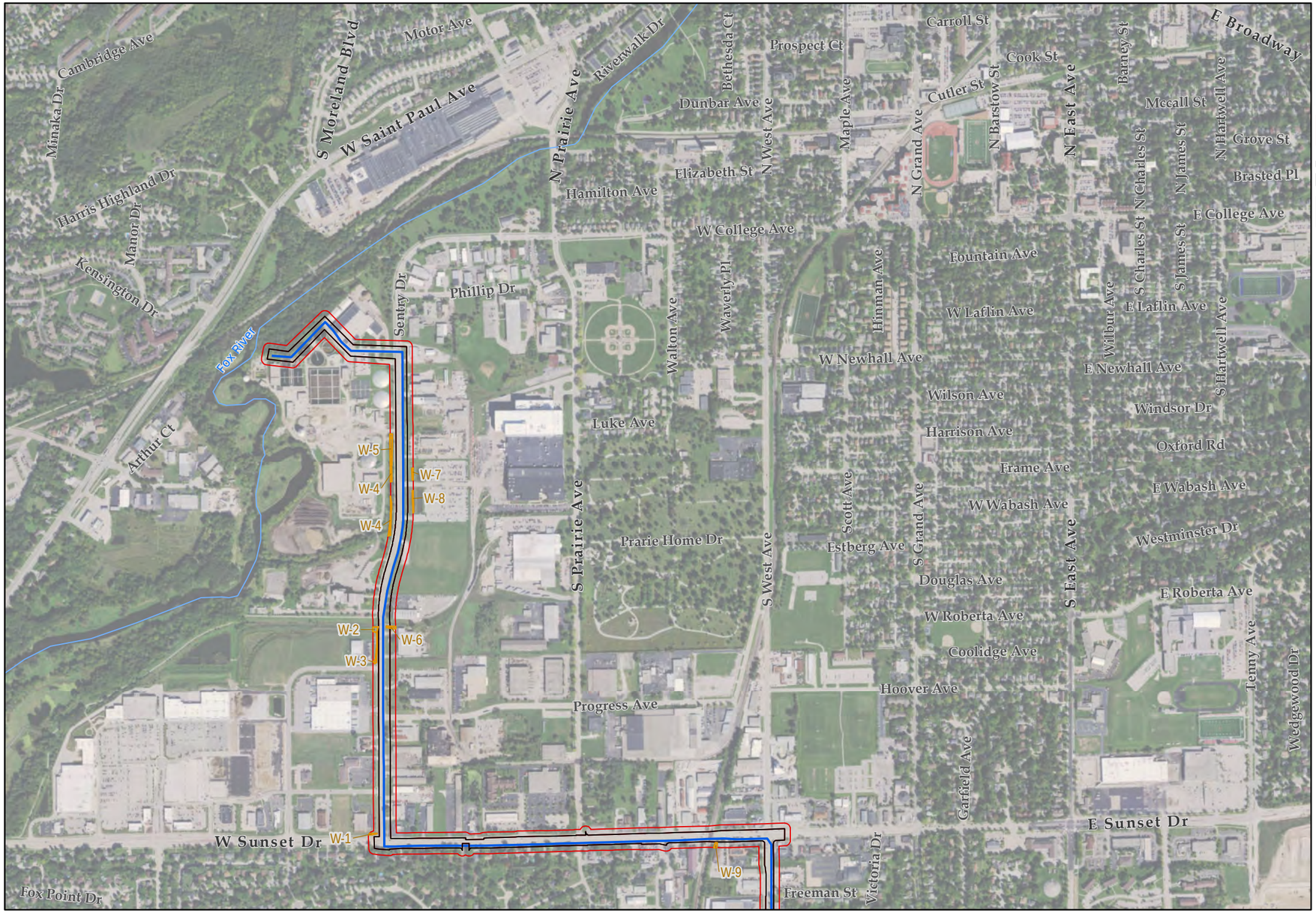
ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 5A



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
3. WISCONSIN WETLANDS INVENTORY (WWI) DATA PURCHASED FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, WISCONSIN DIGITAL WETLAND. (DWI)
4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT2wetlandsmb.mxd

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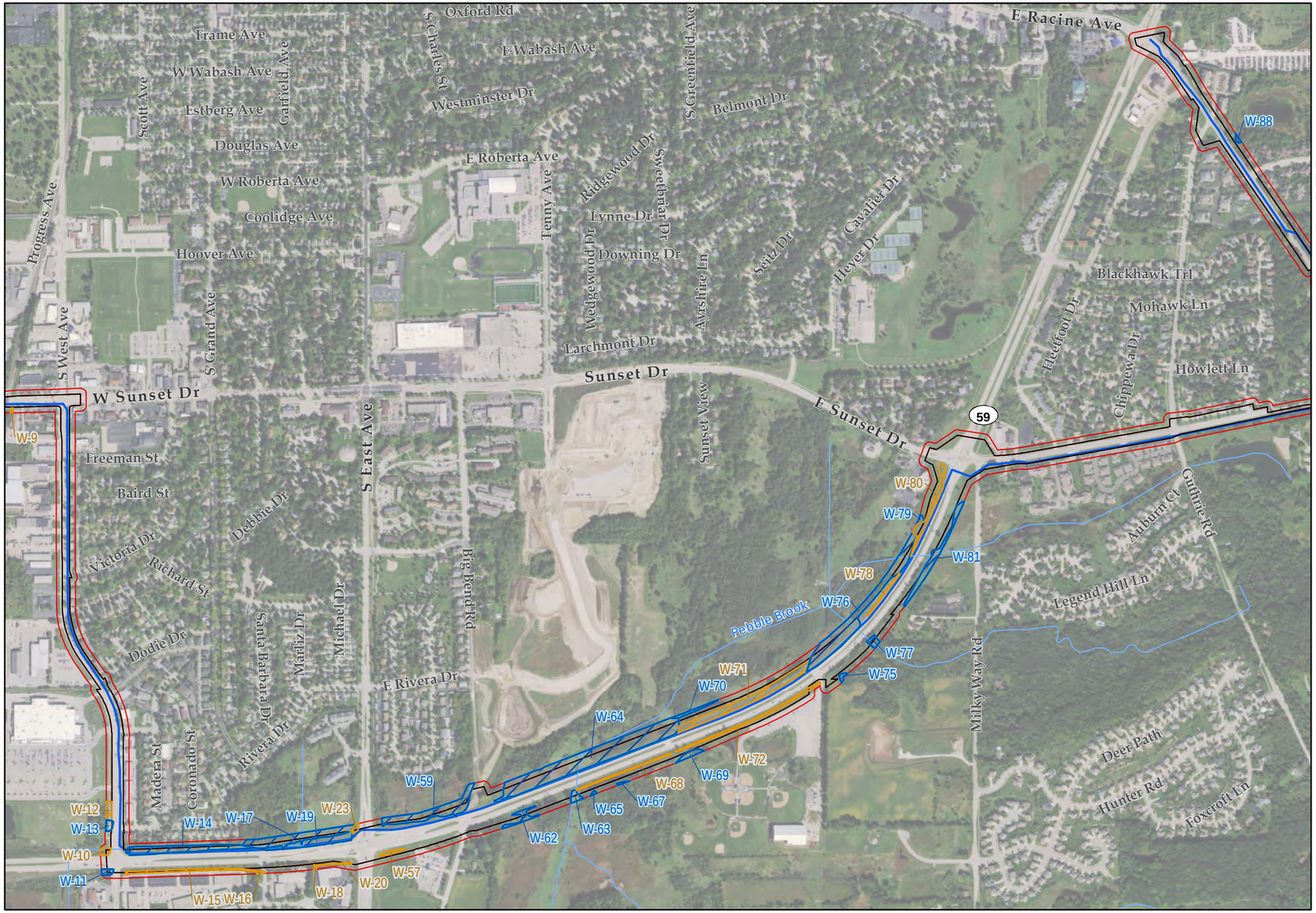
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5B



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5C

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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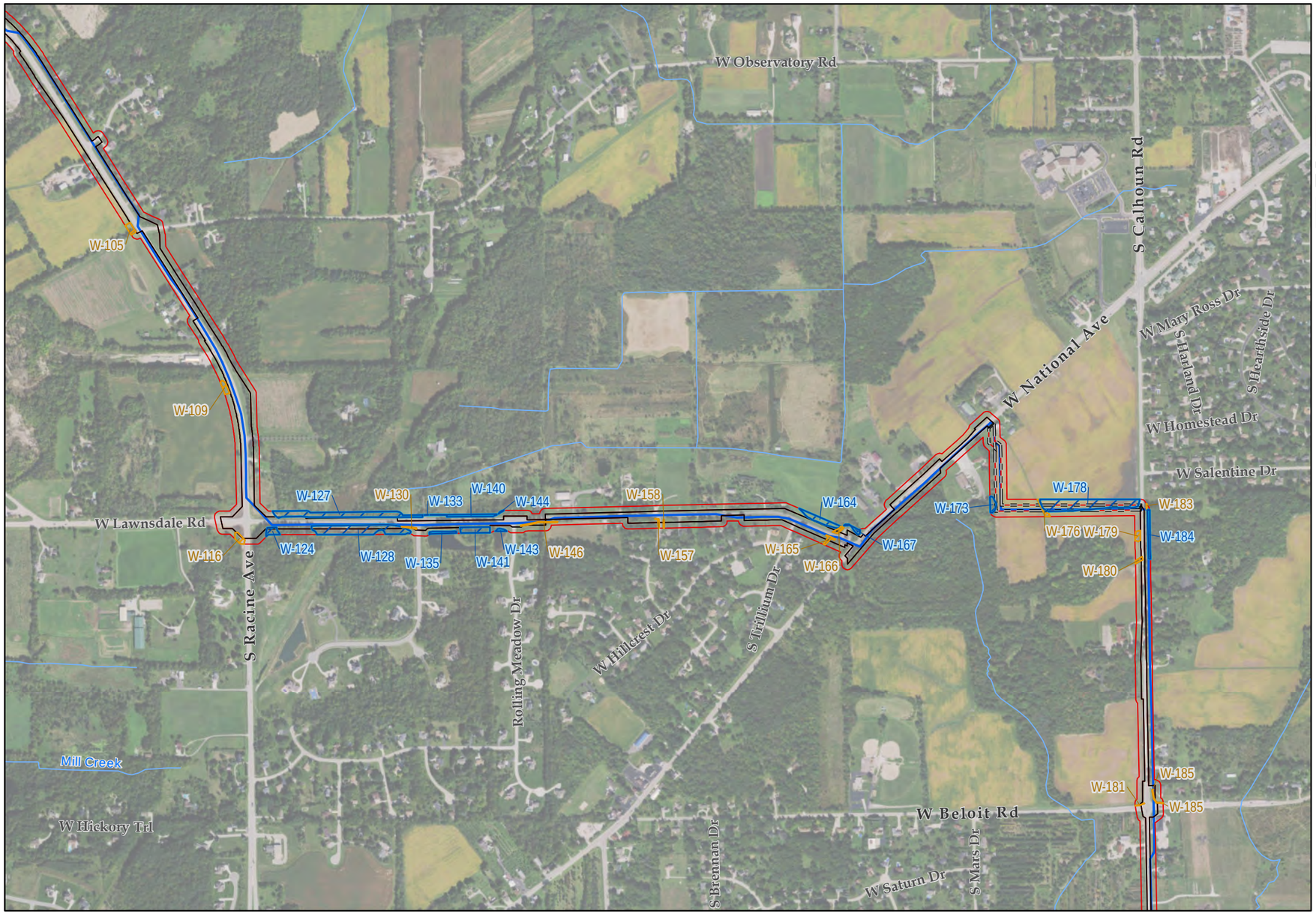
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5D



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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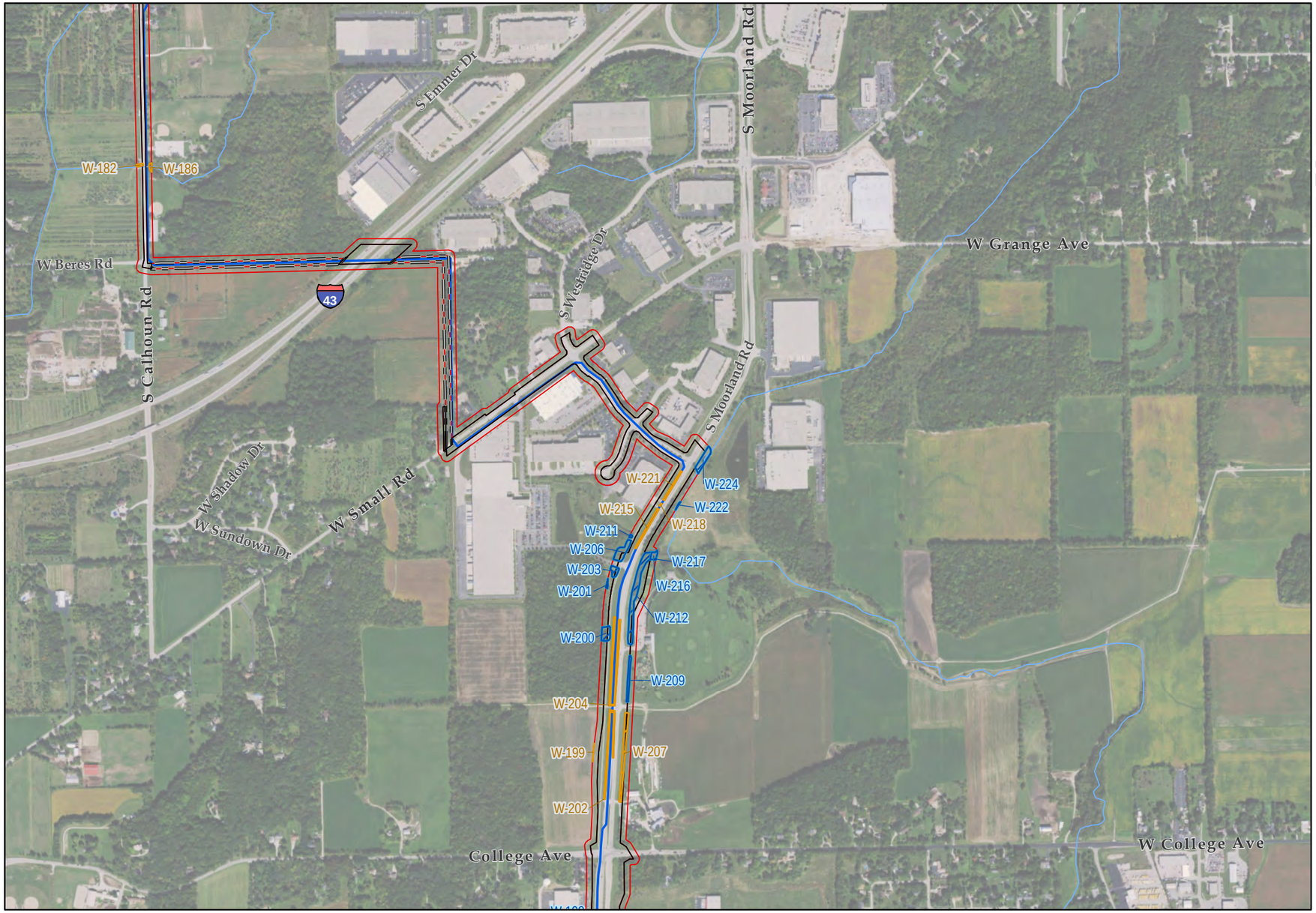
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5E



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5F

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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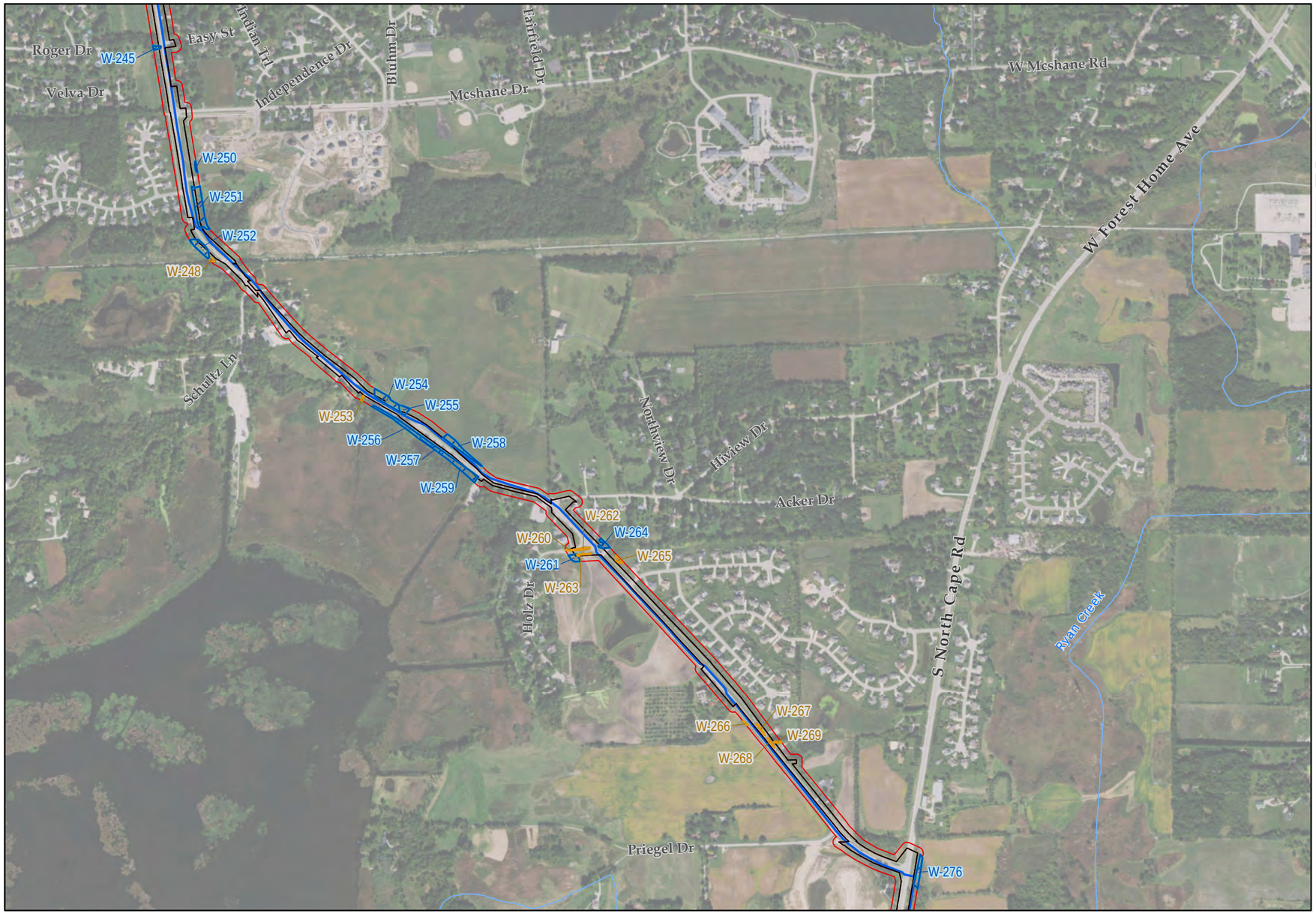
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5G



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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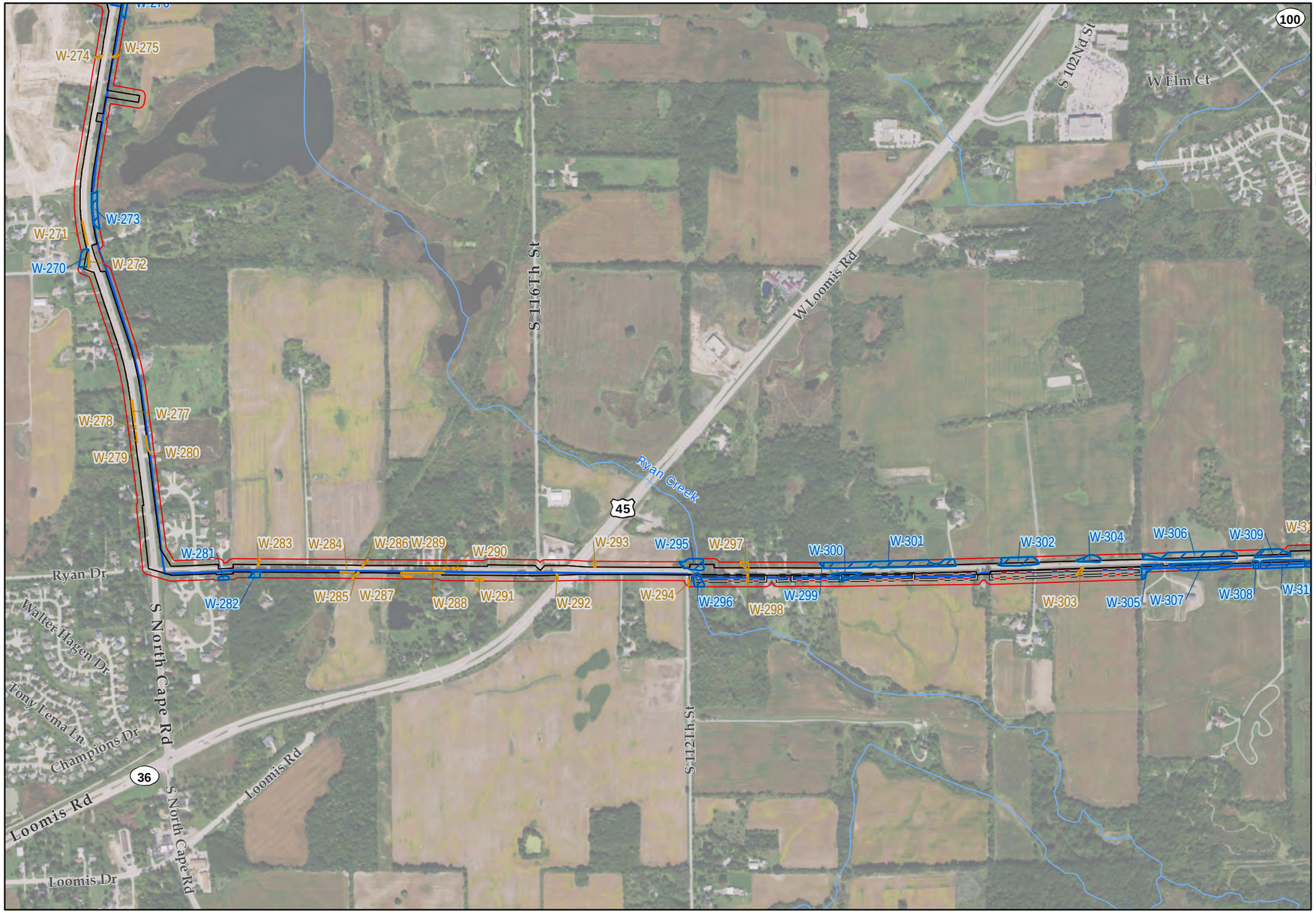
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5H



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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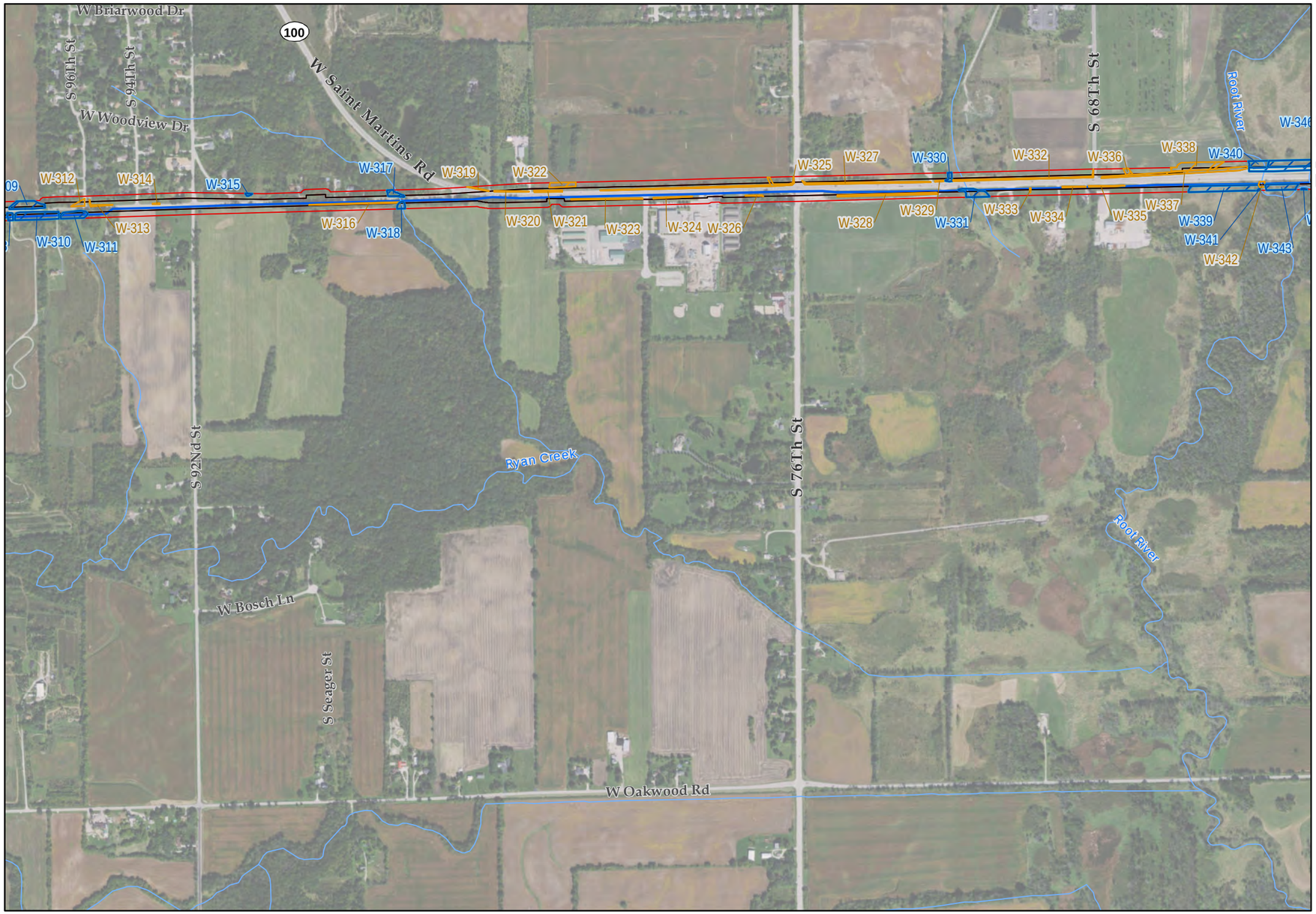
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5I



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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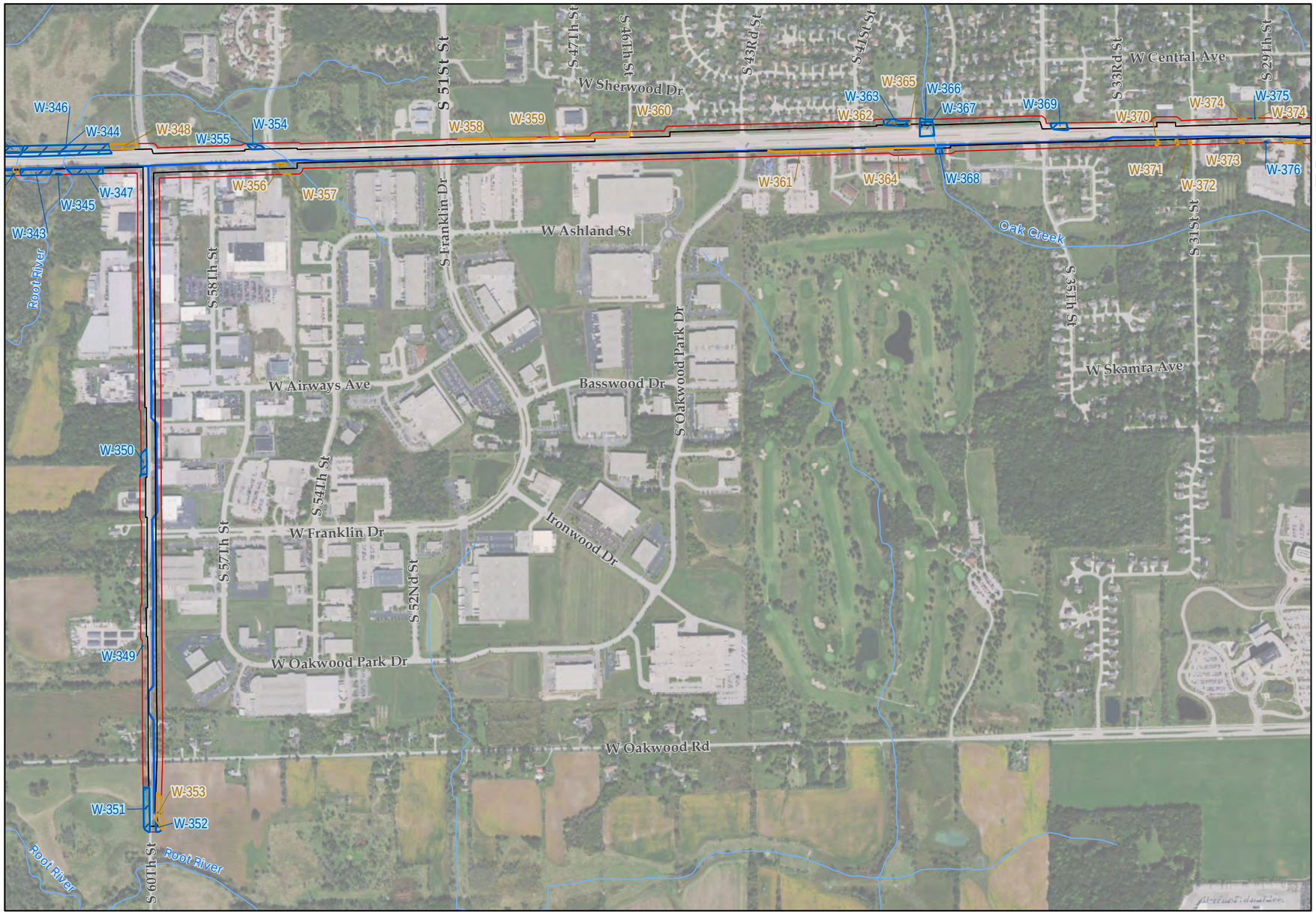
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5J



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT2wetlandsmb.mxd

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ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 5K

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- NHD STREAM/RIVER
- ROUTE 2

Notes

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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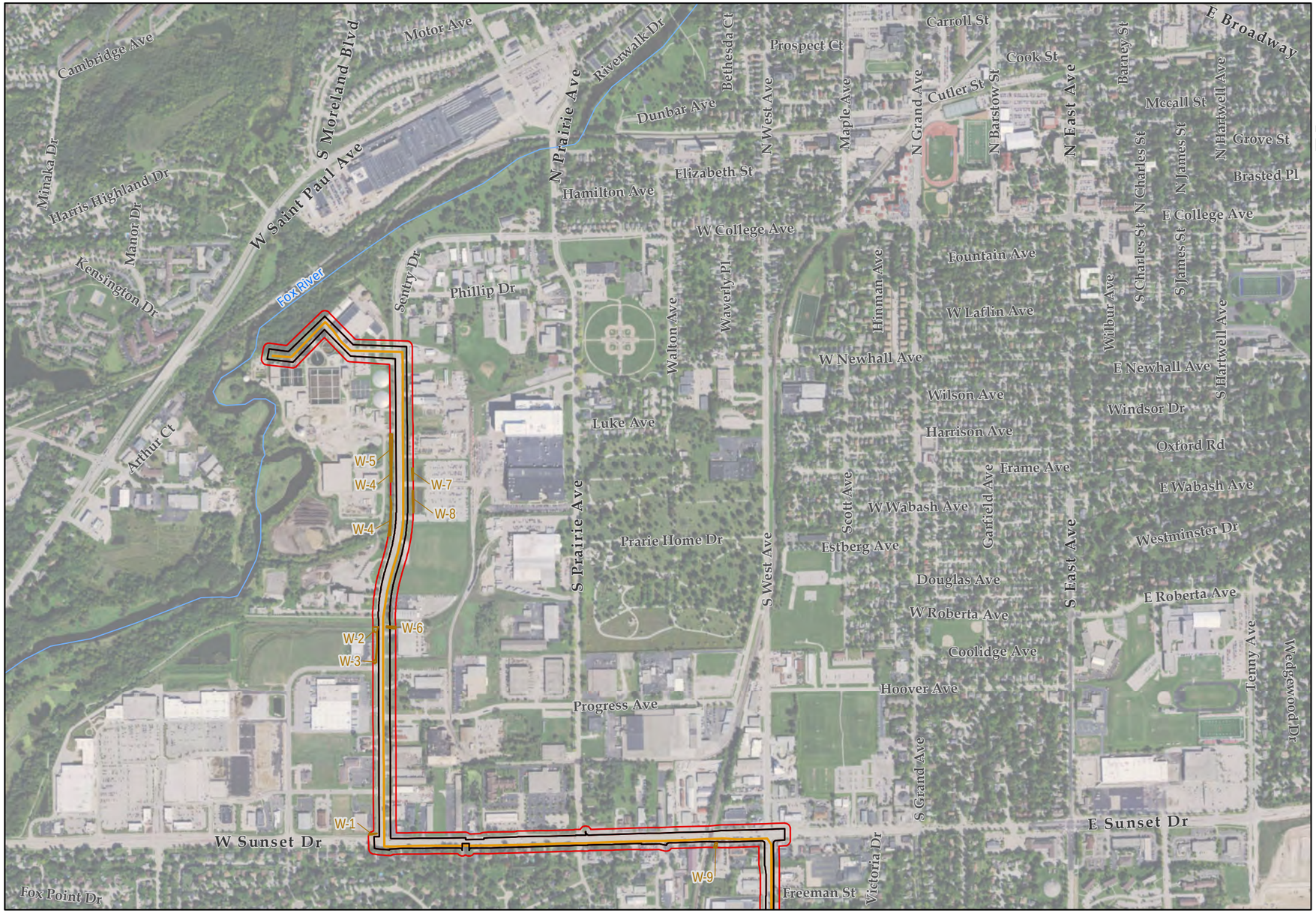
ROUTE 2-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6A



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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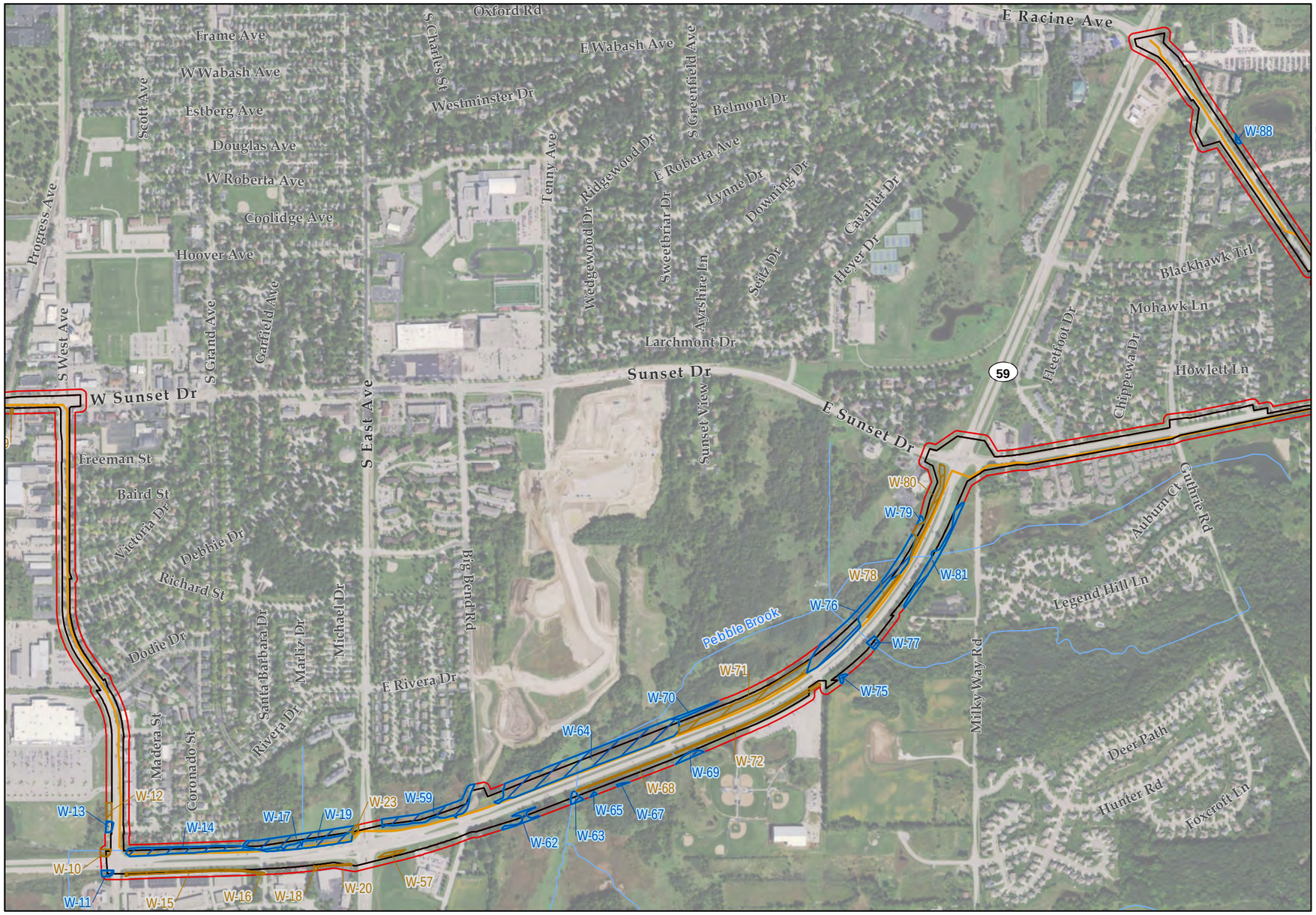
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6B



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

Notes

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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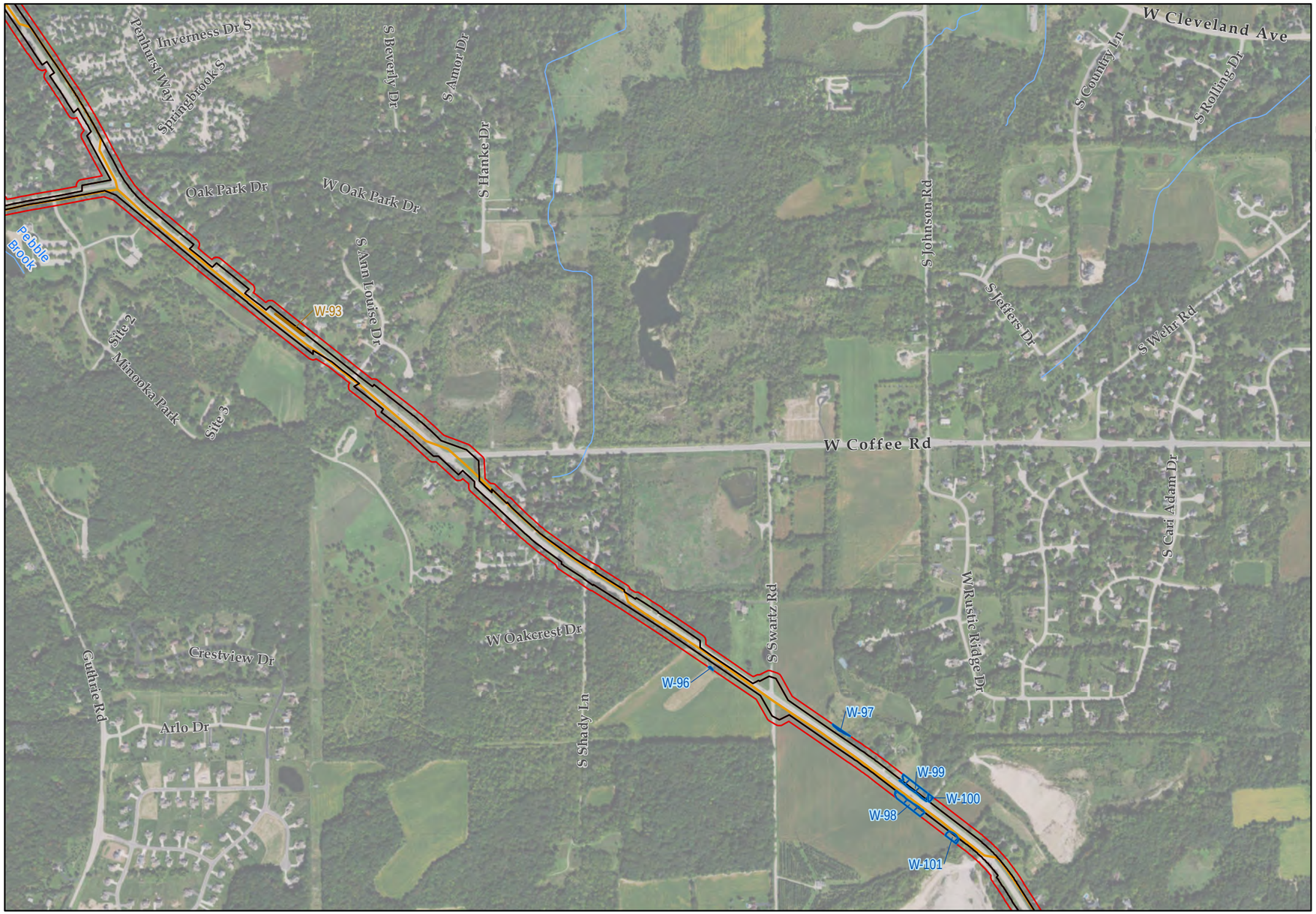
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6C



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

Notes

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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT3wetlandsmb.mxd

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ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6D

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
Document Path: E:\WetlandsGeneralWaukeshaPipeline\2016_263344\263344-GHv2-RT3wetlandsmb.mxd

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ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6E

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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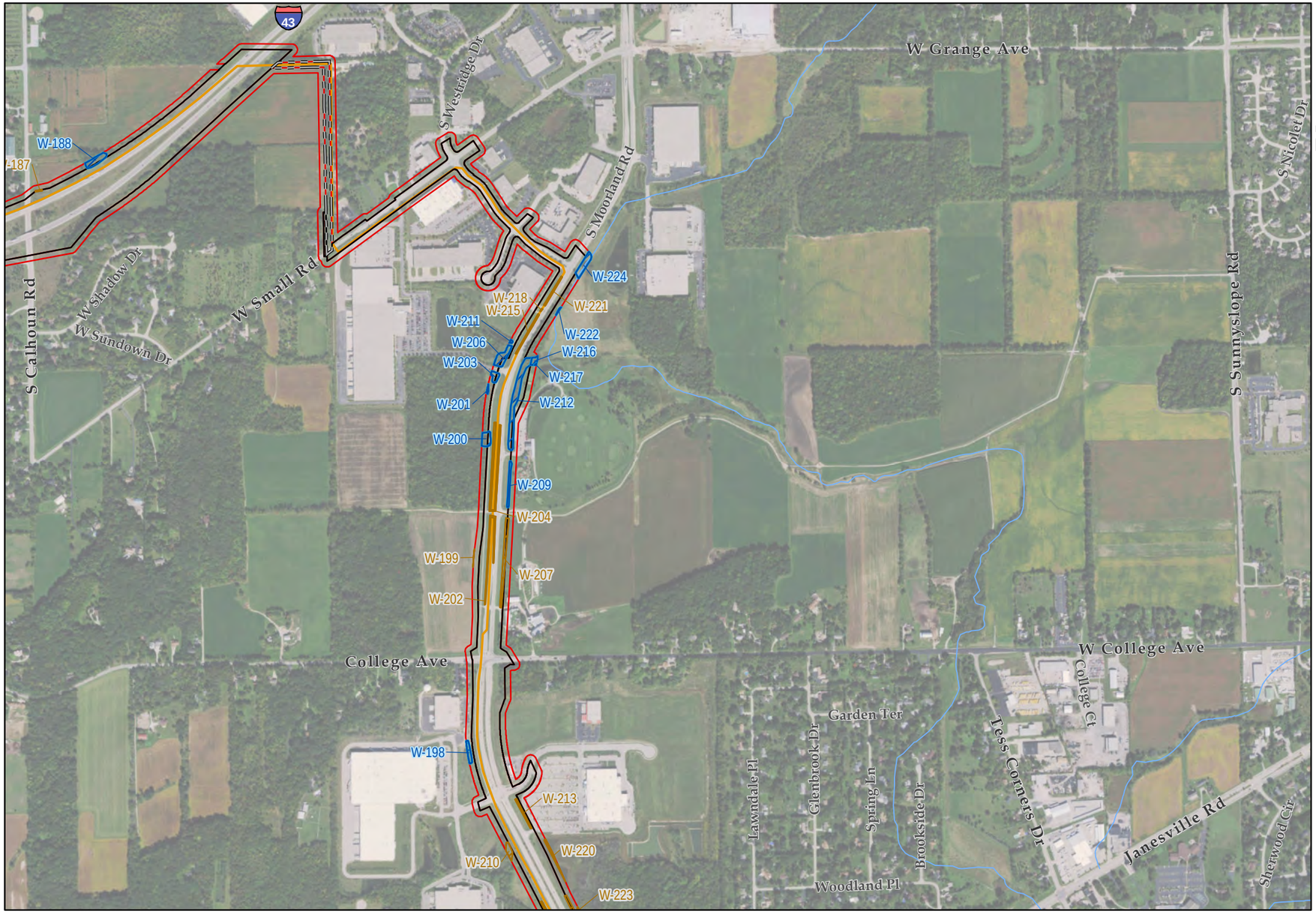
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6F



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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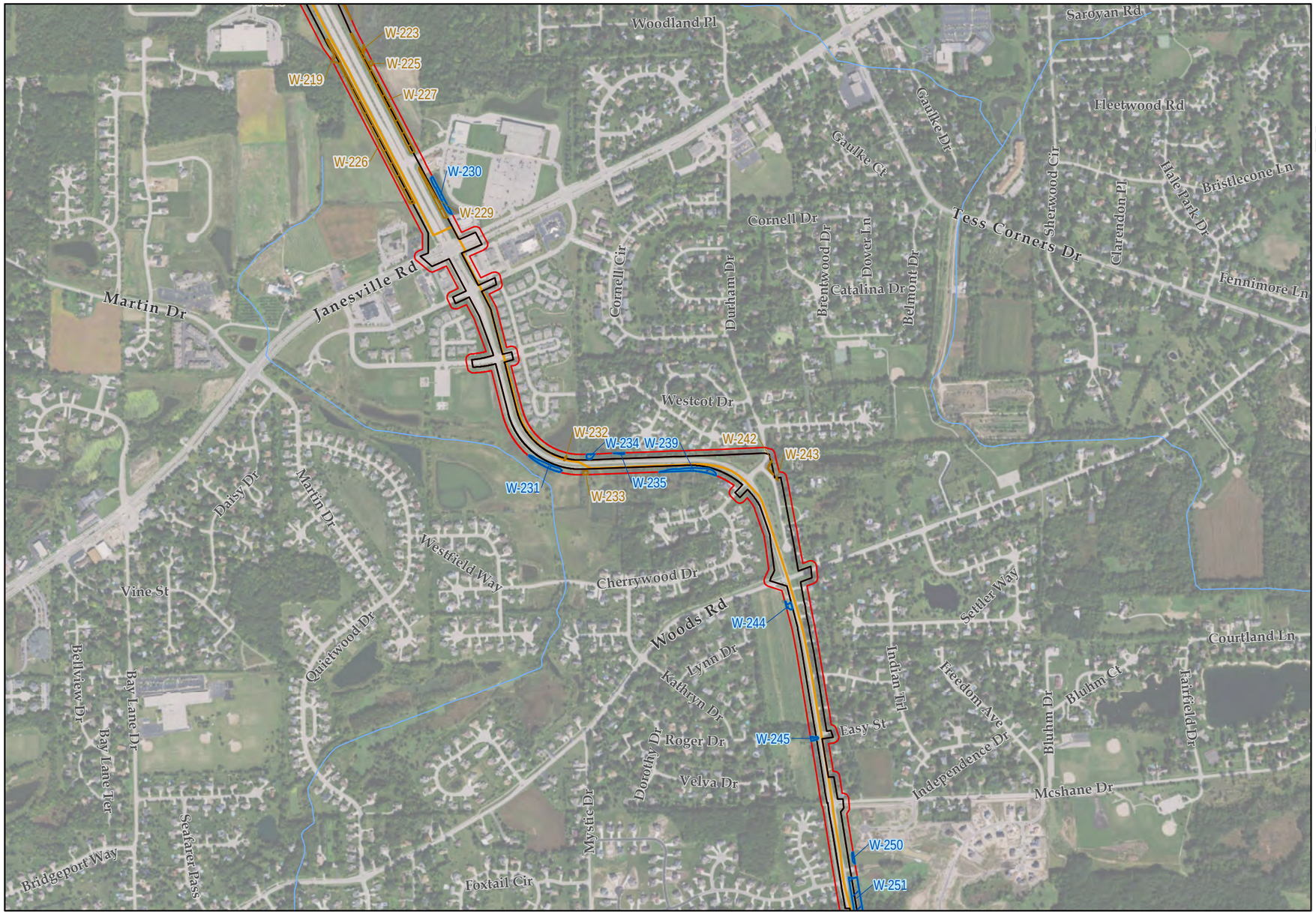
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6G



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6H

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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Plotted: 7/17/2017
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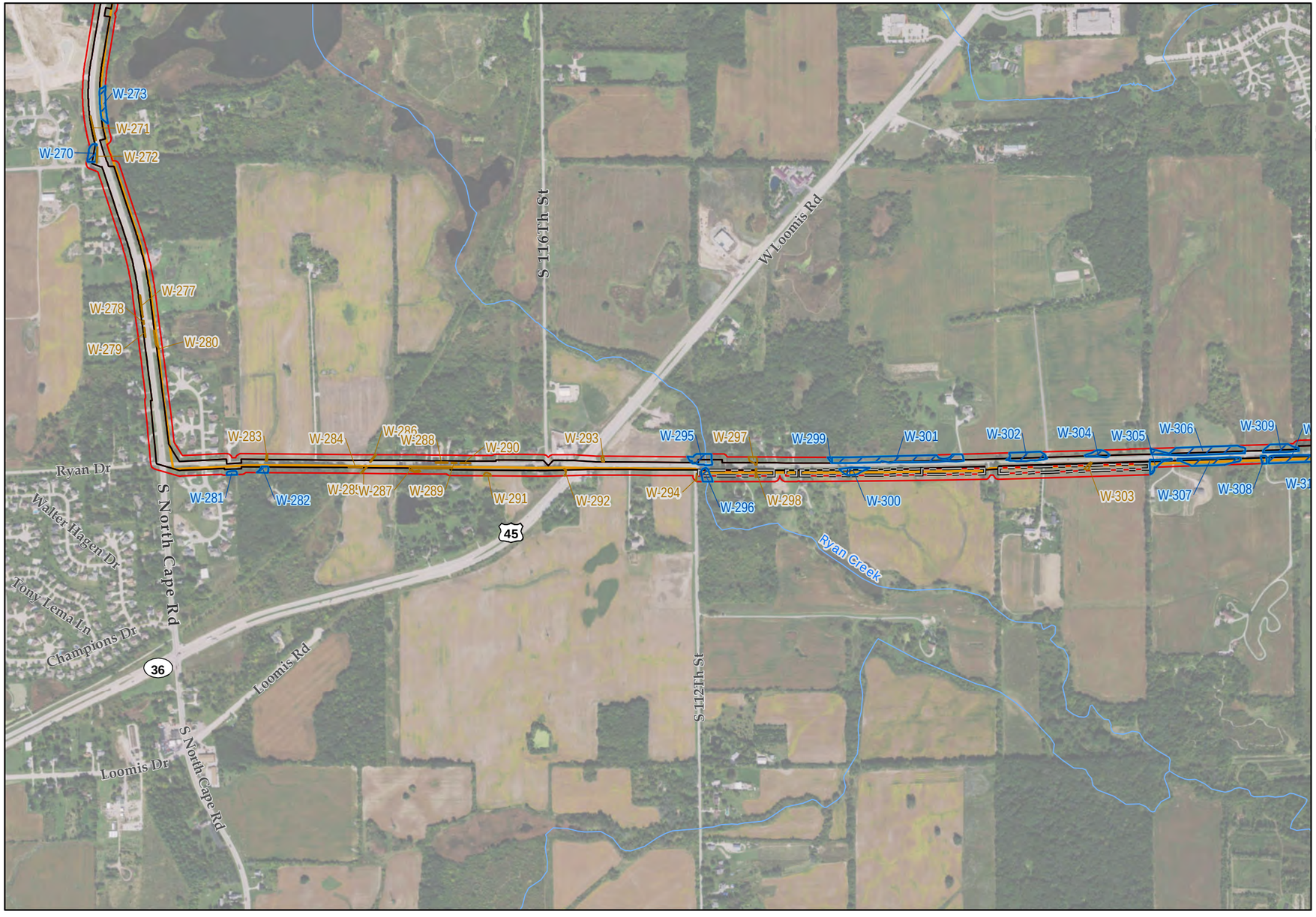
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6I



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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Plotted: 7/17/2017
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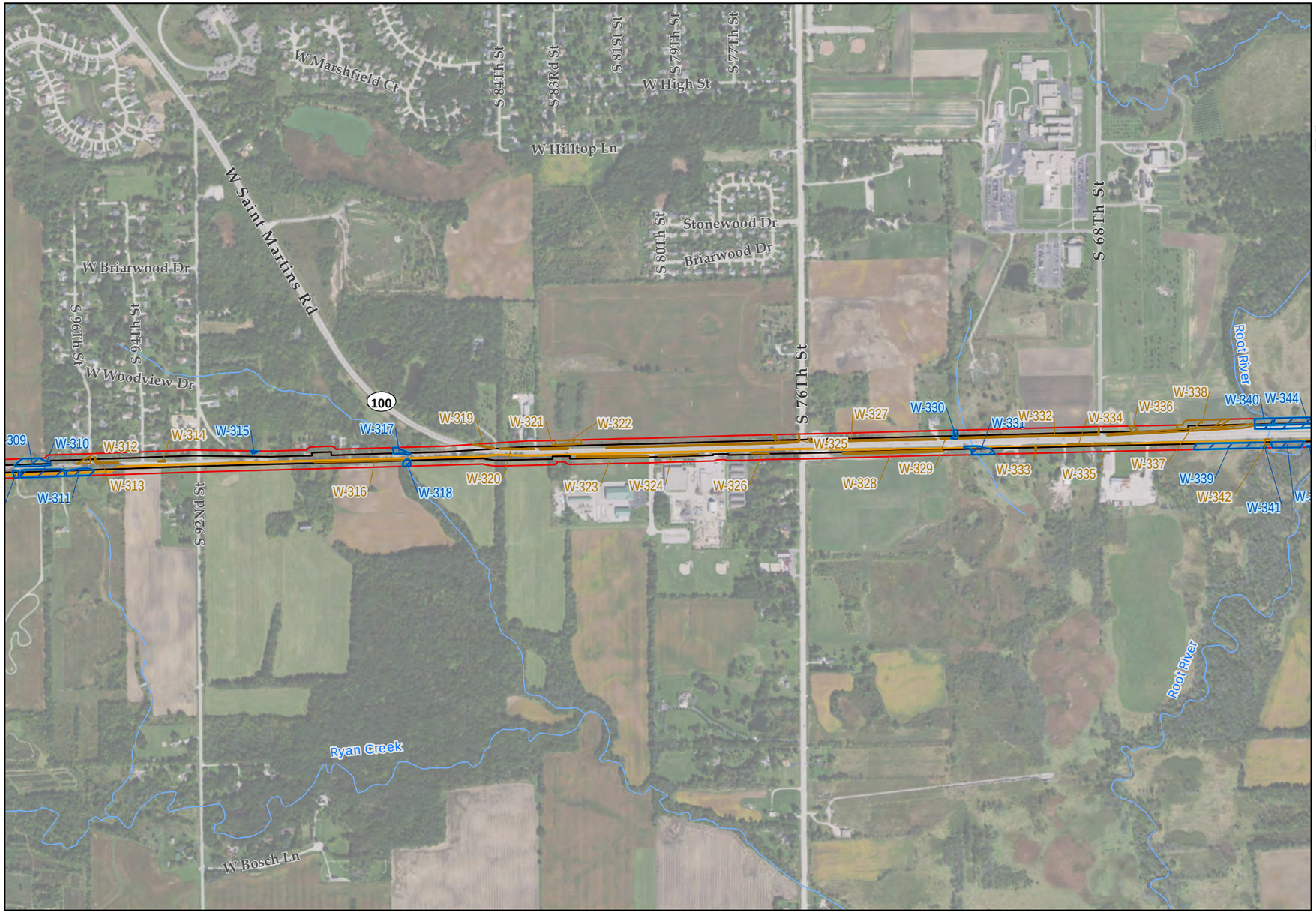
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6J



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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0 500 1,000 2,000 Feet

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Date: 7/17/2017

Plotted: 7/17/2017
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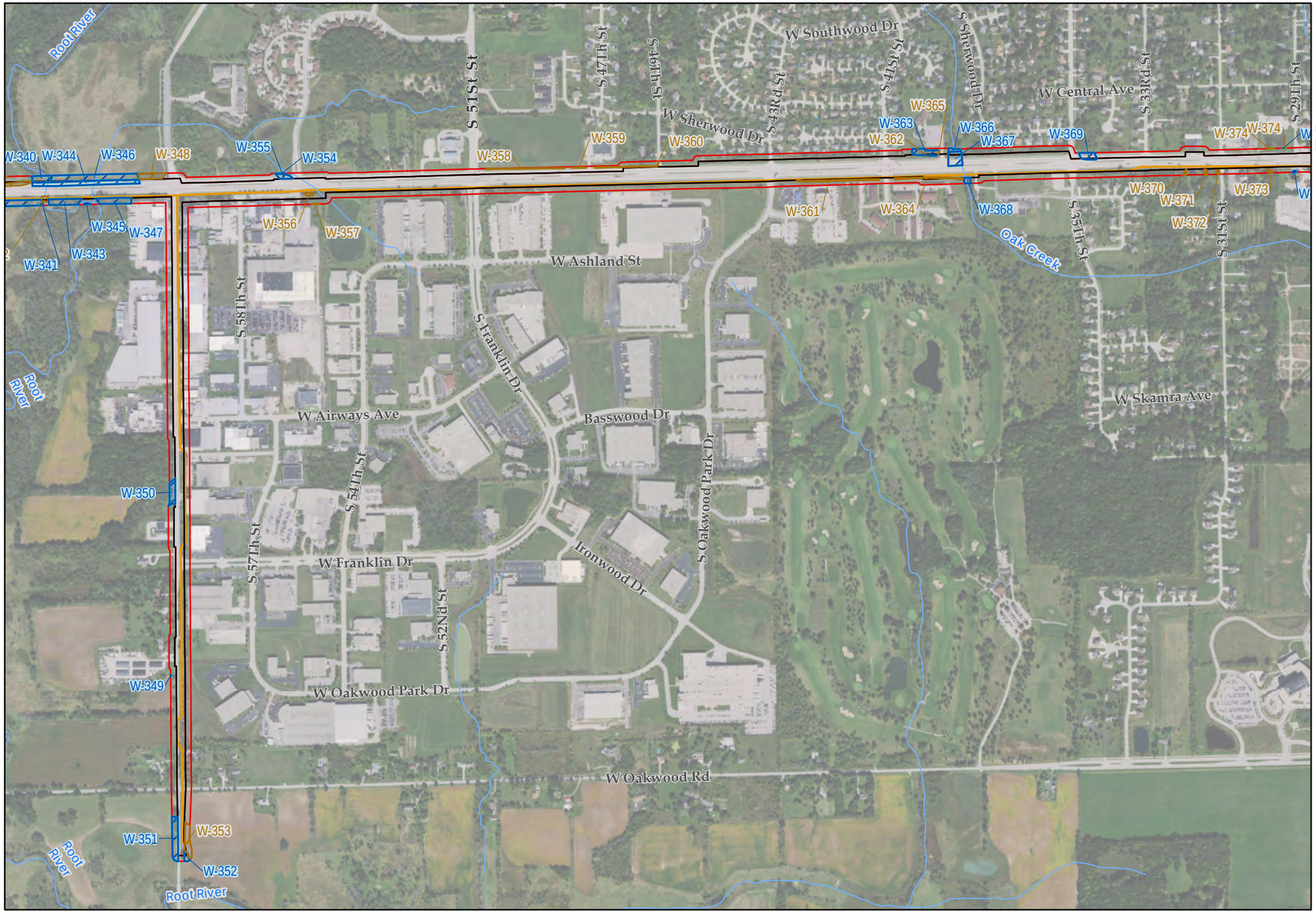
FIGURE NO. 6K



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 6L

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- EASEMENTS
- RIGHT OF WAY (ROW)
- 50' BUFFER
- NHD STREAM/RIVER
- ROUTE 3

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/17/2017
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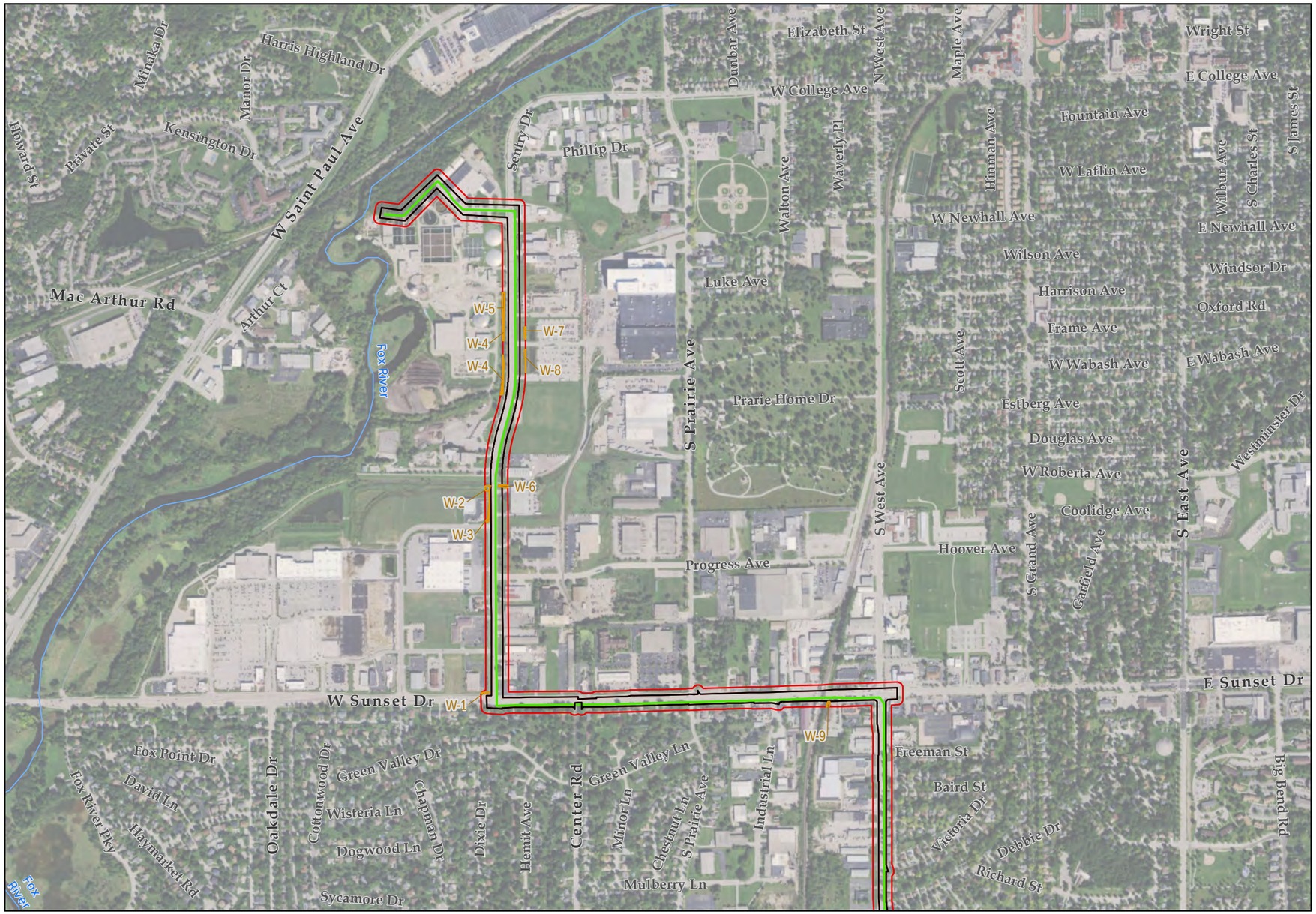
ROUTE 3-DESKTOP WETLAND INVESTIGATION

Date: 7/17/2017

FIGURE NO. 7A



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/19/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT4wetlandsmb.mxd

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ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7B

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/19/2017
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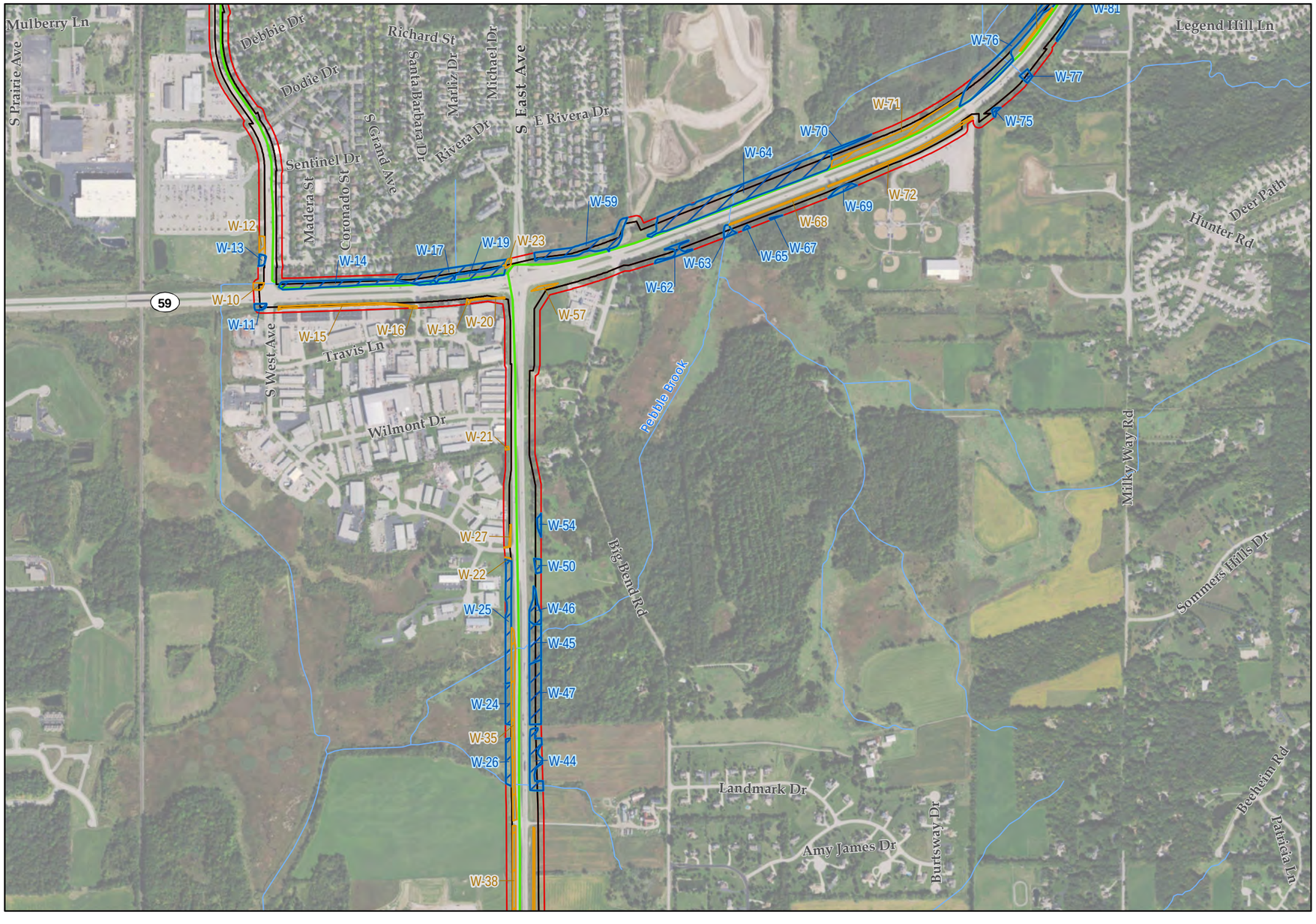
ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7C



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

Notes

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0 500 1,000 2,000 Feet

Plotted: 7/19/2017
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ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7D

Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

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1 " = 1,000 '

0 500 1,000 2,000 Feet

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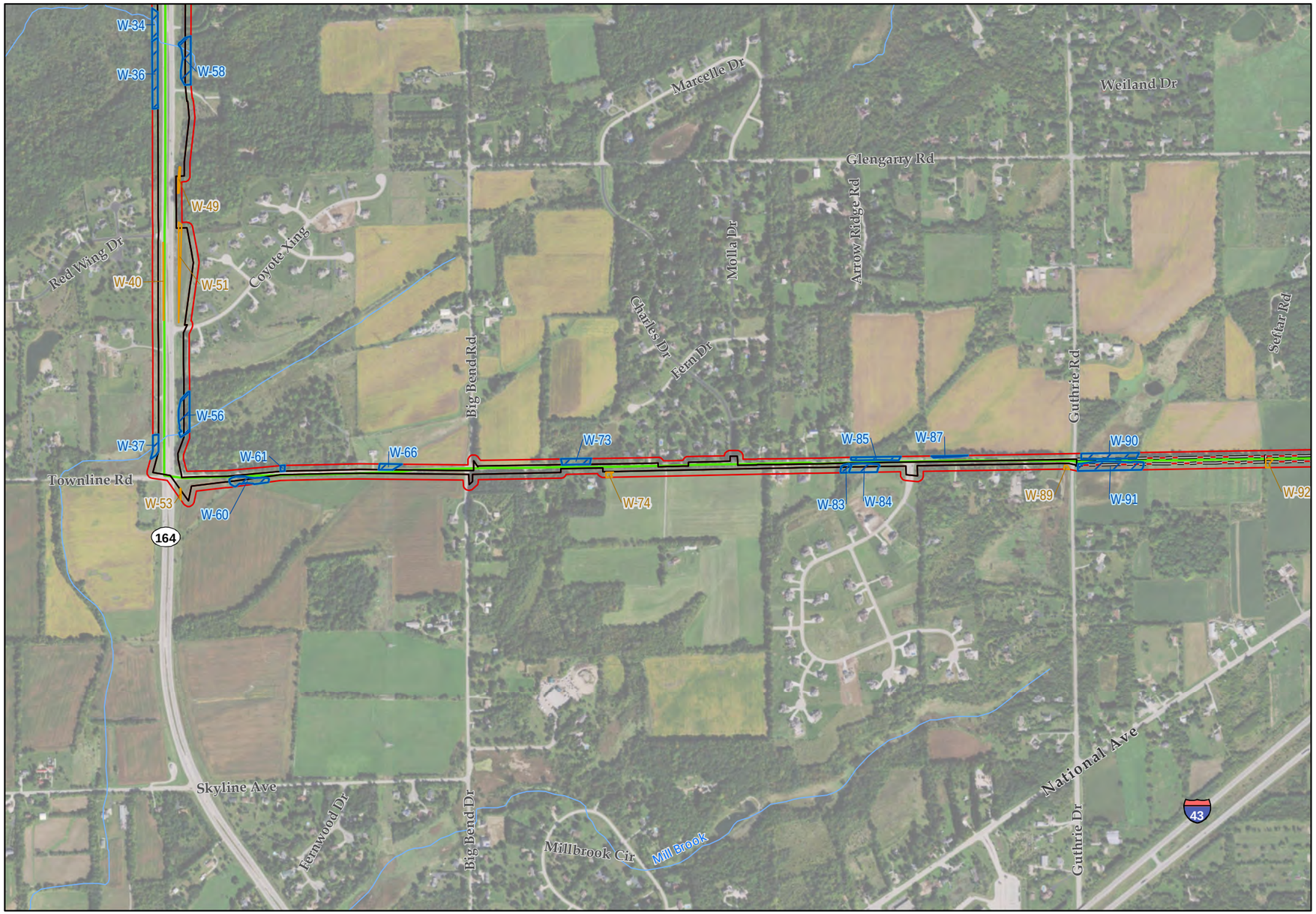
ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7E



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

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Date: 7/19/2017

Plotted: 7/19/2017
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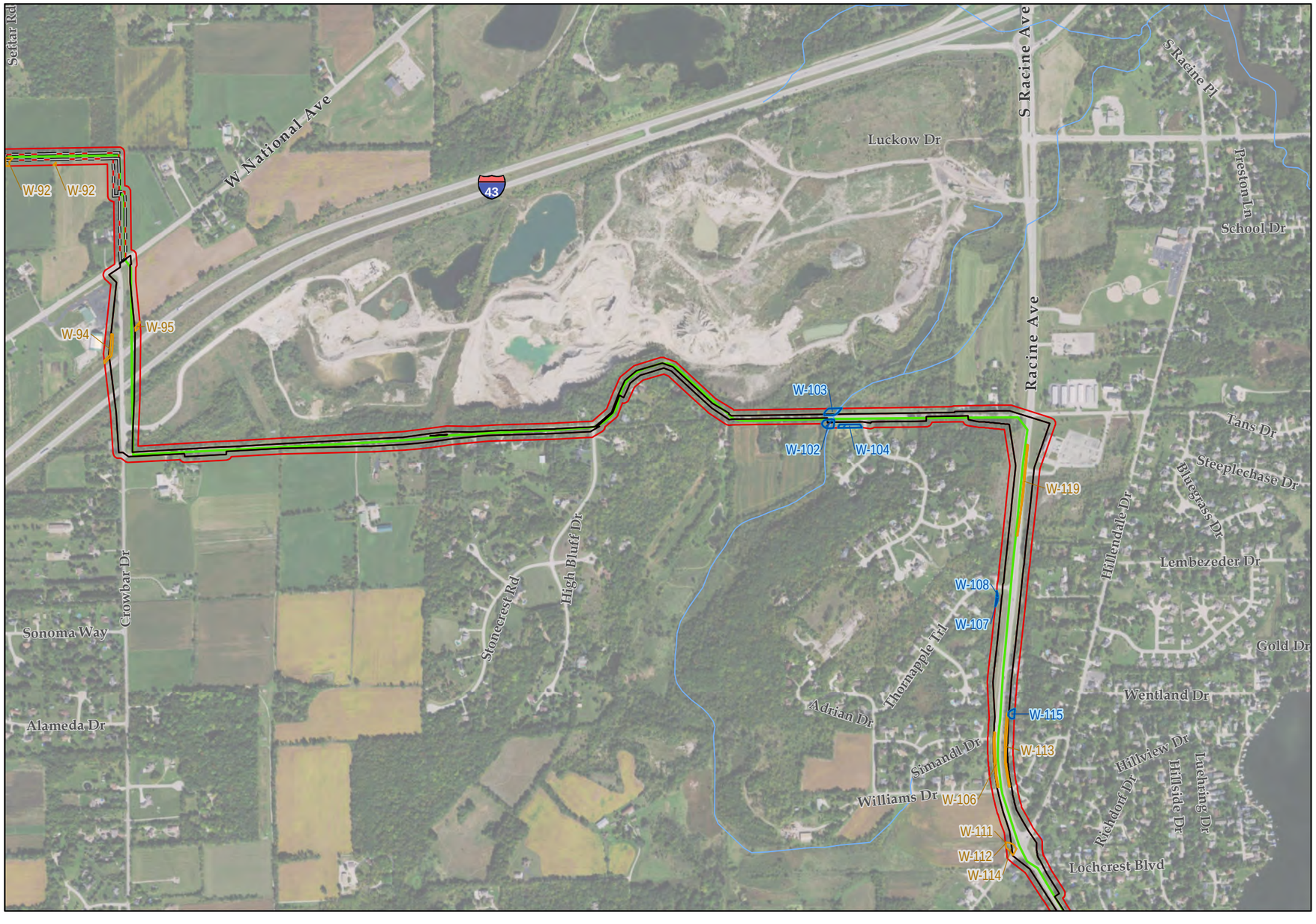
FIGURE NO. 7F



Legend

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- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
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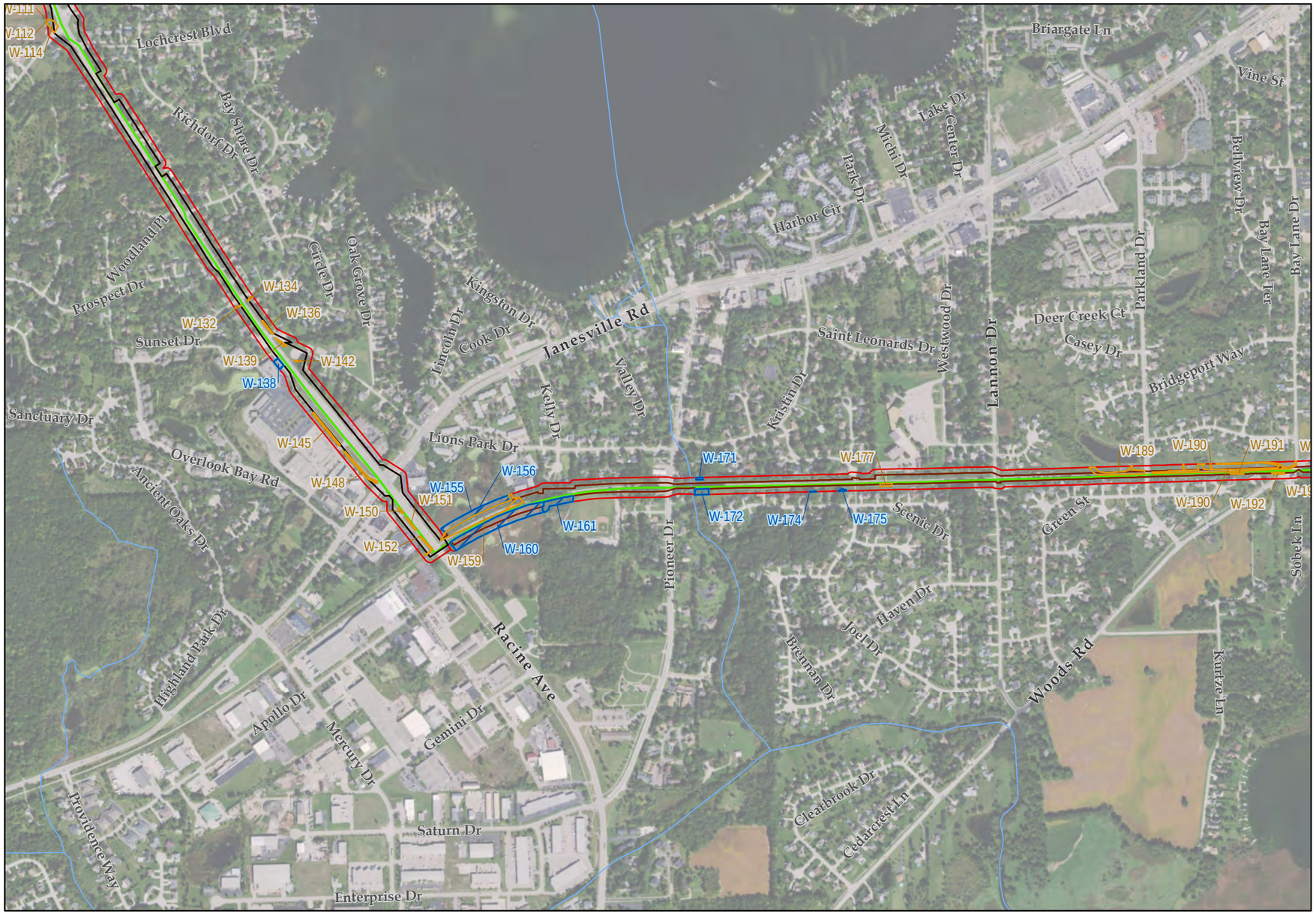
ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7G



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
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Date: 7/19/2017

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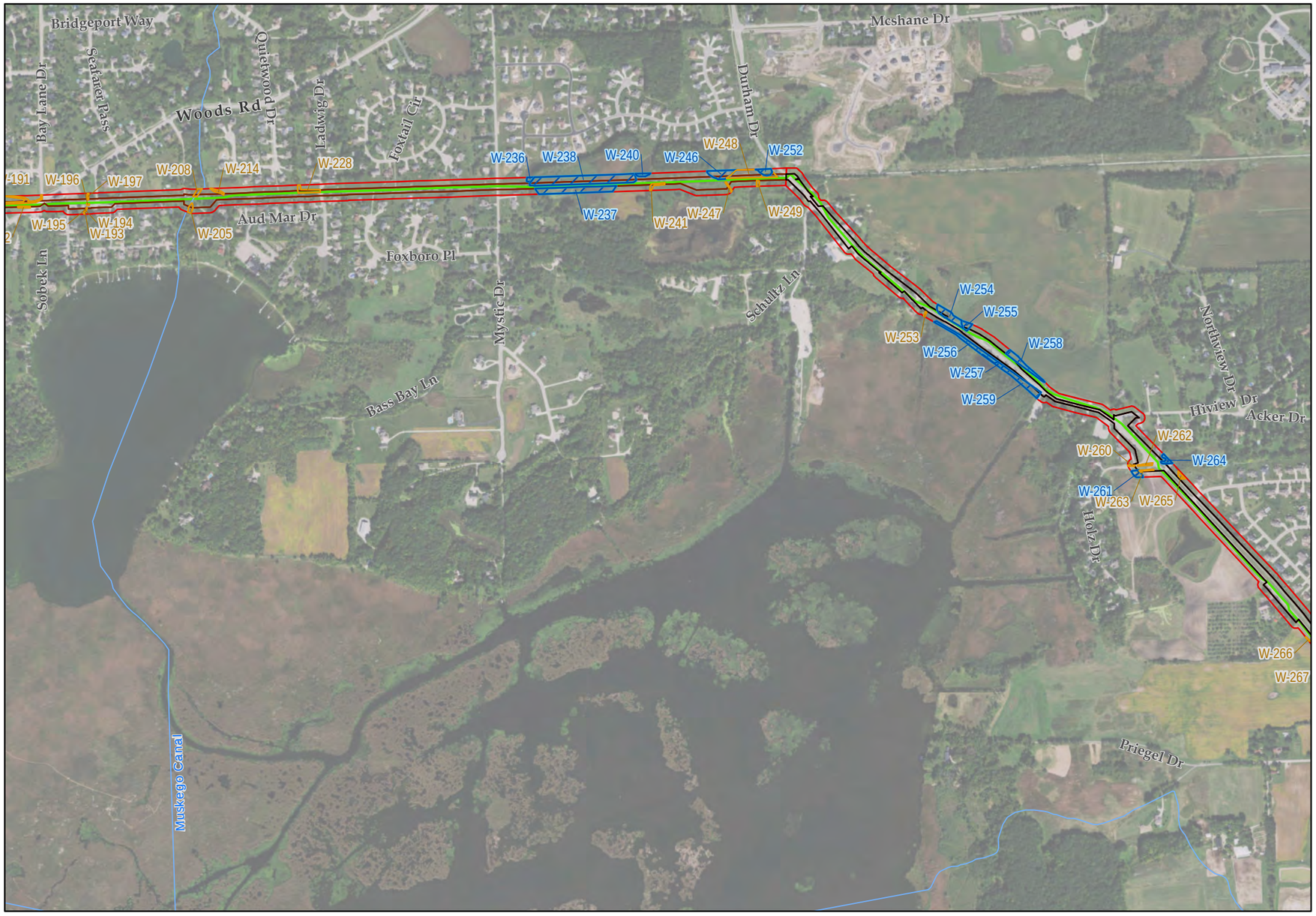
FIGURE NO. 7H



Legend

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- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
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2. PHOTO INTERPRETATION OF WETLANDS WAS CONDUCTED USING RECENT AERIAL IMAGERY AND WHERE PRACTICAL, GOOGLE STREET VIEW.
3. WISCONSIN WETLANDS INVENTORY (WWI) DATA PURCHASED FROM WISCONSIN DEPARTMENT OF NATURAL RESOURCES, WISCONSIN DIGITAL WETLAND. (DWI)
4. STREAM/RIVERS FROM NATIONAL HYDROGRAPHY DATASET (NHD) FROM USDA.GOV.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/19/2017
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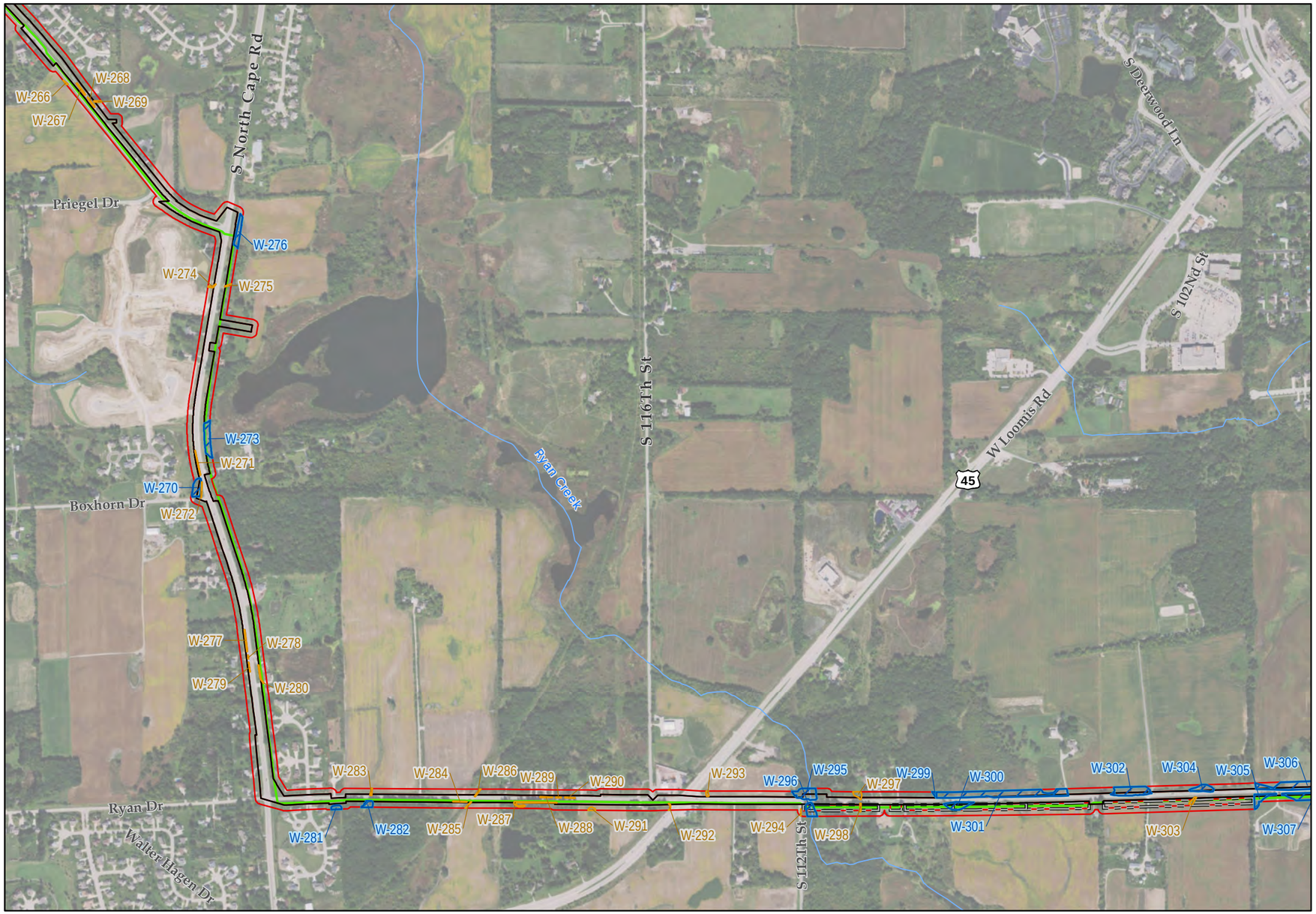
ROUTE 4-DESKTOP WETLAND INVESTIGATION

Date: 7/19/2017

FIGURE NO. 7I



Legend

- PHOTO INTERPRETED WETLANDS
- WWI WETLANDS
- 50' BUFFER
- EASEMENTS
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- NHD STREAM/RIVER
- ROUTE 4

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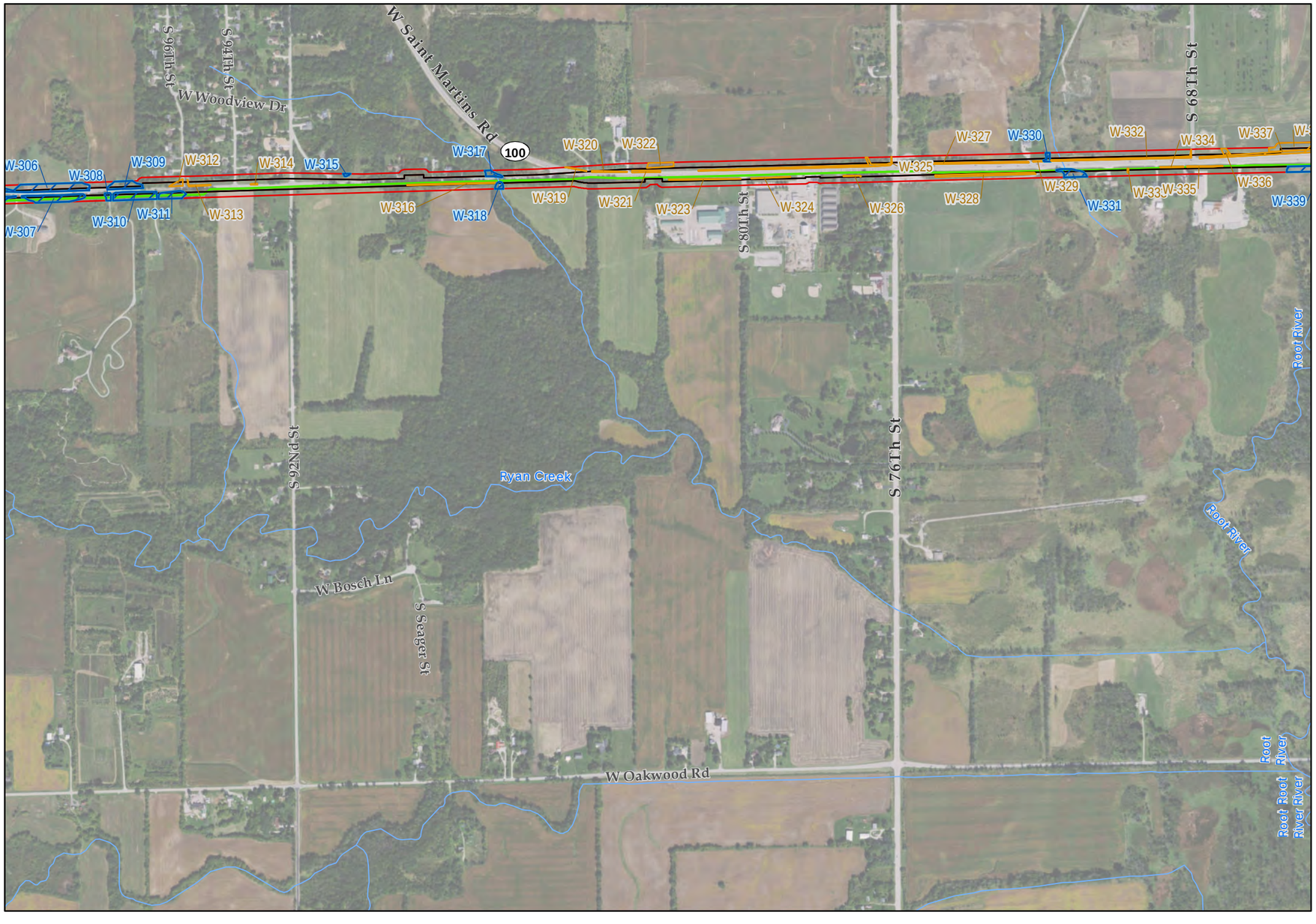
Date: 7/19/2017

FIGURE NO. 7J



Legend

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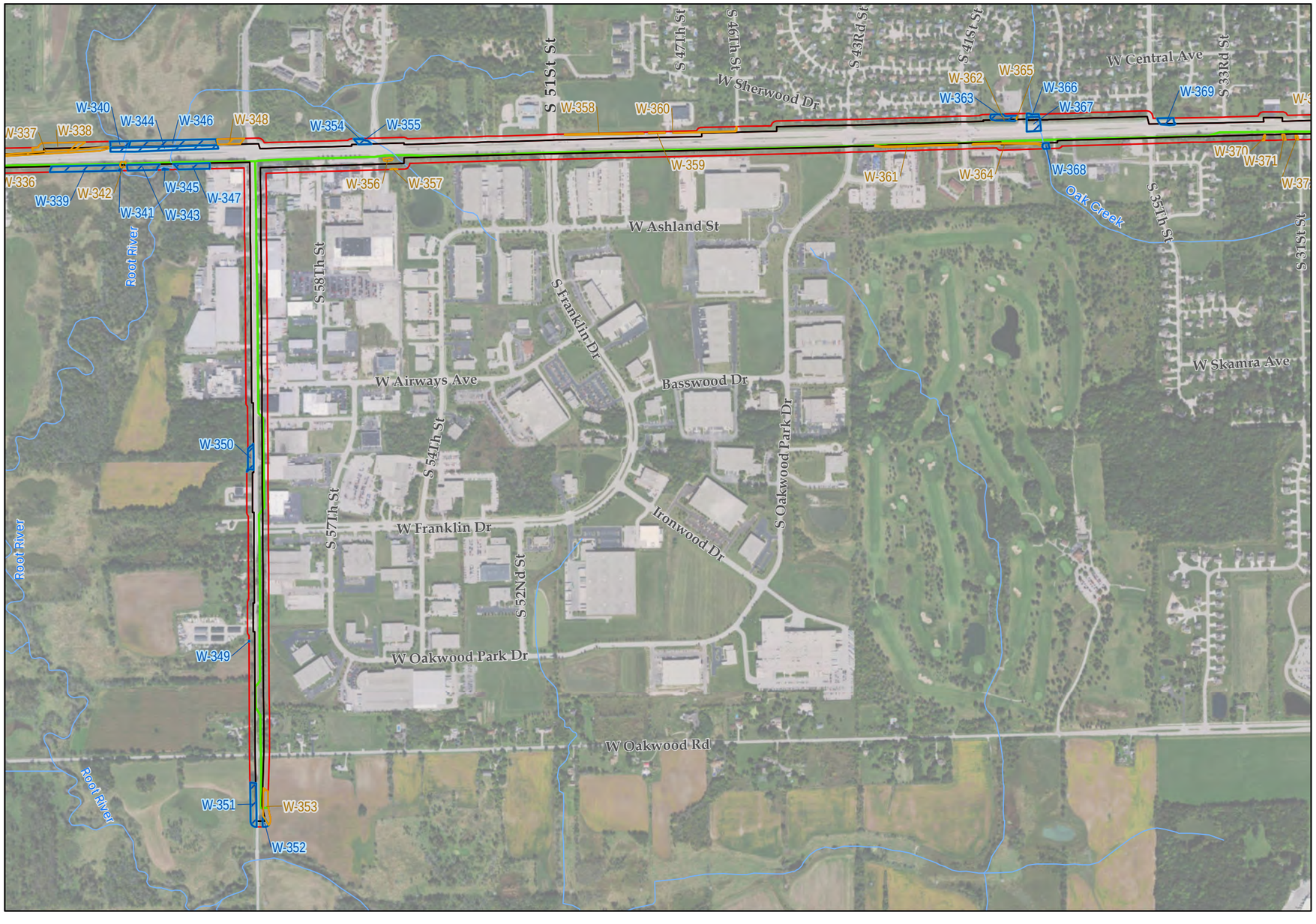
FIGURE NO. 7K



Legend

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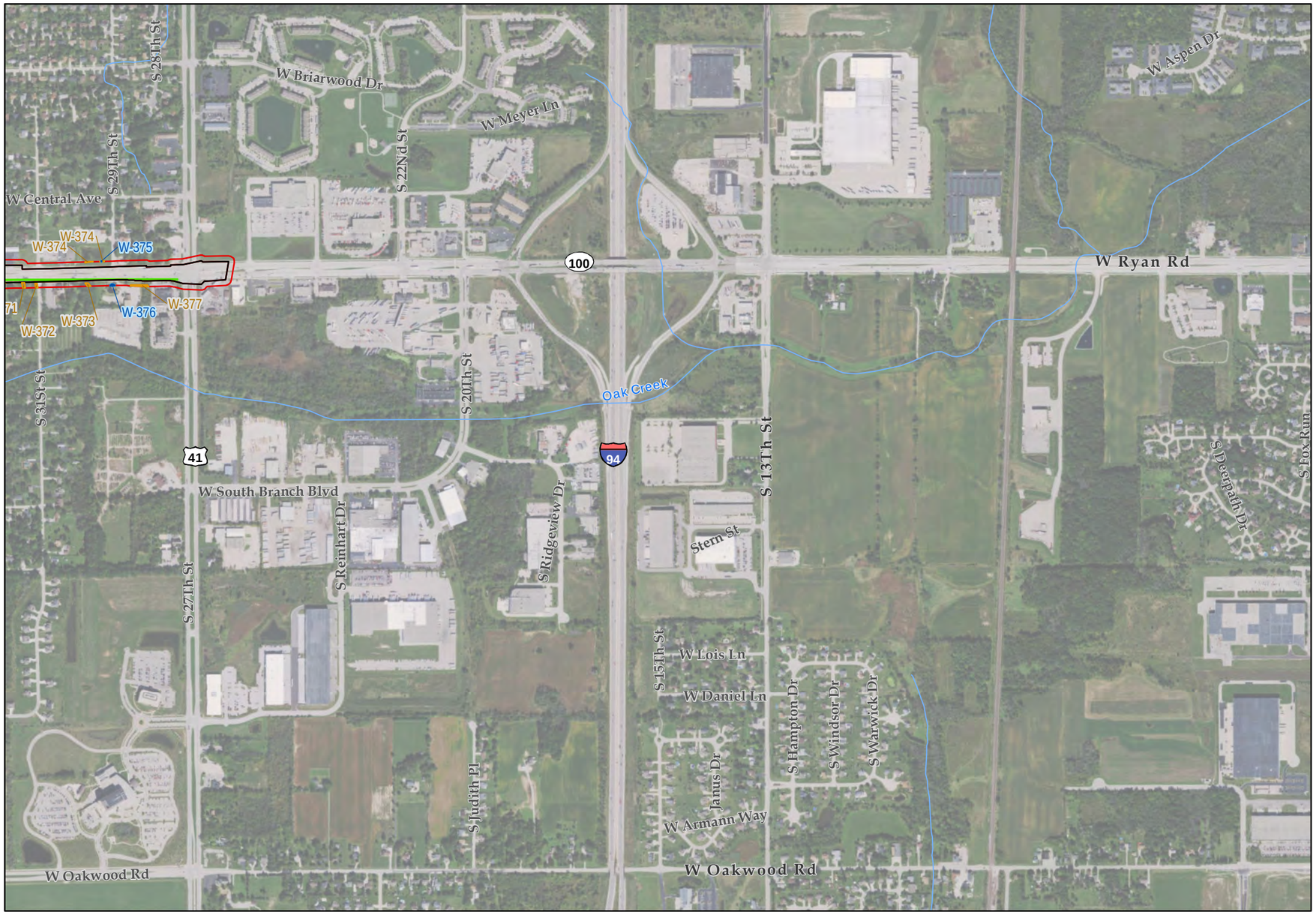
FIGURE NO. 7L



Legend

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2-8 Archaeological Resources Desktop Review for Route Alternatives

Confidential

Confidential information is provided under a separate cover.

2-9 Agricultural Resources Desktop Review for Route Alternatives

2-9: Part 1 - Proposed Milwaukee Supply Alternative

Milwaukee Supply Route Alternative Agricultural Desktop Review is being developed and will be included in a future PSC submittal or as requested by WDNR.

2-9: Part 2 - Proposed Milwaukee Return Flow Alternative and Other Alternatives Considered

Great Lakes Water Supply Program

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DRAFT

4-170 D1 Agricultural Resources Technical Memorandum

January 2018

Waukesha Water Utility
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PROGRAM TEAM MEMBER CONSULTANTS:

EXECUTIVE SUMMARY

TRC Environmental Corporation (TRC) conducted a desktop review of locations of agricultural lands, quantity of agricultural lands, and select types (certified organic) agricultural lands along three route alternatives under consideration by the Great Water Alliance (Program). The desktop review was conducted using Waukesha County Open Data Portal Website (Land use 2010), the Milwaukee County Land Information Office Geospatial data (Land Use 2010), the U.S. Department of Agriculture Organic Integrity Database, and the Organic Agriculture in Wisconsin 2017 Status Report and 2015 Status Report. Using these resources, agricultural lands were identified and mapped on recent aerial photographs. To summarize:

- There are no known, certified organic farms along any of the three route alternatives.
- There are no agricultural lands within the actual right-of-way of the three route alternatives.
- Route Alternative 2 contains the second most agricultural land at 71.80 acres within the buffer. The easements along Route Alternative 2 contain 8.96 acres of agricultural land (Appendix G-2, Figures 5A – 5K).
- Route Alternative 3 contains the most agricultural land, at 76.28 acres within the buffer. The easements along Route Alternative 3 contain 5.03 acres of agricultural land.
- Route Alternative 4 contains the least amount of agricultural land, at 64.92 acres within the buffer. The Route Alternative 4 easements contain 7.16 acres of agricultural land, and an additional 1.5 acres of agricultural land are located along the electrical transmission utility corridor easement.

SECTION 1 Introduction

1.1 Agricultural Resources Assessment Desktop Review

The agricultural resources assessment for this phase of the Great Water Alliance (Program) was conducted in April and May of 2017 by TRC's field scientists and GIS mapping specialists. The Study Area included the road right-of-way of each of the three proposed route alternatives, areas of proposed easements, an electrical transmission utility corridor, and a 50-foot buffer extending beyond the edge of these features on either side (Appendix G-2, Figures 1-4). A width of 50-feet was used in place of a right-of-way through the electrical transmission utility corridor where the proposed route alternatives did not follow an existing road and a public right-of-way did not exist and where there were no proposed easements. Please note that future assessments and reports may provide additional details on these or other alternate route alternatives as the planning and design of the Program evolves.

1.2 Agency Regulatory Authority and Discussion

Agricultural impacts are one of many key issues for the Public Service Commission of Wisconsin (PSC) in a construction program, and as part of the Certificate of Public Convenience and Necessity (CPCN) process. The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) has worked closely with the PSC, WDNR, and Wisconsin utilities to develop an approach that protects the farmland in Wisconsin. The issues of importance to both the routing and the construction process that need to be addressed up front (and in a CPCN application) include erosion, compaction, soil mixing, animal and crop diseases (bio-security) and organic farms.

DATCP is, in part, responsible for protecting agricultural resources in Wisconsin. For utility programs, DATCP will review a proposed program for potential siting, access (construction and maintenance) and construction impacts. DATCP staff also prepare an Agricultural Impact Statement (AIS) for public programs that involve the acquisition of farmland by purchase or easement.

To begin addressing the agricultural issues for the Program, it is important to gather information on the locations of croplands, the type of farm operations, and other applicable agricultural practices to consider during the route study, route alternative selection and design process. This acknowledges that the agricultural issues are being treated as seriously as other resources for which permits will be obtained. While there are no specific permits for agricultural resources, the end product should be to acknowledge in the CPCN how these issues were addressed in the siting, routing and construction planning. For example, farms were avoided during siting and access across farm land is limited; construction access is addressed in construction practices.

SECTION 2 Methodology

Data on agricultural areas were sourced from the Waukesha County Open Data Portal Website (Land Use 2010), the Milwaukee County Land Information Office Geospatial data (Land use 2010), the U.S. Department of Agriculture Organic Integrity Database, and the Organic Agriculture in Wisconsin 2017 Status Report and 2015 Status Report. TRC identified locations and measured the size of agricultural fields within each of the three route alternatives. The route alternative corridors are primarily defined as the road right-of-way and the additional 50-foot buffer on either side. Each agricultural area was labelled and depicted on the Figures 2, 3, 4, 5, 6, and 7, Appendix G-2. The agricultural parcel data was further subdivided into four subcategories: 1) Agricultural areas within the road right-of-way (of which there is none as it is road right-of-way), 2) Agricultural areas within the 50-foot buffer, 3) Agricultural areas within the easements, and 4) Agricultural areas within an electrical transmission utility corridor (Route Alternative 4 only). This review was based on available online data. Other useful information regarding Natural Resource Conservation Service (NRCS) Crop Reserve Program land, NRCS Wetland Reserve Program land, non-certified organic farms, and other farm improvements would require agency and/or property owner communication, which are not included in this technical memorandum. An assessment of prime farmland, recognized by NRCS, also is not included in this technical memorandum. Adjustments were made using desktop photointerpretation to areas mapped as agricultural land but not being used as agricultural land. This only occurred in right-of-way where the GIS data from the various sources slightly overlapped.

SECTION 3 Agricultural Review Results & Discussion

Based on a review of the U.S. Department of Agriculture Organic Integrity Database and the Organic Agriculture in Wisconsin 2017 Status Report and 2015 Status Report, there are no known/reported, certified organic farms along any of the three route alternatives. The nearest known/recorded, certified organic farm (Mason Farms) is located on Denoon Road in Big Bend. Non-certified organic farms may still be present but could not be identified without communicating with individual land owners.

The locations of agricultural fields are shown on Figures 2, 3, 4, 5, 6, and 7, Appendix G-2. Details on the amount of agricultural fields along each route alternative are provided in Table G-3-1. The following sections provide a summary of the quantity of agricultural fields and number of agricultural parcels for each route alternative.

Table G-3-1 Agricultural Evaluation Summary

Route Alternative	Route Alternative Length (miles)	Total Agricultural Area (Acres)
Route Alternative 2 – Right-of-way	25.69	0.00
Route Alternative 2 - Buffer	25.69	71.80
Route Alternative 2 - Easements	25.69	8.96
Route Alternative 3 - Right-of-way	26.94	0.00
Route Alternative 3 - Buffer	26.94	76.28
Route Alternative 3 - Easements	26.94	5.03
Route Alternative 4 - Right-of-way	26.55	0.00
Route Alternative 4 - Buffer	26.55	64.92
Route Alternative 4 – Electrical Transmission Utility Corridor	26.55	1.50
Route Alternative 4 - Easements	26.55	7.16

3.1 Route Alternative 2

Route Alternative 2 contains no agricultural land within the roadway right-of-way. Route Alternative 2 contains 71.8 acres of agricultural land within the 50-foot buffer, and 8.96 acres of agricultural land within the easements (Appendix G-2, Figure 2 and Figures 5A – 5K). The agricultural land within the 50-foot buffer on either side of the corridor is contained within 166 mapped parcels. The agricultural land within the easements is contained within nine mapped parcels. Additional information on each agricultural parcel along Route Alternative 2 is provided in Appendix G-1, Table 1.

3.2 Route Alternative 3

The Route Alternative 3 right-of-way contains no agricultural land within the roadway right-of-way. The Route Alternative 3 buffer contains 76.28 acres of agricultural land (Appendix G-2, Figures 2-3 and Figures 6A – 6L). The easements include 5.03 acres of agricultural land. The agricultural land within the buffer is contained within 161 mapped parcels. The agricultural land within the easements is contained within five mapped parcels. Additional information on each agricultural parcel along Route Alternative 3 is provided in Appendix G-1, Table 3.

3.3 Route Alternative 4

Route Alternative 4 contains no agricultural land within the roadway right-of-way. Route Alternative 4 contains 64.92 acres of agricultural land within the 50-foot right-of-way buffer (Appendix G-2, Figures 2-4 and Figures 7A – 7L). The easements consist of 7.16 acres of agricultural land. Also, a total of 1.5 acres of agricultural land is located within the electrical transmission utility corridor. The agricultural land within the 50-foot buffer on either side of the corridor is contained within 166 mapped parcels. The agricultural land within the easements is contained within 10 mapped parcels. Additional information on each agricultural parcel along Route Alternative 4 is provided in Appendix G-1, Table 4.

3.4 Agricultural Review Discussion

None of the three route alternatives have agricultural land in the roadway right-of-way. Route Alternative 2 easements, contains the most amount of agricultural land, at 8.93 acres. Route Alternative 4 easements, contains the second most agricultural land, Route Alternative 3 easements contains the least amount of agricultural land, at 5.03 acers. Of the three route alternatives, Route Alternative 3 contains the most agricultural land, at a total of 81.31 acres in the buffer and easements. Route Alternative 2 contains the second most agricultural land, at 80.76 total acres. Route Alternative 4 contains the least, at 72.08 total acres.

Based solely from a perspective of agricultural lands impact avoidance and based only on the amount of agricultural land mapped within the right-of-way and easements. This is also based on the assumption that there are no proposed activities within the 50-foot buffers. Route Alternative 3 would be the preferred route alternative. Route Alternative 4 would be the second preferred route alternative and Route Alternative 2 would be the third preferred route alternative. However, if the quantity of agricultural land within the 50-foot buffers is taken into consideration, assuming that these areas would be disturbed, Route Alternative 4 would be the preferred route alternative, Route Alternative 2 would be the second preferred route alternative and Route Alternative 3 would be the third preferred route alternative.

The results of this research will aid in determining the amount and type of agricultural fields that are located within each route alternative corridor. Based on this information, some assumptions may be made to determine which route alternative could potentially result in the least amount of impacts to agricultural land. In general, based on desktop analysis, the route alternative with the least amount of agricultural land will likely result in the least amount of impact to agricultural land. It is important to note that this review was limited to quantity of agricultural land and readily available public information. Other factors could alter the results. These factors include presence and abundance of undocumented organic farms, NRCS Crop Reserve Program land, NRCS Wetland Reserve Program land, or other farm uses and improvements made by the individual land owners.

The technical memorandum is limited to available online data and the location of route alternatives supplied to TRC at the time this assessment was conducted. Adjustments to route alternative alignments or creation of new route alternatives will likely result in changes to the quantity, extents, and types of agricultural lands reported herein. Due to the inherent limitations of available online resources and databases, on-site field investigations, information from various state and federal agencies (e.g. DATCP, NRCS, Farm Service Agency), and information from landowners will result in additional information needed to determine the potential impacts on not only quantity but types, easements, and uses of agricultural lands.

Appendix G-1 - Tables

Table 1 Agricultural Parcel Information: Route Alternative 2

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description (if available)	Acreage
A-0	Buffer	Not available	Cropland	0.246
A-1	Buffer	Not available	Pasture & Other Ag	0.223
A-2	Buffer	Not available	Pasture & Other Ag	0.009
A-3	Buffer	W230S3785 MILKY WAY RD	Cropland	1.563
A-4	Buffer	MILKY WAY RD	Cropland	0.177
A-5	Buffer	3675 S RACINE AVE	Cropland - Wetland	0.006
A-6	Buffer	3675 S RACINE AVE	Cropland	1.109
A-7	Buffer	Not available	Cropland	0.758
A-8	Buffer	3928 S RACINE AVE	Cropland	0.014
A-9	Buffer	Not available	Cropland	1.42
A-10	Buffer	3928 S RACINE AVE	Pasture & Other Ag	0.299
A-11	Buffer	Not available	Cropland - Wetland	0.344
A-12	Buffer	Not available	Cropland	0.311
A-13	Buffer	Not available	Cropland - Wetland	0.133
A-14	Buffer	4050 S RACINE AVE	Cropland	0.349
A-15	Buffer	Not available	Cropland	0.078
A-16	Buffer	4050 S RACINE AVE	Pasture & Other Ag	0.277
A-17	Buffer	4050 S RACINE AVE	Pasture & Other Ag	0.328
A-18	Buffer	4235 S RACINE AVE	Cropland	0.433
A-19	Buffer	4235 S RACINE AVE	Cropland	0.572
A-20	Buffer	4415 S RACINE AVE	Cropland	0.047
A-21	Buffer	19685 W OBSERVATORY RD	Cropland	0.431
A-22	Buffer	4485 S RACINE AVE	Cropland	0.128
A-23	Buffer	4785 S RACINE AVE	Pasture & Other Ag	0.287
A-24	Buffer	4635 S RACINE AVE	Cropland	1.338
A-25	Buffer	4530 S RACINE AVE	Cropland	0.882
A-26	Buffer	4636 S RACINE AVE	Pasture & Other Ag	0.457
A-27	Buffer	18650 W LAWNSDALE RD	Pasture & Other Ag	0.080
A-28	Buffer	18589 W LAWNSDALE RD	Cropland	0.214
A-29	Buffer	18650 W LAWNSDALE RD	Pasture & Other Ag	0.341
A-30	Buffer	18400 W LAWNSDALE RD	Cropland	0.377
A-31	Buffer	18300 W LAWNSDALE RD	Pasture & Other Ag	0.299
A-32	Buffer	18200 W LAWNSDALE RD	Pasture & Other Ag	0.228
A-33	Buffer	Not available	Pasture & Other Ag	0.381
A-34	Buffer	Not available	Orchards and Nursery	0.206
A-35	Buffer	Not available	Pasture & Other Ag	0.314
A-36	Buffer	17655 W NATIONAL AVE	Pasture & Other Ag	0.107
A-37	Buffer	Not available	Cropland	0.496
A-38	Buffer	17655 W NATIONAL AVE	Pasture & Other Ag	0.215
A-39	Buffer	17655 W NATIONAL AVE	Pasture & Other Ag	0.049
17655 W NATIONAL AVE	Easement		Pasture & Other Ag	0.004

Table 1 Agricultural Parcel Information: Route Alternative 2

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description (if available)	Acreage
17585 W NATIONAL AVE	Easement		Cropland	1.111
A-42	Buffer	17585 W NATIONAL AVE	Cropland	1.10
A-43	Buffer	17585 W NATIONAL AVE	Cropland	0.027
A-44	Buffer	Not available	Cropland	0.546
A-45	Buffer	17585 W NATIONAL AVE	Cropland - Wetland	0.009
A-46	Easement	17585 W NATIONAL AVE	Cropland - Wetland	0.690
A-47	Buffer	17585 W NATIONAL AVE	Cropland - Wetland	0.996
A-48	Buffer	17585 W NATIONAL AVE	Cropland	0.008
A-49	Buffer	Not available	Cropland	1.792
A-50	Easement	17585 W NATIONAL AVE	Cropland	0.224
A-51	Buffer	4945 S CALHOUN RD	Pasture & Other Ag	0.402
A-52	Buffer	4895 S CALHOUN RD	Cropland	0.183
A-53	Buffer	17585 W NATIONAL AVE	Cropland	0.010
A-54	Buffer	Not available	Cropland	1.091
A-55	Buffer	5161 S CALHOUN RD	Orchards and Nursery	0.202
A-56	Buffer	5161 S CALHOUN RD	Orchards and Nursery	0.998
A-57	Buffer	Not available	Orchards and Nursery	0.044
A-58	Buffer	Not available	Orchards and Nursery	1.475
A-59	Buffer	4908 S CALHOUN RD	Cropland	0.148
A-60	Buffer	5570 S CALHOUN RD	Cropland	0.008
A-61	Buffer	5570 S CALHOUN RD	Cropland	1.85
A-62	Easement	5570 S CALHOUN RD	Cropland	1.916
A-63	Buffer	5570 S CALHOUN RD	Cropland	1.980
A-64	Easement	5570 S CALHOUN RD	Cropland	2.016
A-65	Buffer	5570 S CALHOUN RD	Cropland	0.005
A-66	Buffer	Not available	Cropland	1.486
A-67	Buffer	15920 W COLLEGE AVE	Pasture & Other Ag	0.272
A-68	Buffer	15920 W COLLEGE AVE	Cropland	0.617
A-69	Buffer	Not available	Pasture & Other Ag	1.21
A-70	Buffer	Not available	Cropland	0.974
A-71	Buffer	S70W16050 JANESVILLE	Cropland	1.339
A-72	Buffer	S70W16050 JANESVILLE	Cropland	1.023
A-73	Buffer	S69W15636 JANESVILLE	Cropland	0.025
A-74	Buffer	S69W15612 JANESVILLE	Cropland	0.328
A-75	Buffer	Not available	Orchards and Nursery	0.177
A-76	Buffer	Not available	Orchards and Nursery	1.317
A-77	Buffer	Not available	Orchards and Nursery	0.642
A-78	Buffer	Not available	Cropland	0.558
A-79	Buffer	Not available	Cropland	0.021
A-80	Buffer	Not available	Pasture & Other Ag	0.073
A-81	Buffer	W143S7980 DURHAM DR	Cropland	0.088

Table 1 Agricultural Parcel Information: Route Alternative 2

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description (if available)	Acreage
A-82	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.098
A-83	Buffer	Not available	Cropland	0.045
A-84	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.223
A-85	Buffer	W141S8063 DURHAM DR	Pasture & Other Ag	0.037
A-86	Buffer	Not available	Cropland - Wetland	0.093
A-87	Buffer	Not available	Cropland	0.456
A-88	Buffer	Not available	Cropland - Wetland	0.458
A-89	Buffer	Not available	Cropland	0.192
A-90	Buffer	Not available	Cropland	0.677
A-91	Buffer	W131S8489 DURHAM DR	Cropland	0.087
A-92	Buffer	W131S8489 DURHAM DR	Orchards and Nursery	0.055
A-93	Buffer	Not available	Cropland	0.590
A-94	Buffer	W129S8642 DURHAM DR	Pasture & Other Ag	0.14
A-95	Buffer	W129S8642 DURHAM DR	Cropland	0.412
A-96	Buffer	Not available	Cropland	0.31
A-97	Buffer	W126S8581 NORTH CAPE	Pasture & Other Ag	0.020
A-98	Buffer	Not available	Cropland	0.333
A-99	Buffer	Not available	Pasture & Other Ag	0.576
A-100	Buffer	Not available	Cropland	0.570
A-101	Buffer	Not available	Pasture & Other Ag	0.545
A-102	Buffer	W127S9076 NORTH CAPE	Pasture & Other Ag	0.009
A-103	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.156
A-104	Buffer	Not available	Pasture & Other Ag	0.281
A-105	Buffer	W126S9205 NORTH CAPE	Pasture & Other Ag	0.535
A-106	Buffer	Not available	Cropland	0.064
A-107	Buffer	Not available	Cropland	0.024
A-108	Buffer	W126S8886 NORTH CAPE	Pasture & Other Ag	0.133
A-109	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.133
A-110	Buffer	Not available	Cropland	0.158
A-111	Buffer	S94W12420 RYAN RD	Pasture & Other Ag	0.087
A-112	Buffer	142 CAPITOL DR SUITE 200, HARTLAND, WI, 53029-2104	not provided in data set	1.200
A-113	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.290
A-114	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.566
A-115	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.510
A-116	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.349
A-117	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	not provided in data set	0.904
A-118	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.44
A-119	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.252
A-120	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.322
A-121	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.738
A-122	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.620
A-123	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.007

Table 1 Agricultural Parcel Information: Route Alternative 2

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description (if available)	Acreage
A-124	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.08
A-125	Easement	10931 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.640
A-126	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.635
A-127	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.111
A-128	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.358
A-129	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.918
A-130	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.46
A-131	Easement	10233 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	1.486
A-132	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	1.513
A-133	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.236
A-134	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.022
A-135	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	not provided in data set	0.024
A-136	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.016
A-137	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	not provided in data set	0.130
A-138	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.085
A-139	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.047
A-140	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.064
A-141	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	not provided in data set	0.236
A-142	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	not provided in data set	0.066
A-143	Buffer	N1747 COUNTY RD B, KEWAUNEE, WI, 54216-9358	not provided in data set	0.085
A-144	Buffer	3861 60TH ST, MILWAUKEE, WI, 53220	not provided in data set	0.719
A-145	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	not provided in data set	1.974
A-146	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	not provided in data set	0.928
A-147	Buffer	8432 RYAN RD, FRANKLIN, WI, 53132	not provided in data set	0.033
A-148	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207-0912	not provided in data set	0.506
A-149	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	not provided in data set	0.804
A-150	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	not provided in data set	1.786
A-151	Buffer	2840 BROOKFIELD RD, BROOKFIELD, WI, 53005	not provided in data set	0.85
A-152	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	not provided in data set	1.085
A-153	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	not provided in data set	0.083
A-154	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	not provided in data set	0.073
A-155	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	not provided in data set	0.006
A-156	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	not provided in data set	0.248
A-157	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	not provided in data set	0.064
A-158	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	not provided in data set	0.245
A-159	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	not provided in data set	0.798
A-160	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	not provided in data set	0.131
A-161	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	not provided in data set	0.865
A-162	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	not provided in data set	0.441
A-163	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	not provided in data set	0.644
A-164	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	not provided in data set	0.297
A-165	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	not provided in data set	0.467

Table 1 Agricultural Parcel Information: Route Alternative 2

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description (if available)	Acreage
A-166	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	not provided in data set	0.116
A-167	Buffer	9229 LOOMIS RD, FRANKLIN, WI, 53132	not provided in data set	0.104
A-168	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	not provided in data set	0.367
A-169	Buffer	10267 60TH ST, FRANKLIN, WI, 53132	not provided in data set	0.497
A-170	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	not provided in data set	0.243
A-171	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	not provided in data set	0.453
A-172	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	not provided in data set	0.214
A-173	Buffer	W234S5460 BIG BEND RD, WAUKESHA, WI, 53189	not provided in data set	0.020
A-174	Buffer	11518 PORTWASHINGTON R SUITE #103, MEQUON, WI, 53092	not provided in data set	0.062
A-175	Buffer	11518 PORTWASHINGTON RD STE 103, MEQUON, WI, 53092	not provided in data set	0.087

Table 2 Agricultural Parcel Information: Route Alternative 3

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-0	Buffer	Not available	Cropland	0.246
A-1	Buffer	Not available	Pasture & Other Ag	0.223
A-2	Buffer	Not available	Pasture & Other Ag	0.009
A-3	Buffer	W230S3785 MILKY WAY RD	Cropland	1.563
A-4	Buffer	MILKY WAY RD	Cropland	0.177
A-5	Buffer	3675 S RACINE AVE	Cropland - Wetland	0.006
A-6	Buffer	3675 S RACINE AVE	Cropland	1.109
A-7	Buffer	Not available	Cropland	0.758
A-8	Buffer	3928 S RACINE AVE	Cropland	0.014
A-9	Buffer	Not available	Cropland	1.42
A-10	Buffer	3928 S RACINE AVE	Pasture & Other Ag	0.299
A-11	Buffer	Not available	Cropland - Wetland	0.344
A-12	Buffer	Not available	Cropland	0.311
A-13	Buffer	Not available	Cropland - Wetland	0.133
A-14	Buffer	4050 S RACINE AVE	Cropland	0.349
A-15	Buffer	Not available	Cropland	0.078
A-16	Buffer	4050 S RACINE AVE	Pasture & Other Ag	0.277
A-17	Buffer	4050 S RACINE AVE	Pasture & Other Ag	0.328
A-18	Buffer	4235 S RACINE AVE	Cropland	0.433
A-19	Buffer	4235 S RACINE AVE	Cropland	0.572
A-20	Buffer	4415 S RACINE AVE	Cropland	0.047
A-21	Buffer	19685 W OBSERVATORY RD	Cropland	0.431
A-22	Buffer	4485 S RACINE AVE	Cropland	0.128
A-23	Buffer	4635 S RACINE AVE	Cropland	1.338
A-24	Buffer	4785 S RACINE AVE	Pasture & Other Ag	0.594
A-25	Buffer	Not available	Cropland	1.756
A-26	Buffer	Not available	Pasture & Other Ag	0.229
A-27	Buffer	4995 S RACINE AVE	Pasture & Other Ag	0.372
A-28	Buffer	5055 S RACINE AVE	Pasture & Other Ag	0.266
A-29	Buffer	Not available	Cropland	0.142
A-30	Buffer	4530 S RACINE AVE	Cropland	0.88
A-31	Buffer	4636 S RACINE AVE	Pasture & Other Ag	0.446
A-32	Buffer	4780 S RACINE AVE	Pasture & Other Ag	0.162
A-33	Buffer	S PROVIDENCE DR	Pasture & Other Ag	0.427
A-34	Buffer	4880 S PROVIDENCE DR	Pasture & Other Ag	0.583
A-35	Buffer	5120 RACINE AVE	Cropland	0.215
A-36	Buffer	Not available	Cropland	0.506
A-37	Buffer	5600 S RACINE AVE	Pasture & Other Ag	0.240
A-38	Buffer	6000 S RACINE CT	Cropland	1.122
A-39	Buffer	Not available	Pasture & Other Ag	0.594
A-40	Buffer	5865 S MARTIN RD	Pasture & Other Ag	0.457
A-41	Buffer	5790 S MARTIN RD	Pasture & Other Ag	0.815

Table 2 Agricultural Parcel Information: Route Alternative 3

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-42	Buffer	Not available	Pasture & Other Ag	1.229
A-43	Buffer	5790 S MARTIN RD	Pasture & Other Ag	0.392
A-44	Buffer	Not available	Orchards and Nursery	0.045
A-45	Buffer	Not available	Orchards and Nursery	2.373
A-46	Buffer	Not available	Orchards and Nursery	2.387
A-47	Buffer	5570 S CALHOUN RD	Cropland	0.556
A-48	Buffer	5570 S CALHOUN RD	Cropland	0.897
A-49	Buffer	5570 S CALHOUN RD	Cropland	1.482
A-50	Buffer	5570 S CALHOUN RD	Cropland	3.125
A-51	Easement	5570 S CALHOUN RD	Cropland	2.016
A-52	Buffer	5570 S CALHOUN RD	Cropland	0.005
A-53	Buffer	Not available	Cropland	1.486
A-54	Buffer	15920 W COLLEGE AVE	Pasture & Other Ag	0.272
A-55	Buffer	15920 W COLLEGE AVE	Cropland	0.617
A-56	Buffer	Not available	Pasture & Other Ag	1.218
A-57	Buffer	Not available	Cropland	0.974
A-58	Buffer	S70W16050 JANESVILLE	Cropland	1.33
A-59	Buffer	S70W16050 JANESVILLE	Cropland	1.023
A-60	Buffer	S69W15636 JANESVILLE	Cropland	0.025
A-61	Buffer	S69W15612 JANESVILLE	Cropland	0.328
A-62	Buffer	Not available	Orchards and Nursery	0.177
A-63	Buffer	Not available	Orchards and Nursery	1.317
A-64	Buffer	Not available	Orchards and Nursery	0.642
A-65	Buffer	Not available	Cropland	0.558
A-66	Buffer	Not available	Cropland	0.021
A-67	Buffer	Not available	Pasture & Other Ag	0.073
A-68	Buffer	W143S7980 DURHAM DR	Cropland	0.088
A-69	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.098
A-70	Buffer	Not available	Cropland	0.045
A-71	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.223
A-72	Buffer	W141S8063 DURHAM DR	Pasture & Other Ag	0.037
A-73	Buffer	Not available	Cropland - Wetland	0.093
A-74	Buffer	Not available	Cropland	0.456
A-75	Buffer	Not available	Cropland - Wetland	0.458
A-76	Buffer	Not available	Cropland	0.192
A-77	Buffer	Not available	Cropland	0.677
A-78	Buffer	W131S8489 DURHAM DR	Cropland	0.087
A-79	Buffer	W131S8489 DURHAM DR	Orchards and Nursery	0.055
A-80	Buffer	Not available	Cropland	0.590
A-81	Buffer	W129S8642 DURHAM DR	Pasture & Other Ag	0.148
A-82	Buffer	W129S8642 DURHAM DR	Cropland	0.412
A-83	Buffer	Not available	Cropland	0.311

Table 2 Agricultural Parcel Information: Route Alternative 3

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-84	Buffer	W126S8581 NORTH CAPE	Pasture & Other Ag	0.020
A-85	Buffer	Not available	Cropland	0.333
A-86	Buffer	Not available	Pasture & Other Ag	0.576
A-87	Buffer	Not available	Cropland	0.570
A-88	Buffer	Not available	Pasture & Other Ag	0.545
A-89	Buffer	W127S9076 NORTH CAPE	Pasture & Other Ag	0.009
A-90	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.156
A-91	Buffer	Not available	Pasture & Other Ag	0.281
A-92	Buffer	W126S9205 NORTH CAPE	Pasture & Other Ag	0.535
A-93	Buffer	Not available	Cropland	0.064
A-94	Buffer	Not available	Cropland	0.024
A-95	Buffer	W126S8886 NORTH CAPE	Pasture & Other Ag	0.133
A-96	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.133
A-97	Buffer	Not available	Cropland	0.158
A-98	Buffer	S94W12420 RYAN RD	Pasture & Other Ag	0.087
A-99	Buffer	142 CAPITOL DR SUITE 200, HARTLAND, WI, 53029-2104	agriculture	1.200
A-100	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.290
A-101	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.566
A-102	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.510
A-103	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.349
A-104	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.904
A-105	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.440
A-106	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.252
A-107	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.322
A-108	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.738
A-109	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.620
A-110	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.007
A-111	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.088
A-112	Easement	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.635
A-113	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.635
A-114	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.111
A-115	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.358
A-116	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.918
A-117	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.465
A-118	Easement	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	1.508
A-119	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	1.513
A-120	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.236
A-121	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.022
A-122	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.024
A-123	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.016
A-124	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.130
A-125	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.085

Table 2 Agricultural Parcel Information: Route Alternative 3

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-126	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.047
A-127	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.064
A-128	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.236
A-129	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.066
A-130	Buffer	N1747 COUNTY RD B, KEWAUNEE, WI, 54216-9358	agriculture	0.085
A-131	Buffer	3861 60TH ST, MILWAUKEE, WI, 53220	agriculture	0.719
A-132	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	agriculture	1.974
A-133	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	agriculture	0.928
A-134	Buffer	8432 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.033
A-135	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207-0912	agriculture	0.506
A-136	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	agriculture	0.804
A-137	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	agriculture	1.786
A-138	Buffer	2840 BROOKFIELD RD, BROOKFIELD, WI, 53005	agriculture	0.859
A-139	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	1.085
A-140	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.083
A-141	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.073
A-142	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.006
A-143	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	0.248
A-144	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	0.064
A-145	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	agriculture	0.245
A-146	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.798
A-147	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	agriculture	0.131
A-148	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.865
A-149	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.441
A-150	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.644
A-151	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.297
A-152	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.467
A-153	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	agriculture	0.116
A-154	Buffer	9229 LOOMIS RD, FRANKLIN, WI, 53132	agriculture	0.104
A-155	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	agriculture	0.367
A-156	Buffer	10267 60TH ST, FRANKLIN, WI, 53132	agriculture	0.497
A-157	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.243
A-158	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	agriculture	0.453
A-159	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	agriculture	0.214
A-160	Buffer	W234S5460 BIG BEND RD, WAUKESHA, WI, 53189	agriculture	0.020
A-161	Buffer	11518 PORTWASHINGTON R SUITE #103, MEQUON, WI, 53092	agriculture	0.062
A-162	Buffer	11518 PORTWASHINGTON RD STE 103, MEQUON, WI, 53092	agriculture	0.087

Table 3 Agricultural Parcel Information: Route Alternative 4

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-0	Buffer	Not available	Pasture & Other Ag	0.006
A-1	Buffer	Not available	Cropland	0.240
A-2	Buffer	Not available	Pasture & Other Ag	0.136
A-3	Buffer	Not available	Cropland	0.922
A-4	Buffer	Not available	Cropland - Wetland	0.093
A-5	Buffer	S52W24082 GLENDALE RD	Cropland	0.810
A-6	Buffer	S52W24082 GLENDALE RD	Cropland	0.444
A-7	Buffer	W240S5465 HWY 164	Cropland	0.296
A-8	Buffer	Not available	Cropland	0.577
A-9	Buffer	Not available	Cropland	0.337
A-10	Buffer	Not available	Cropland	0.452
A-11	Buffer	W240S6103 HWY 164	Cropland	0.020
A-12	Buffer	W239S3899 BIG BEND RD	Pasture & Other Ag	0.279
A-13	Buffer	W239S3881 BIG BEND RD	Pasture & Other Ag	0.237
A-14	Buffer	W239S3875 BIG BEND RD	Pasture & Other Ag	0.253
A-15	Buffer	Not available	Cropland	0.371
A-16	Buffer	Not available	Pasture & Other Ag	0.130
A-17	Buffer	W238S4195 BIG BEND RD	Pasture & Other Ag	0.311
A-18	Buffer	W238S4415 BIG BEND RD	Cropland	0.129
A-19	Buffer	W238S4415 BIG BEND RD	Cropland	0.158
A-20	Buffer	W238S4415 BIG BEND RD	Cropland	0.065
A-21	Buffer	W238S4415 BIG BEND RD	Cropland	0.856
A-22	Buffer	W239S4785 MERLIN LN	Pasture & Other Ag	0.679
A-23	Buffer	Not available	Pasture & Other Ag	0.186
A-24	Buffer	Not available	Cropland	1.104
A-25	Buffer	Not available	Cropland	0.324
A-26	Buffer	W239S4745 MERLIN LN	Pasture & Other Ag	0.351
A-27	Buffer	W239S5525 CHESTNUT TRL	Cropland	0.681
A-28	Buffer	Not available	Cropland	0.656
A-29	Buffer	Not available	Pasture & Other Ag	0.045
A-30	Buffer	Not available	Pasture & Other Ag	0.063
A-31	Buffer	W239S5830 HWY 164	Cropland	0.461
A-32	Buffer	W235S6465 BIG BEND DR	Cropland	0.554
A-33	Buffer	W235S6465 BIG BEND DR	Cropland	0.051
A-34	Buffer	Not available	Pasture & Other Ag	0.223
A-35	Buffer	S62W23750 TOWNLINE RD	Pasture & Other Ag	0.439
A-36	Buffer	Not available	Pasture & Other Ag	0.009
A-37	Buffer	S62W23680 TOWNLINE RD	Pasture & Other Ag	0.316
A-38	Buffer	W235S6089 BIG BEND RD	Cropland	0.110
A-39	Buffer	W235S6465 BIG BEND DR	Cropland	0.995
A-40	Buffer	W235S6089 BIG BEND RD	Cropland	0.432
A-41	Buffer	S63W23425 TOWNLINE RD	Orchards and Nursery	0.624

Table 3 Agricultural Parcel Information: Route Alternative 4

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-42	Buffer	W234S6040 BIG BEND RD	Cropland	0.681
A-43	Buffer	W234S6040 BIG BEND RD	Pasture & Other Ag	0.176
A-44	Buffer	W230S3785 MILKY WAY RD	Cropland	1.563
A-45	Buffer	S63W23425 TOWNLINE RD	Orchards and Nursery	0.033
A-46	Buffer	W234S6040 BIG BEND RD	Pasture & Other Ag	0.331
A-47	Buffer	MILKY WAY RD	Cropland	0.177
A-48	Buffer	S63W23155 TOWNLINE RD	Cropland	1.646
A-49	Buffer	W225S6167 GUTHRIE RD	Cropland	0.005
A-50	Buffer	W225S6167 GUTHRIE RD	Pasture & Other Ag	0.095
A-51	Buffer	W225S6167 GUTHRIE RD	Cropland	0.021
A-52	Buffer	S63W22685 TOWNLINE RD	Pasture & Other Ag	0.272
A-53	Buffer	W225S6167 GUTHRIE RD	Cropland - Wetland	0.105
A-54	Buffer	W225S6167 GUTHRIE RD	Cropland	0.422
A-55	Buffer	S65W22240 NATIONAL AVE	Cropland - Wetland	0.657
A-56	Easement	S65W22240 NATIONAL AVE	Cropland - Wetland	0.298
A-57	Easement	S65W22240 NATIONAL AVE	Cropland	1.622
A-58	Buffer	Not available	Cropland	1.235
A-59	Buffer	S65W22240 NATIONAL AVE	Cropland	0.003
A-60	Buffer	S65W22240 NATIONAL AVE	Cropland	1.241
A-61	Easement	Not available	Cropland	0.512
A-62	Buffer	Not available	Cropland	0.507
A-63	Buffer	Not available	Cropland	0.959
A-64	Easement	S64W22000 NATIONAL AVE	Cropland	0.639
A-65	Buffer	S64W22000 NATIONAL AVE	Cropland	1.138
A-66	Easement	S64W22000 NATIONAL AVE	Cropland	0.376
A-67	Buffer	Not available	Cropland	0.044
A-68	Easement	Not available	Cropland	0.693
A-69	Buffer	Not available	Cropland	1.118
A-70	Buffer	NATIONAL AVE	Cropland	0.681
A-71	Buffer	S67W21885 TANS DR	Cropland	0.287
A-72	Buffer	S67W21845 TANS DR	Cropland	0.228
A-73	Buffer	S67W21885 TANS DR	Cropland	0.563
A-74	Buffer	S67W21367 TANS DR	Cropland	0.810
A-75	Buffer	S67W20447 TANS DR	Pasture & Other Ag	0.098
A-76	Buffer	S67W20253 TANS DR	Cropland	0.107
A-77	Buffer	S67W20253 TANS DR	Cropland	0.092
A-78	Buffer	W200S7203 WILLIAMS DR	Cropland	0.644
A-79	Buffer	S66W19678 TANS DR	Pasture & Other Ag	0.088
A-80	BUFFER_Electrical Transmission Utility Corridor	W160S7893 SANDY BEACH	Cropland	0.354
A-81	BUFFER_Electrical Transmission Utility Corridor	W160S7893 SANDY BEACH	Pasture & Other Ag	0.047

Table 3 Agricultural Parcel Information: Route Alternative 4

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-82	BUFFER_Electrical Transmission Utility Corridor	Not available	Pasture & Other Ag	0.017
A-83	BUFFER_Electrical Transmission Utility Corridor	S77W15973 WOODS RD	Pasture & Other Ag	0.079
A-84	BUFFER_Electrical Transmission Utility Corridor	Not available	Pasture & Other Ag	0.322
A-85	BUFFER_Electrical Transmission Utility Corridor	Not available	Cropland	0.126
A-86	BUFFER_Electrical Transmission Utility Corridor	Not available	Cropland	0.168
A-87	BUFFER_Electrical Transmission Utility Corridor	Not available	Cropland	0.381
A-88	Buffer	Not available	Pasture & Other Ag	0.086
A-89	Buffer	W143S7980 DURHAM DR	Cropland	0.088
A-90	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.165
A-91	Buffer	Not available	Cropland	0.045
A-92	Buffer	W143S7980 DURHAM DR	Pasture & Other Ag	0.223
A-93	Buffer	W141S8063 DURHAM DR	Pasture & Other Ag	0.037
A-94	Buffer	Not available	Cropland - Wetland	0.093
A-95	Buffer	Not available	Cropland	0.456
A-96	Buffer	Not available	Cropland - Wetland	0.458
A-97	Buffer	Not available	Cropland	0.192
A-98	Buffer	Not available	Cropland	0.677
A-99	Buffer	W131S8489 DURHAM DR	Cropland	0.087
A-100	Buffer	W131S8489 DURHAM DR	Orchards and Nursery	0.055
A-101	Buffer	Not available	Cropland	0.590
A-102	Buffer	W129S8642 DURHAM DR	Pasture & Other Ag	0.148
A-103	Buffer	W129S8642 DURHAM DR	Cropland	0.412
A-104	Buffer	Not available	Cropland	0.311
A-105	Buffer	W126S8581 NORTH CAPE	Pasture & Other Ag	0.020
A-106	Buffer	Not available	Cropland	0.333
A-107	Buffer	Not available	Pasture & Other Ag	0.576
A-108	Buffer	Not available	Cropland	0.570
A-109	Buffer	Not available	Pasture & Other Ag	0.545
A-110	Buffer	W127S9076 NORTH CAPE	Pasture & Other Ag	0.009
A-111	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.156
A-112	Buffer	Not available	Pasture & Other Ag	0.281
A-113	Buffer	W126S9205 NORTH CAPE	Pasture & Other Ag	0.535
A-114	Buffer	Not available	Cropland	0.064
A-115	Buffer	Not available	Cropland	0.024
A-116	Buffer	W126S8886 NORTH CAPE	Pasture & Other Ag	0.133
A-117	Buffer	W126S8854 NORTH CAPE	Pasture & Other Ag	0.133
A-118	Buffer	Not available	Cropland	0.158
A-119	Buffer	S94W12420 RYAN RD	Pasture & Other Ag	0.087

Table 3 Agricultural Parcel Information: Route Alternative 4

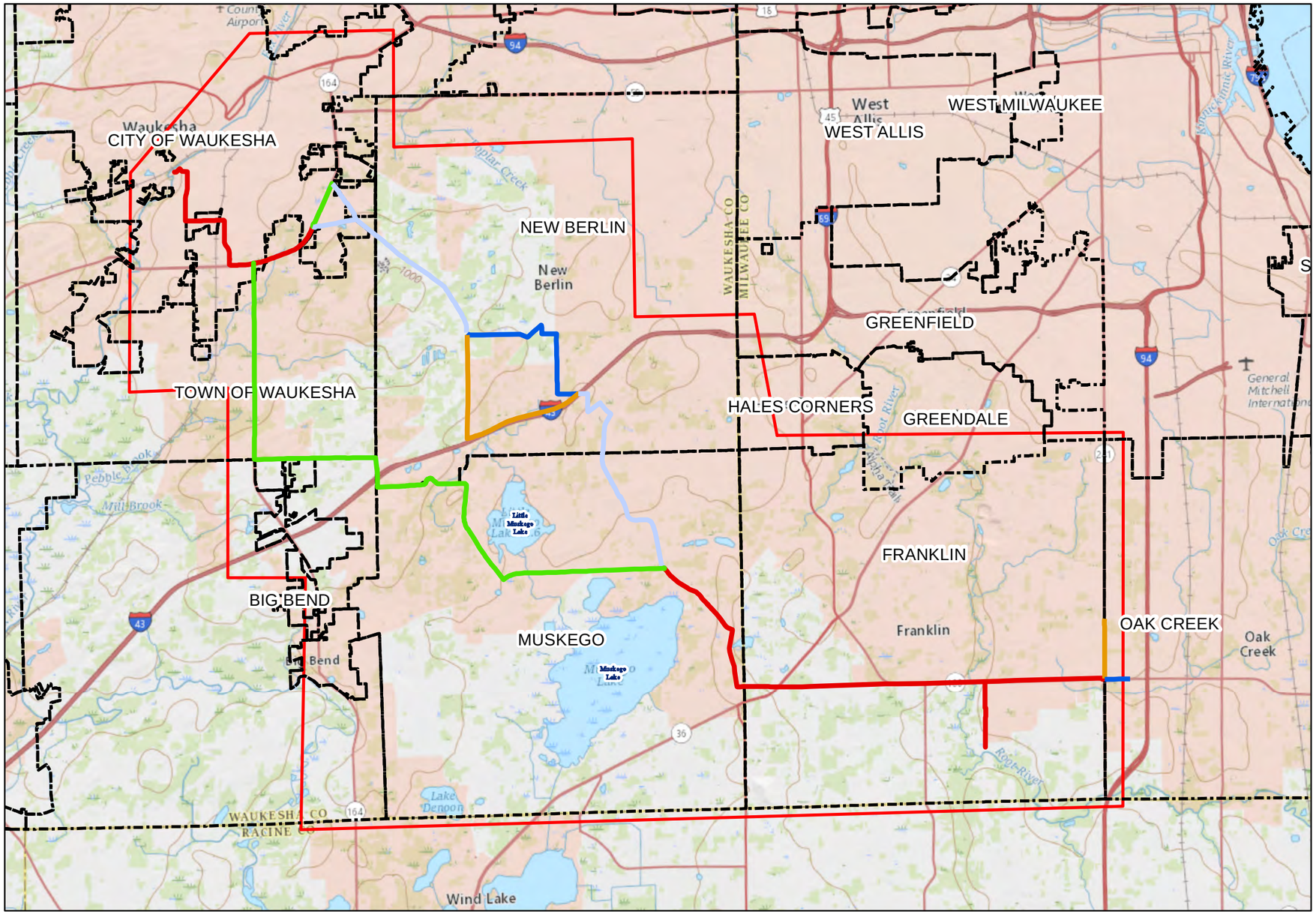
Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-120	Buffer	142 CAPITOL DR SUITE 200, HARTLAND, WI, 53029-2104	agriculture	1.200
A-121	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.290
A-122	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.566
A-123	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.510
A-124	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.349
A-125	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.904
A-126	Buffer	11835 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.440
A-127	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.252
A-128	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.322
A-129	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.738
A-130	Easement	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.620
A-131	Buffer	10903 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.007
A-132	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.088
A-133	Easement	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.635
A-134	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.635
A-135	Buffer	10931 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.111
A-136	Buffer	10338 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.358
A-137	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.918
A-138	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.465
A-139	Easement	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	1.508
A-140	Buffer	10233 RYAN RD, FRANKLIN, WI, 53132	agriculture	1.514
A-141	Buffer	10250 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.236
A-142	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.022
A-143	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.024
A-144	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.016
A-145	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.130
A-146	Buffer	9957 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.085
A-147	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.047
A-148	Buffer	9733 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.064
A-149	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.236
A-150	Buffer	4707 JENNA CT, FRANKLIN, WI, 53132	agriculture	0.066
A-151	Buffer	N1747 COUNTY RD B, KEWAUNEE, WI, 54216-9358	agriculture	0.085
A-152	Buffer	3861 60TH ST, MILWAUKEE, WI, 53220	agriculture	0.719
A-153	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	agriculture	1.974
A-154	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207	agriculture	0.928
A-155	Buffer	8432 RYAN RD, FRANKLIN, WI, 53132	agriculture	0.033
A-156	Buffer	P O BOX 07912, MILWAUKEE, WI, 53207-0912	agriculture	0.506
A-157	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	agriculture	0.804
A-158	Buffer	200 JEFFERSON ST, MILWAUKEE, WI, 53202	agriculture	1.786
A-159	Buffer	2840 BROOKFIELD RD, BROOKFIELD, WI, 53005	agriculture	0.859
A-160	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	1.085

Table 3 Agricultural Parcel Information: Route Alternative 4

Agriculture Tag # (From Figures G-2 5A – 5K)	Buffer or Easement	Parcel Address (if available)	Ag Description	Acreage
A-161	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.083
A-162	Buffer	8320 VIRGINIA CIR, WIND LAKE, WI, 53185	agriculture	0.073
A-163	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.006
A-164	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	0.248
A-165	Buffer	5200 LOOMIS RD, GREENDALE, WI, 53129	agriculture	0.064
A-166	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	agriculture	0.245
A-167	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.798
A-168	Buffer	9312 33RD ST, FRANKLIN, WI, 53132	agriculture	0.131
A-169	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.865
A-170	Buffer	901 9TH ST RM 102, MILWAUKEE, WI, 53233	agriculture	0.441
A-171	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.644
A-172	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.297
A-173	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.467
A-174	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	agriculture	0.116
A-175	Buffer	9229 LOOMIS RD, FRANKLIN, WI, 53132	agriculture	0.104
A-176	Buffer	10101 60TH ST, FRANKLIN, WI, 53132	agriculture	0.367
A-177	Buffer	10267 60TH ST, FRANKLIN, WI, 53132	agriculture	0.497
A-178	Buffer	901 9TH ST ROOM 102, MILWAUKEE, WI, 53233	agriculture	0.243
A-179	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	agriculture	0.453
A-180	Buffer	4604 THORNCREST DR, FRANKLIN, WI, 53132	agriculture	0.214
A-181	Buffer	W234S5460 BIG BEND RD, WAUKESHA, WI, 53189	agriculture	0.020
A-182	Buffer	11518 PORTWASHINGTON R SUITE #103, MEQUON, WI, 53092	agriculture	0.062
A-183	Buffer	11518 PORTWASHINGTON RD STE 103, MEQUON, WI, 53092	agriculture	0.087

Appendix G-2 - Figures

FIGURE NO. 1



Legend

- ROUTE 2
- ROUTE 2 & 3
- ROUTE 2, 3 & 4
- ROUTE 3
- ROUTE 4
- MUNICIPALITIES
- STUDY BOUNDARY

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.

1 " = 10,000 '

0 5,000 10,000 20,000

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ALL ROUTES, OVERVIEW

Date: 7/18/2017

Plotted: 7/18/2017
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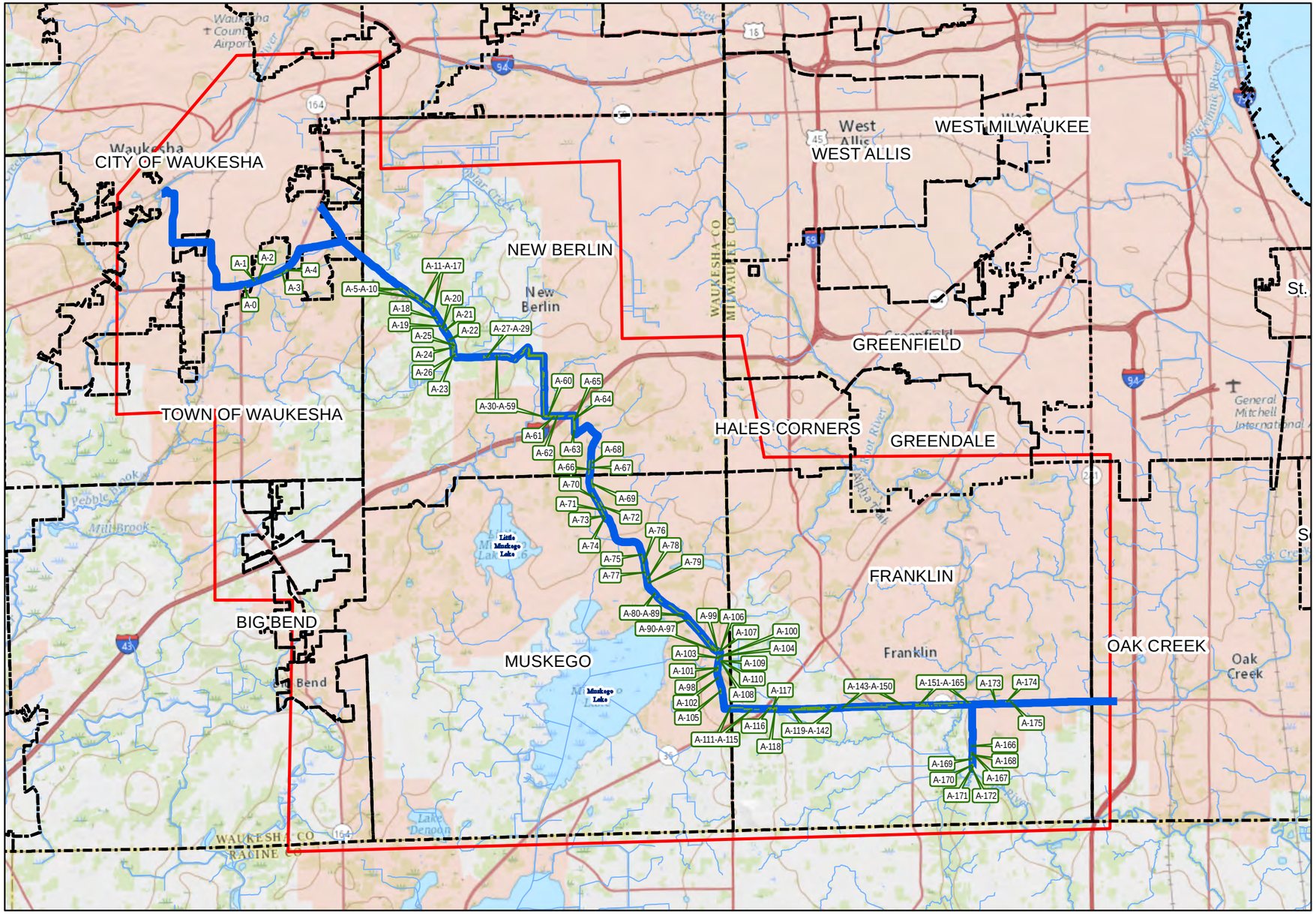
FIGURE NO. 2



Legend

- ROUTE 2 AGRICULTURE AREAS
- A## AGRICULTURE AREAS TAG NO.
- ROUTE 2
- MUNICIPALITIES
- STUDY BOUNDARY

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.

1 " = 10,000 '

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Document Path: E:\Wetlands\General\WaukeshaPipeline\2016_263344\263344-GHv2-OverviewAG_RT2.mxd

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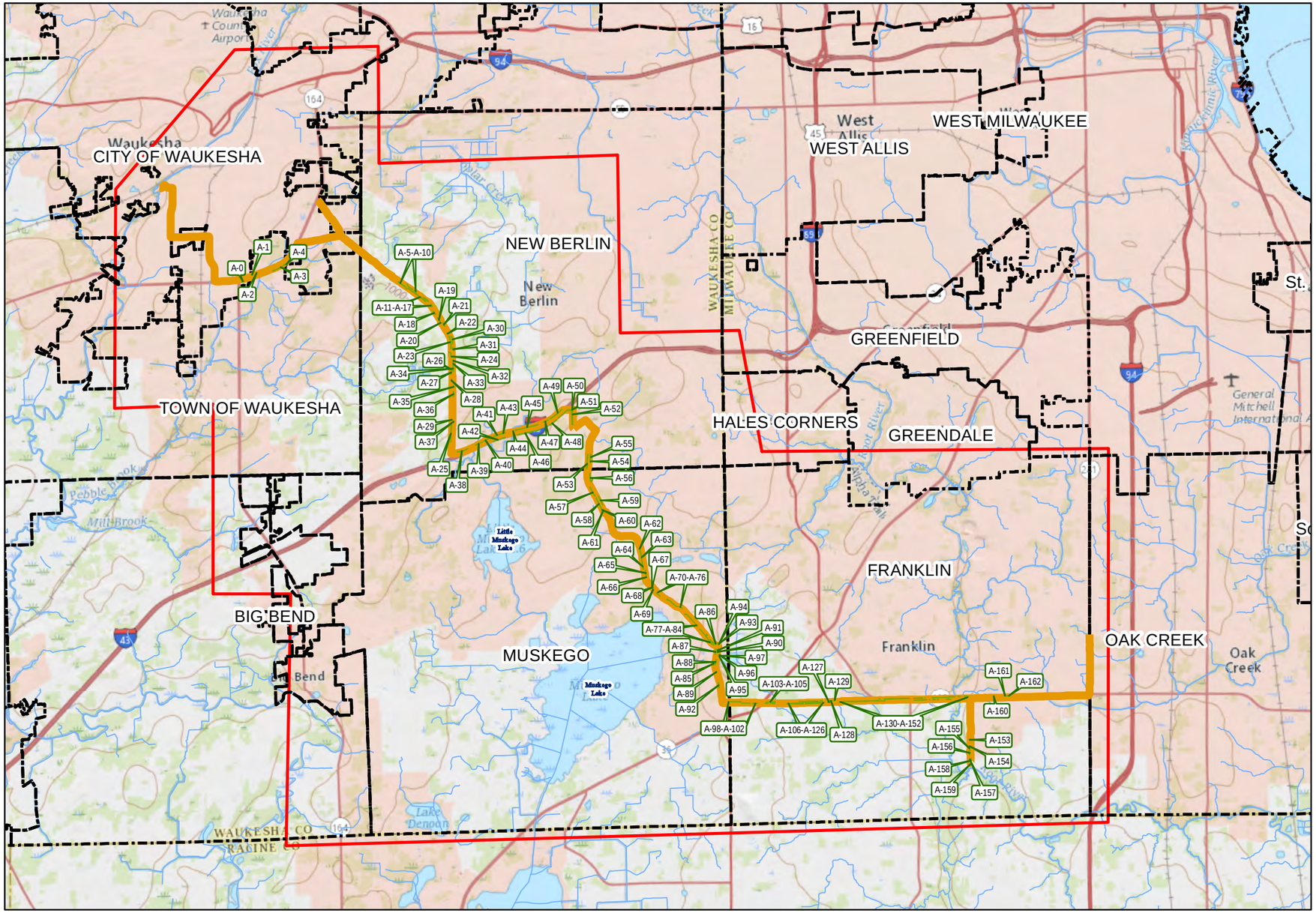
ROUTE 2-AGRICULTURE RESOURCES DESKTOP INVESTIGATION

Date: 7/18/2017

FIGURE NO. 3



Legend

- ROUTE 3 AGRICULTURE AREAS
- A## AGRICULTURE AREAS TAG NO.
- ROUTE 3
- MUNICIPALITIES
- STUDY BOUNDARY

N

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.

1 " = 10,000 '

0 5,000 10,000 20,000

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-OverviewAG_RT3.mxd

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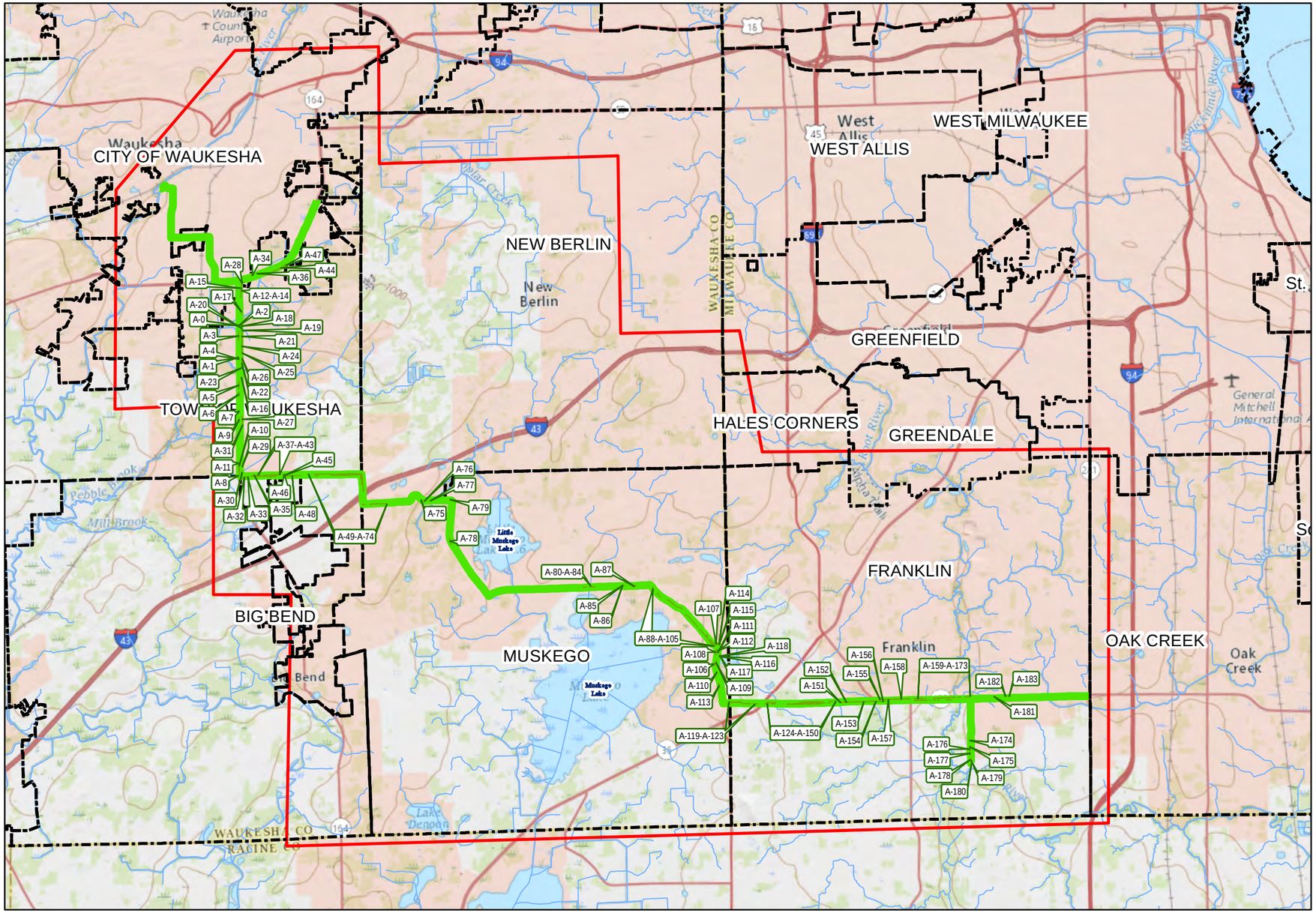
ROUTE 3-AGRICULTURE DESKTOP RESOURCES INVESTIGATION

Date: 7/18/2017

FIGURE NO. 4



Legend

- ROUTE 4 AGRICULTURE AREAS
- A## AGRICULTURE AREAS TAG NO.
- ROUTE 4
- MUNICIPALITIES
- STUDY BOUNDARY

N

Notes

1. BASEMAP IMAGERY FROM ESRI, USGS TOPO.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.

1 " = 10,000 '

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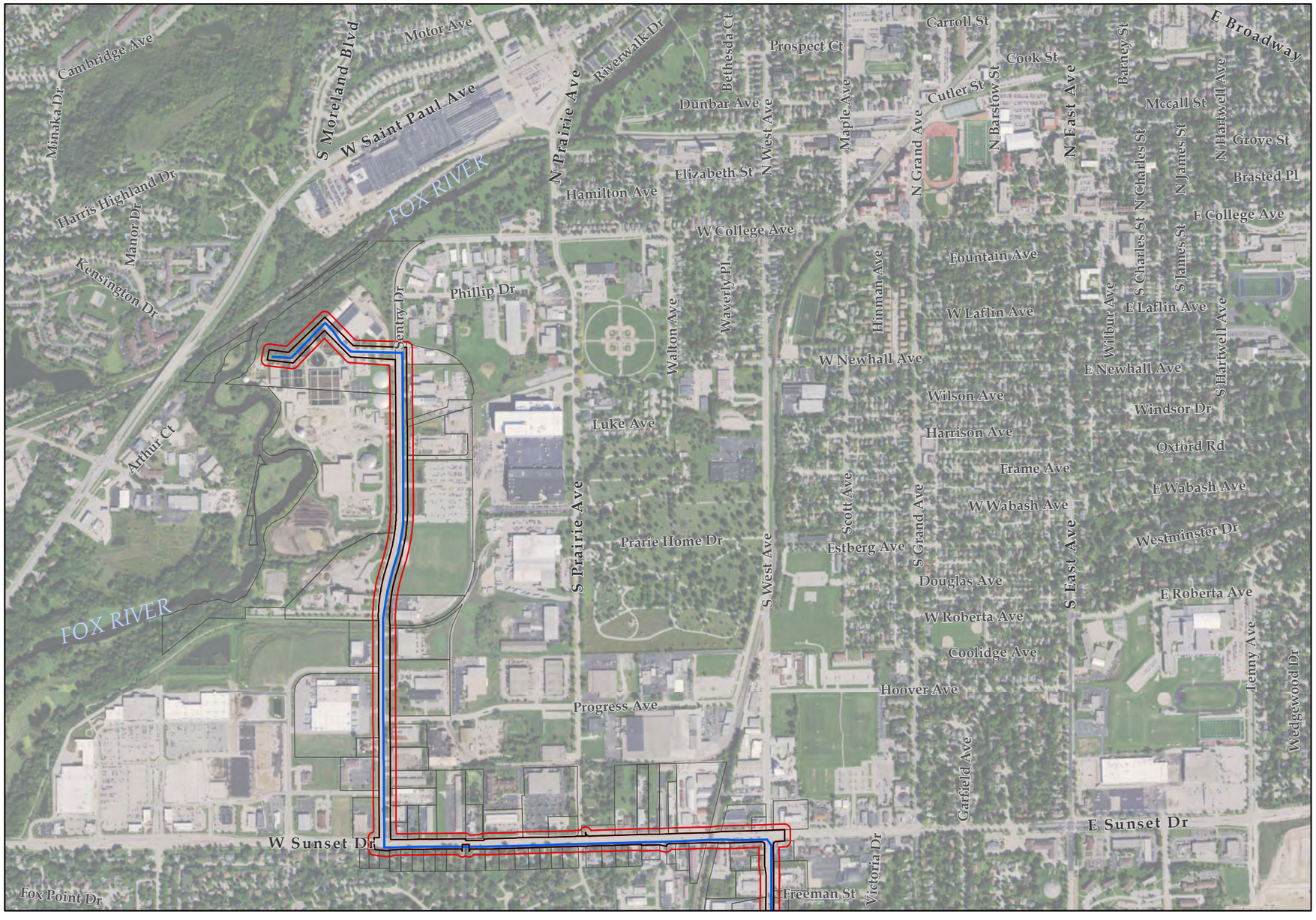
ROUTE 4-AGRICULTURE DESKTOP RESOURCES INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5A



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.
4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

1 " = 1,000 '

0 500 1,000 2,000 Feet

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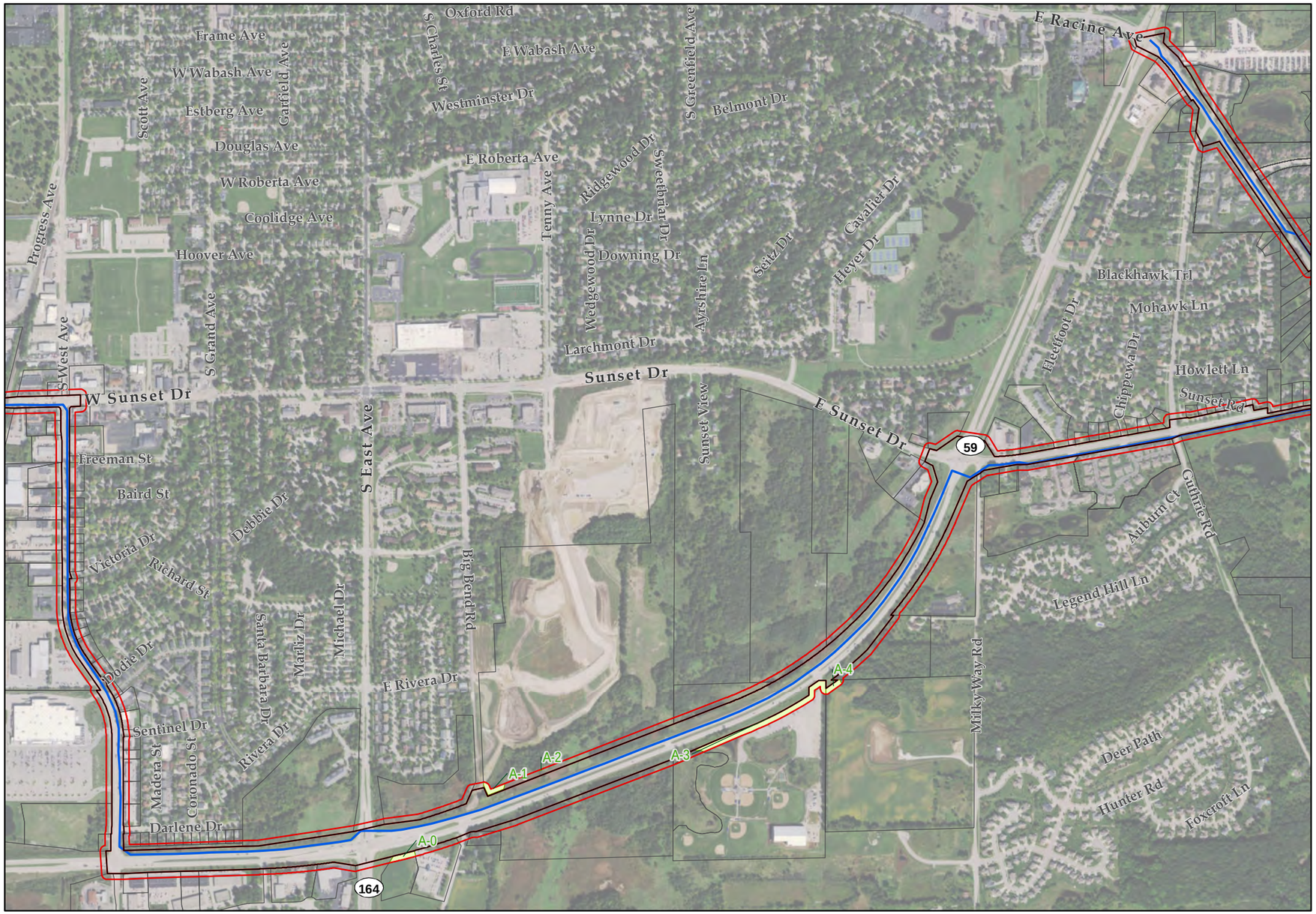
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5B



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

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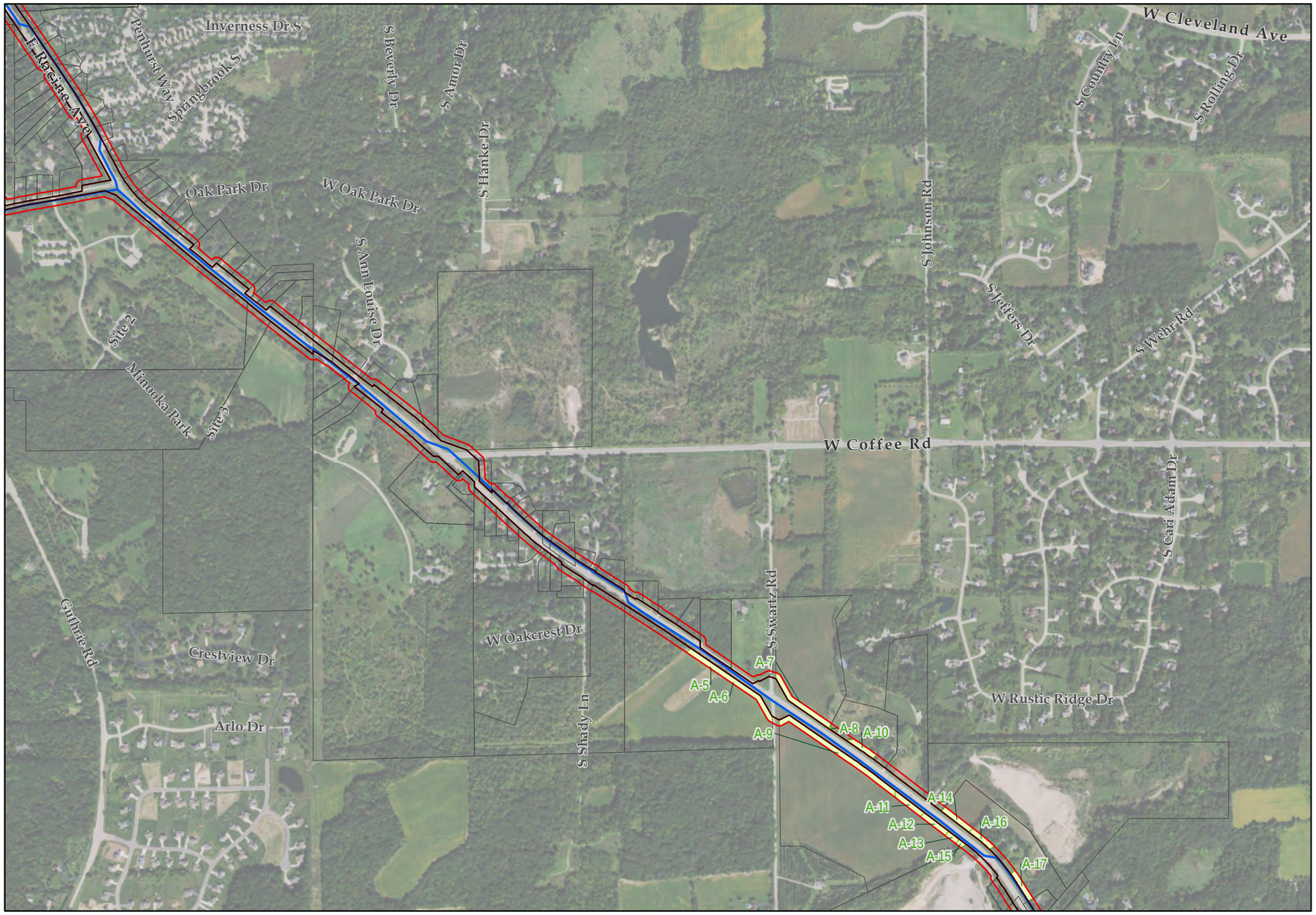
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5C



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
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4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

1 " = 1,000 '

0 500 1,000 2,000 Feet

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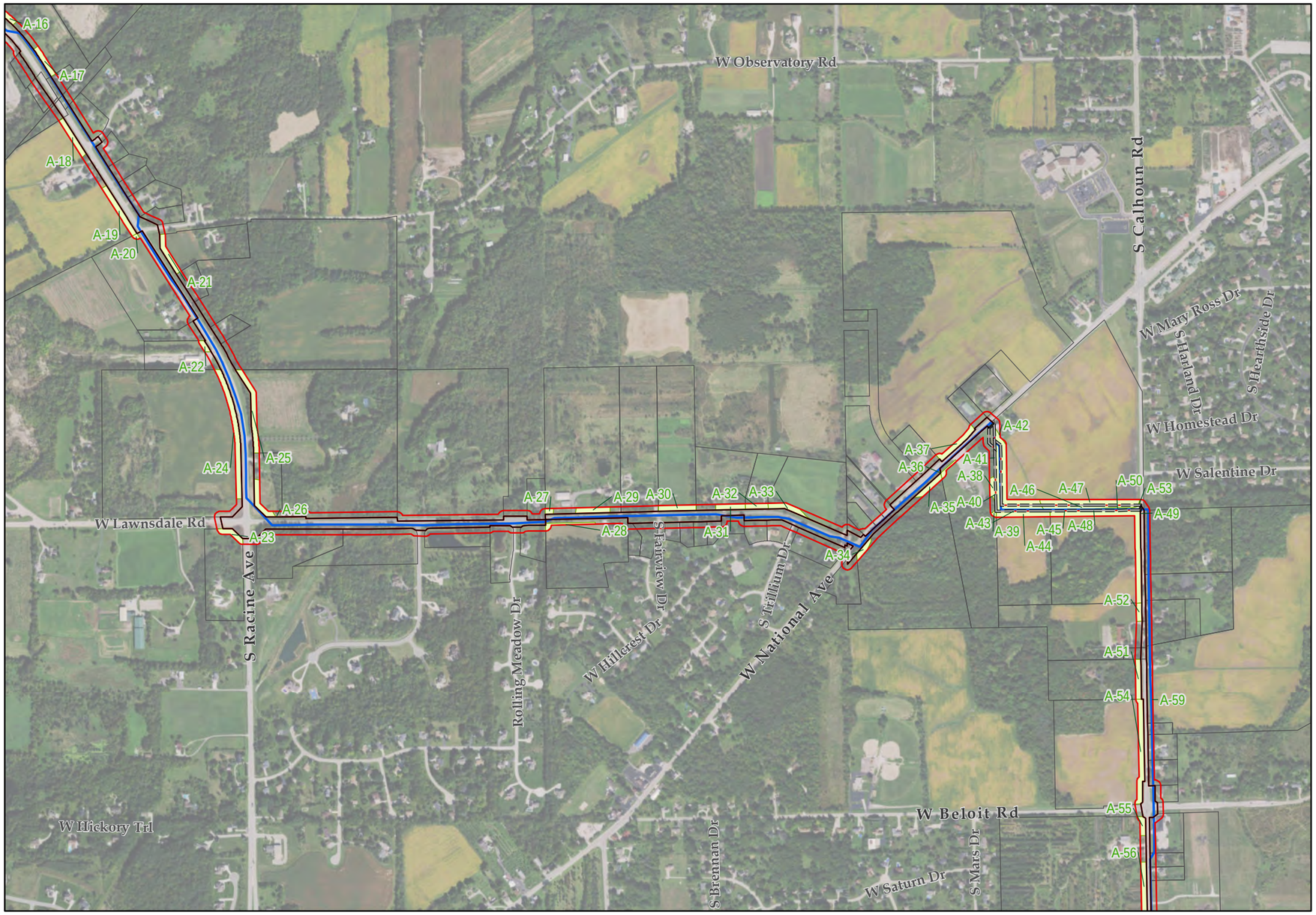
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5D



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.
4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

1 " = 1,000 '

0 500 1,000 2,000 Feet

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Date: 7/18/2017

Plotted: 7/18/2017
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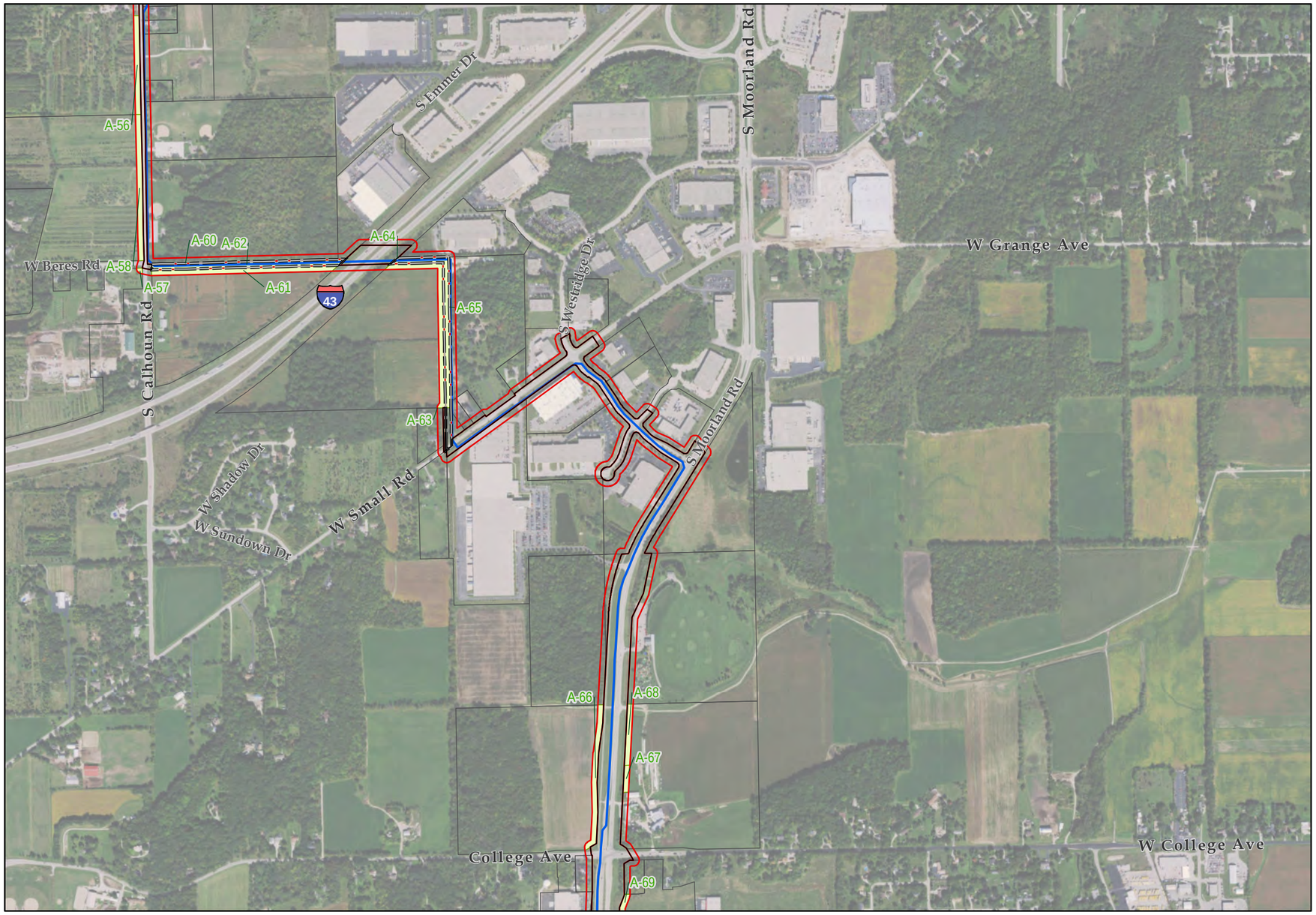
FIGURE NO. 5E



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.
4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/18/2017
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Great Lakes Water Supply Program

ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5F

Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.
4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT2_Agmb.mxd

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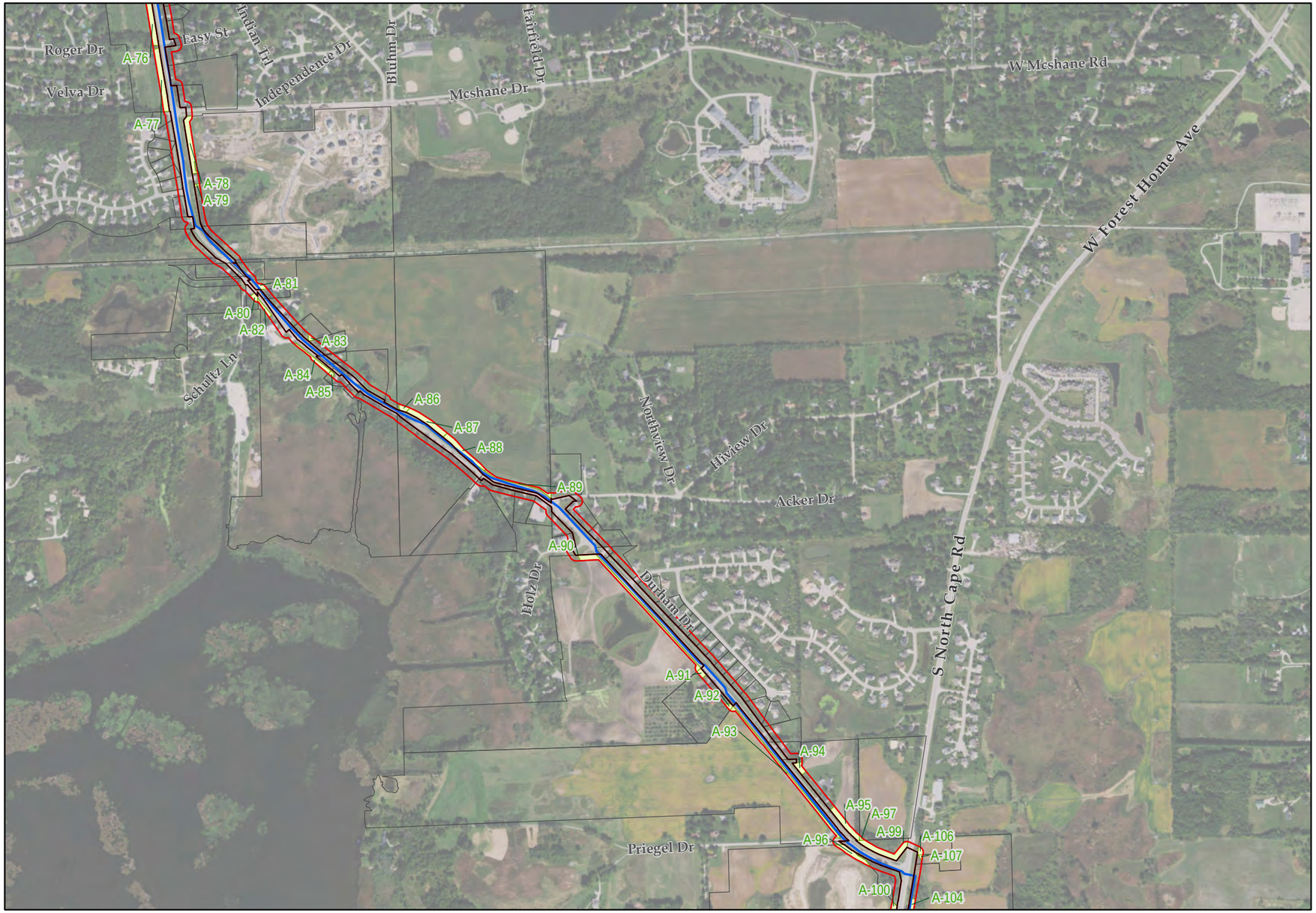
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5G



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
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- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

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Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344263344-GHv2-RT2_Agmb.mxd

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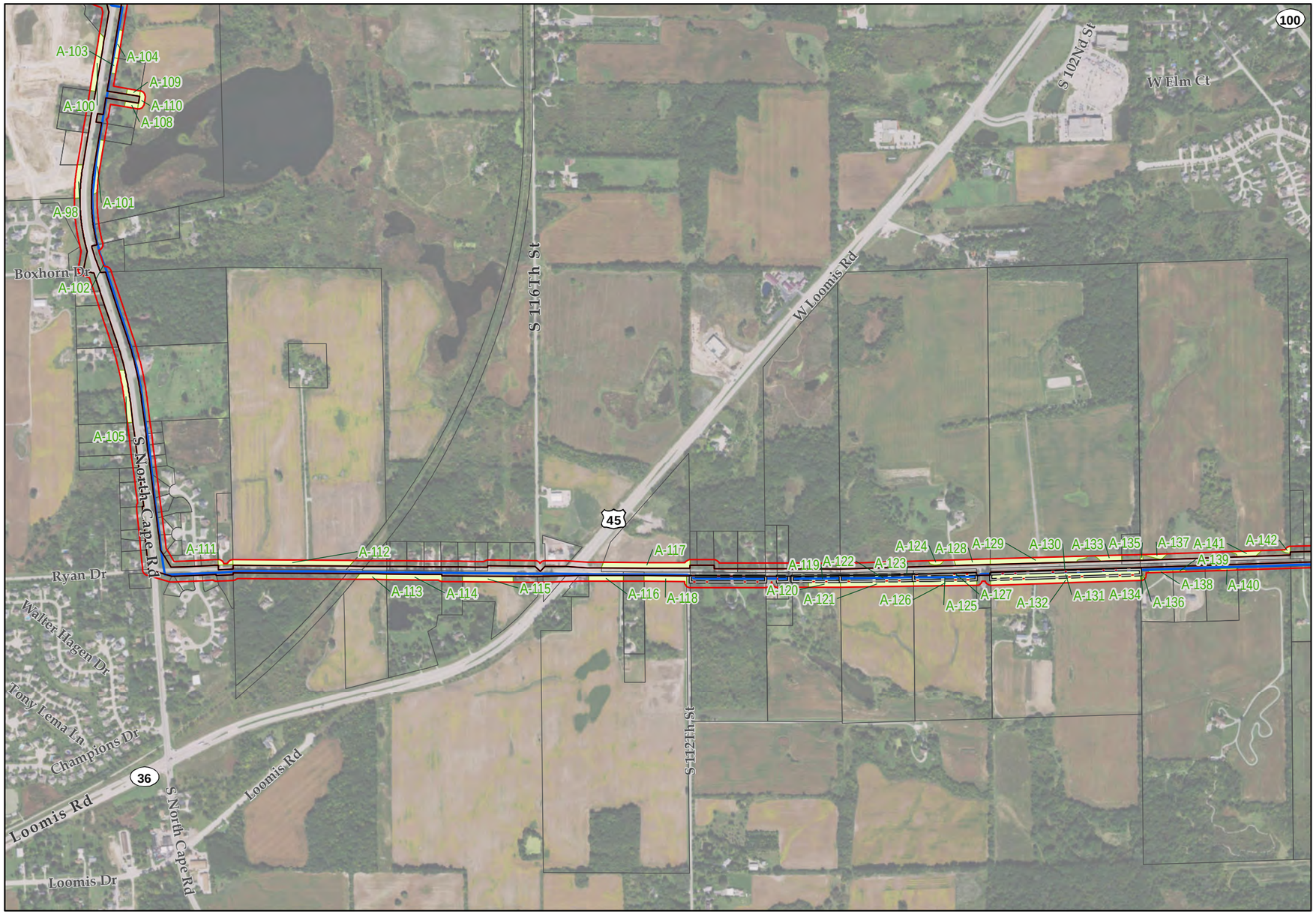
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5H



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

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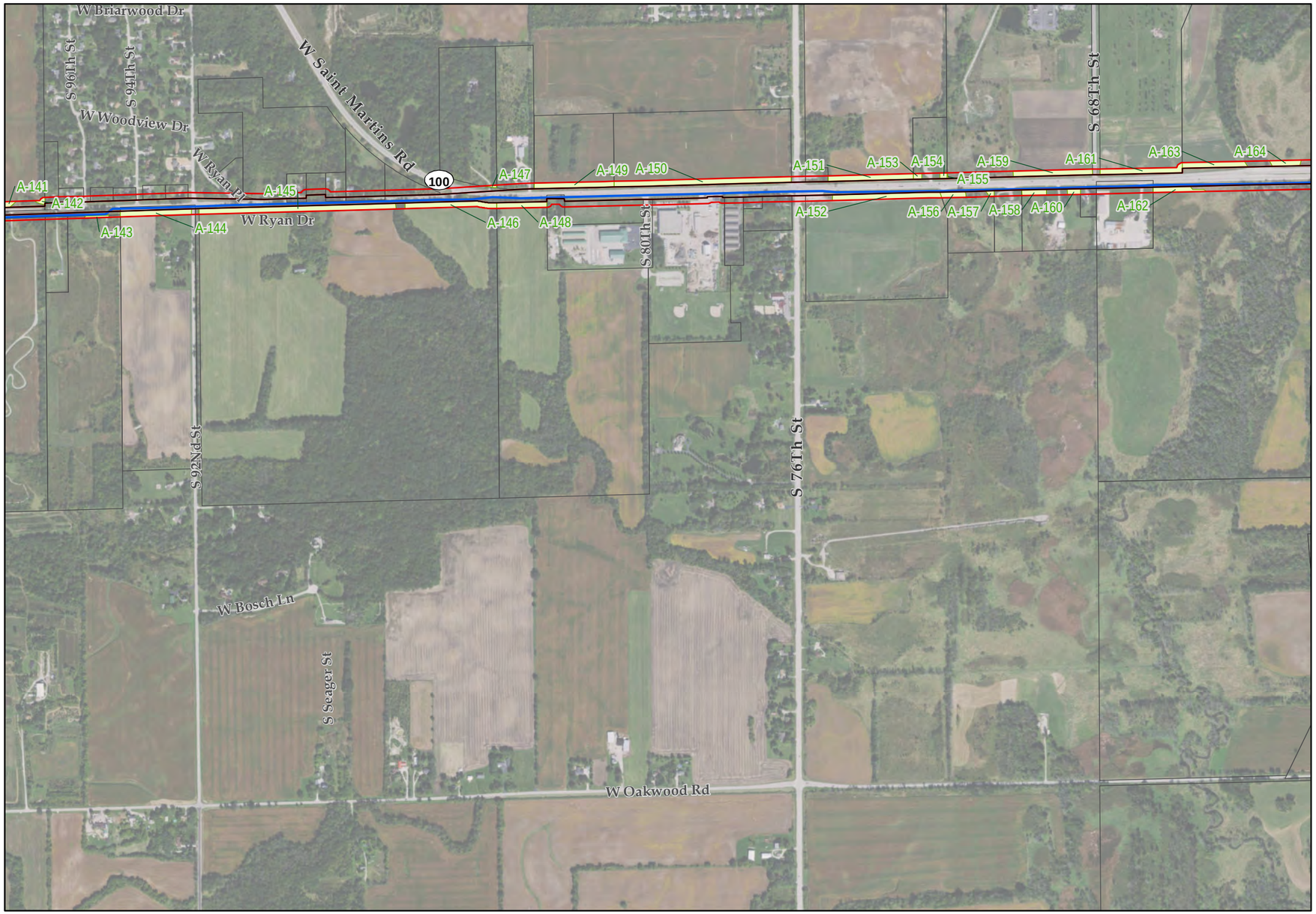
Date: 7/18/2017

FIGURE NO. 5I



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

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Plotted: 7/18/2017
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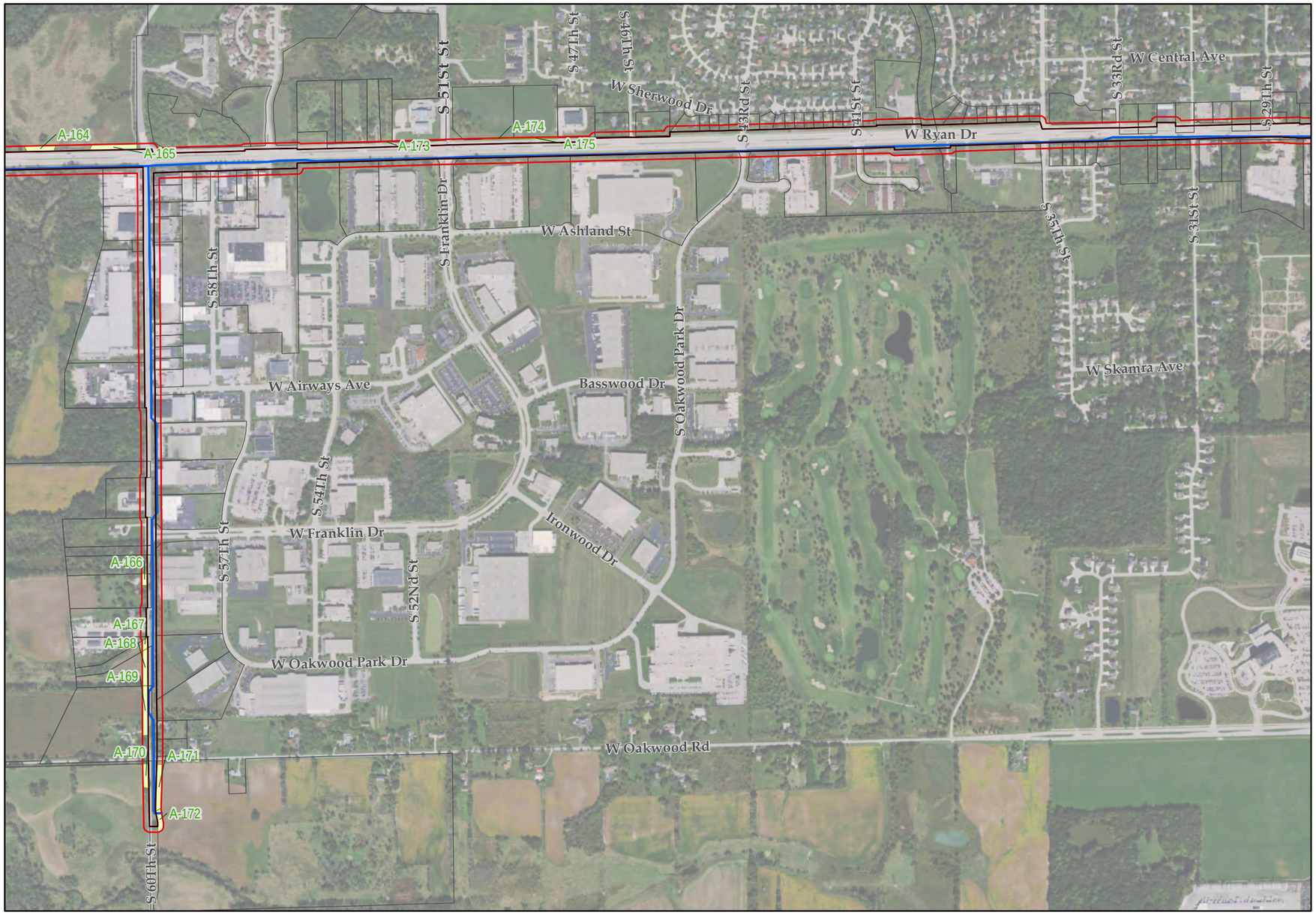
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5J



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

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ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 5K

Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 2
- ROUTE 2 AGRICULTURE AREAS
- PARCEL BOUNDARIES
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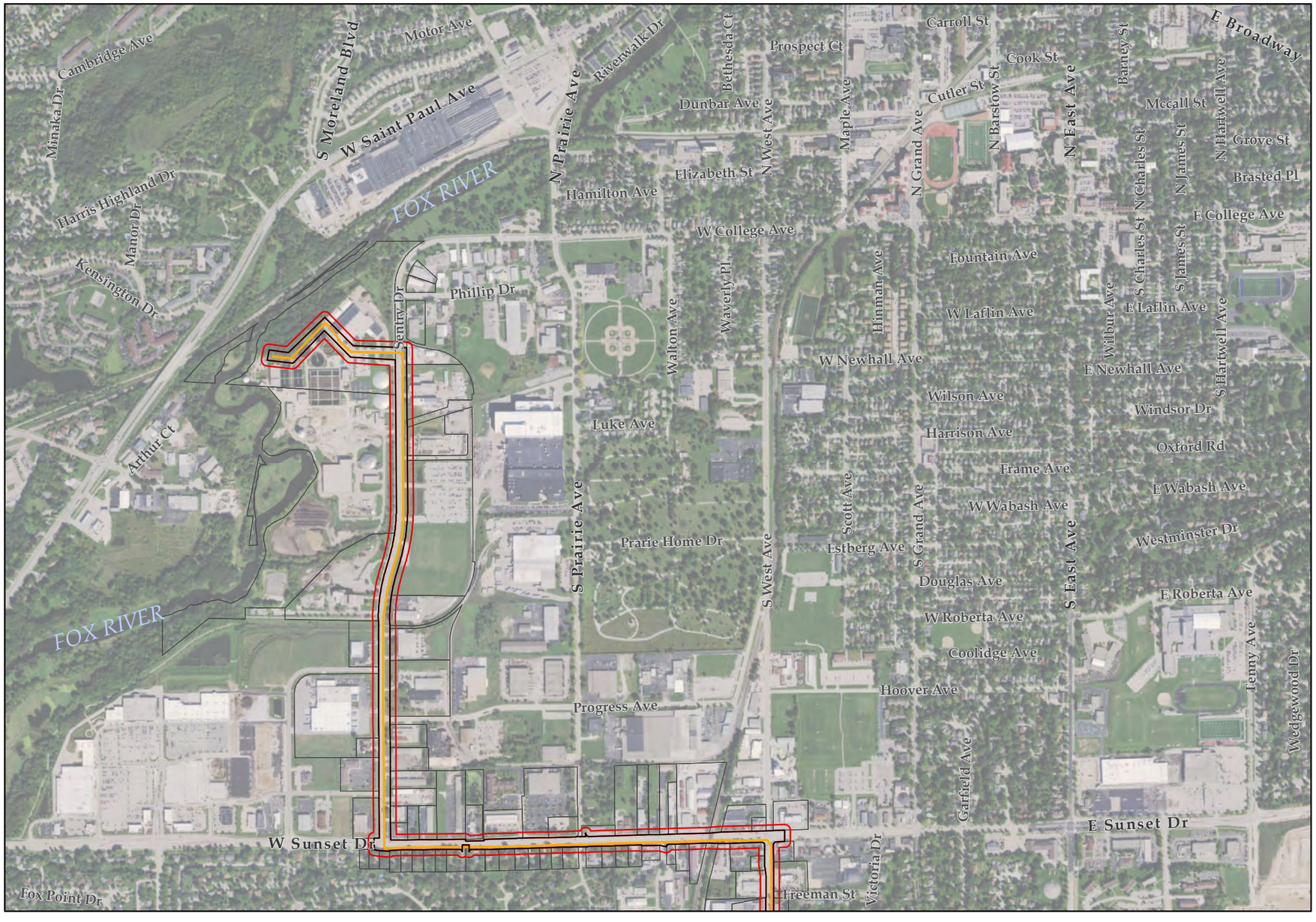
ROUTE 2-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6A



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

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0 500 1,000 2,000 Feet

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT3_Agmb.mxd

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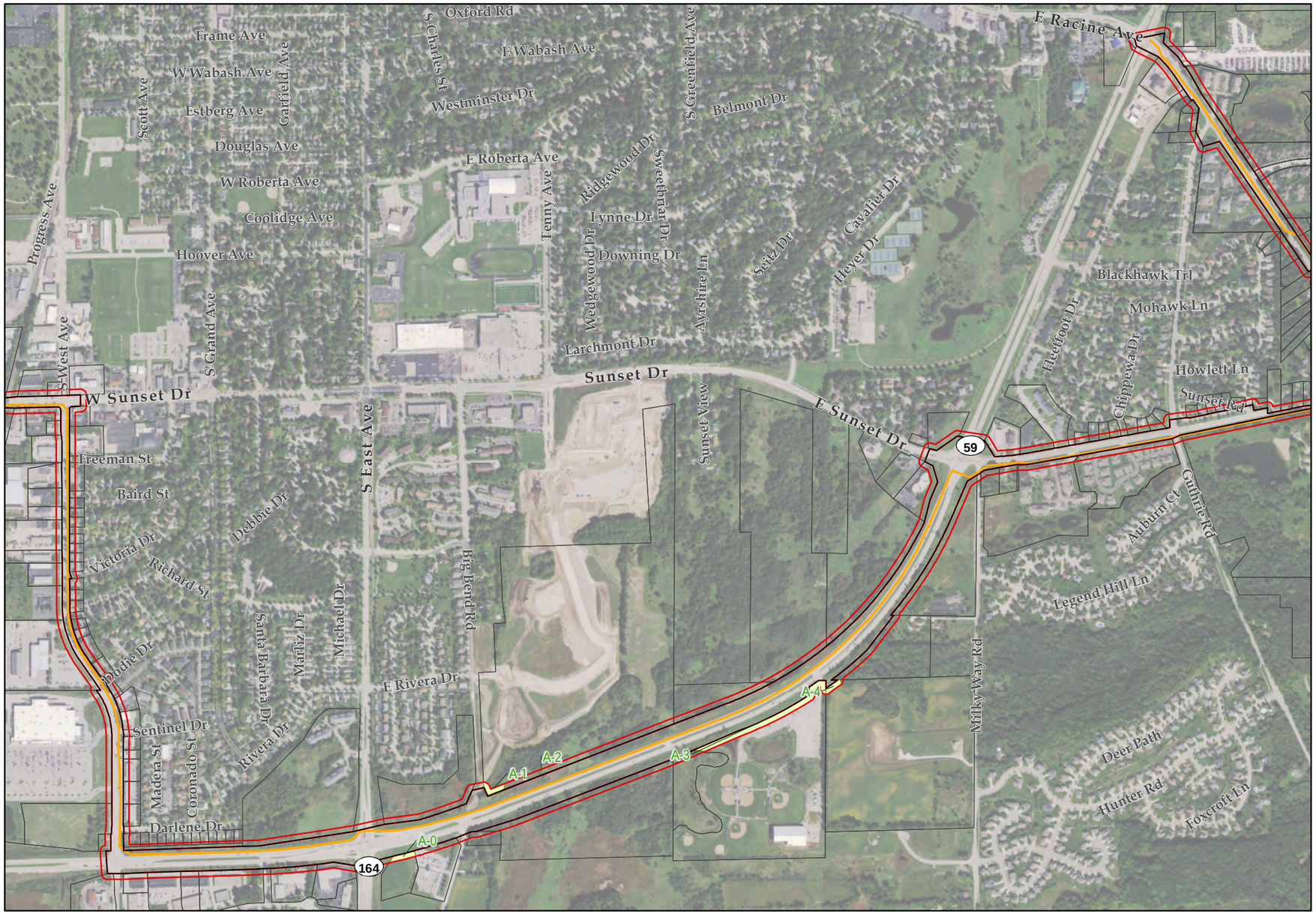
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6B



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

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Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344263344-GHv2-RT3_Agmb.mxd

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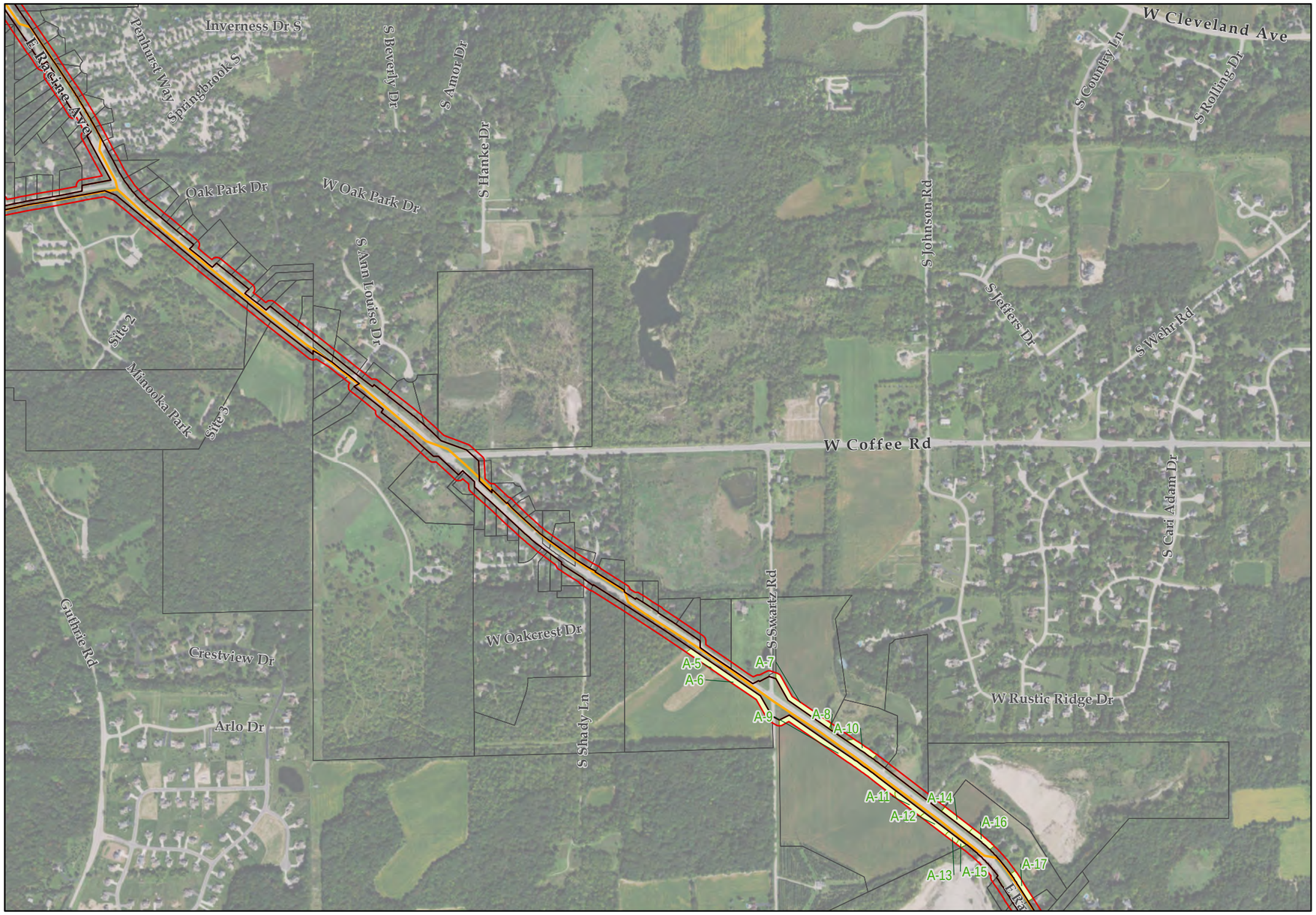
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6C



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

Notes

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0 500 1,000 2,000 Feet

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT3_Agmb.mxd

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ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6D

Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

Notes

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1 " = 1,000 '

0 500 1,000 2,000 Feet

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneralWaukeshaPipeline\2016_263344\263344-GHv2-RT3_Agmb.mxd

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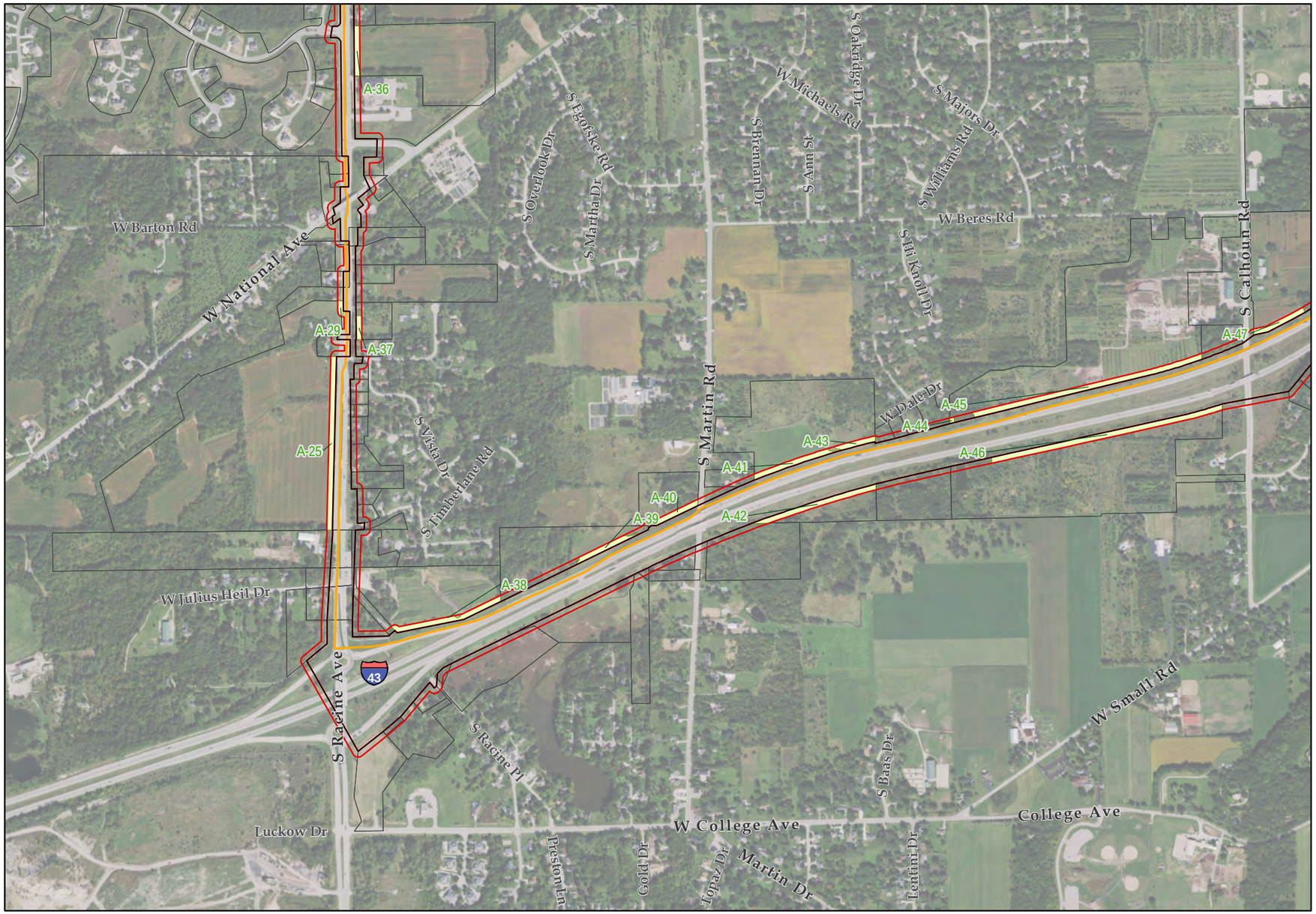
Great Lakes Water Supply Program

ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6E



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

Notes

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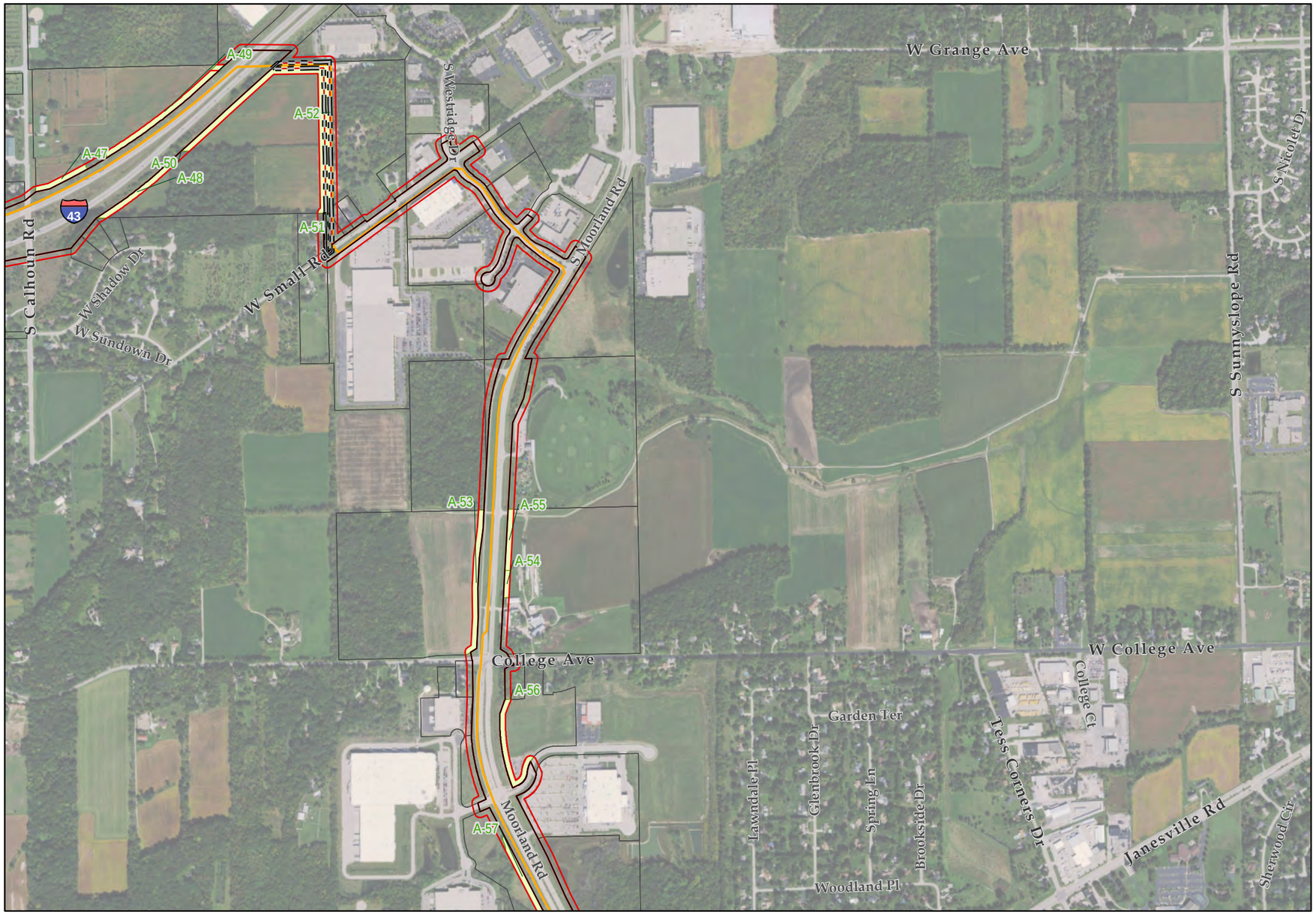
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6F



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
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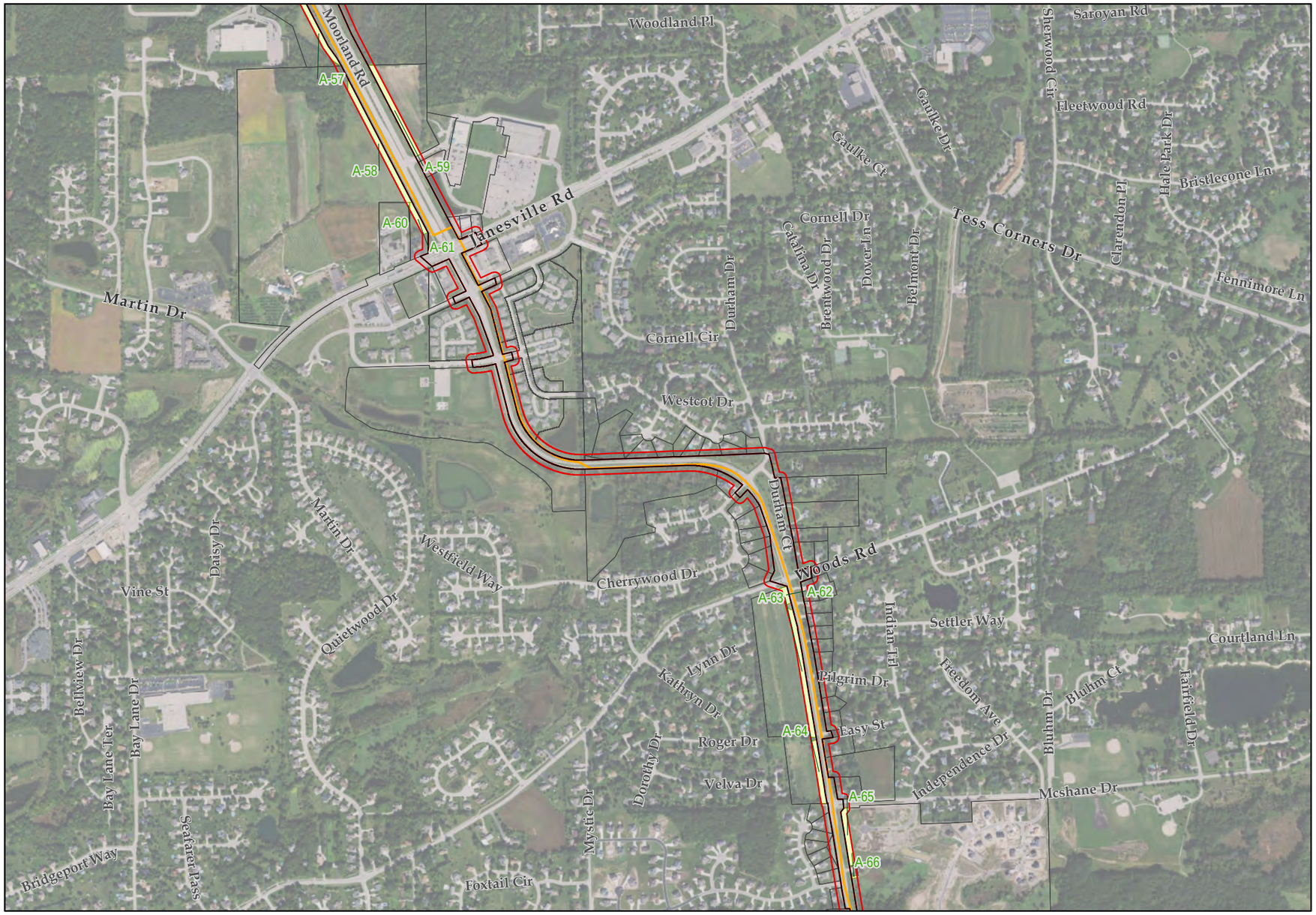
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6G



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
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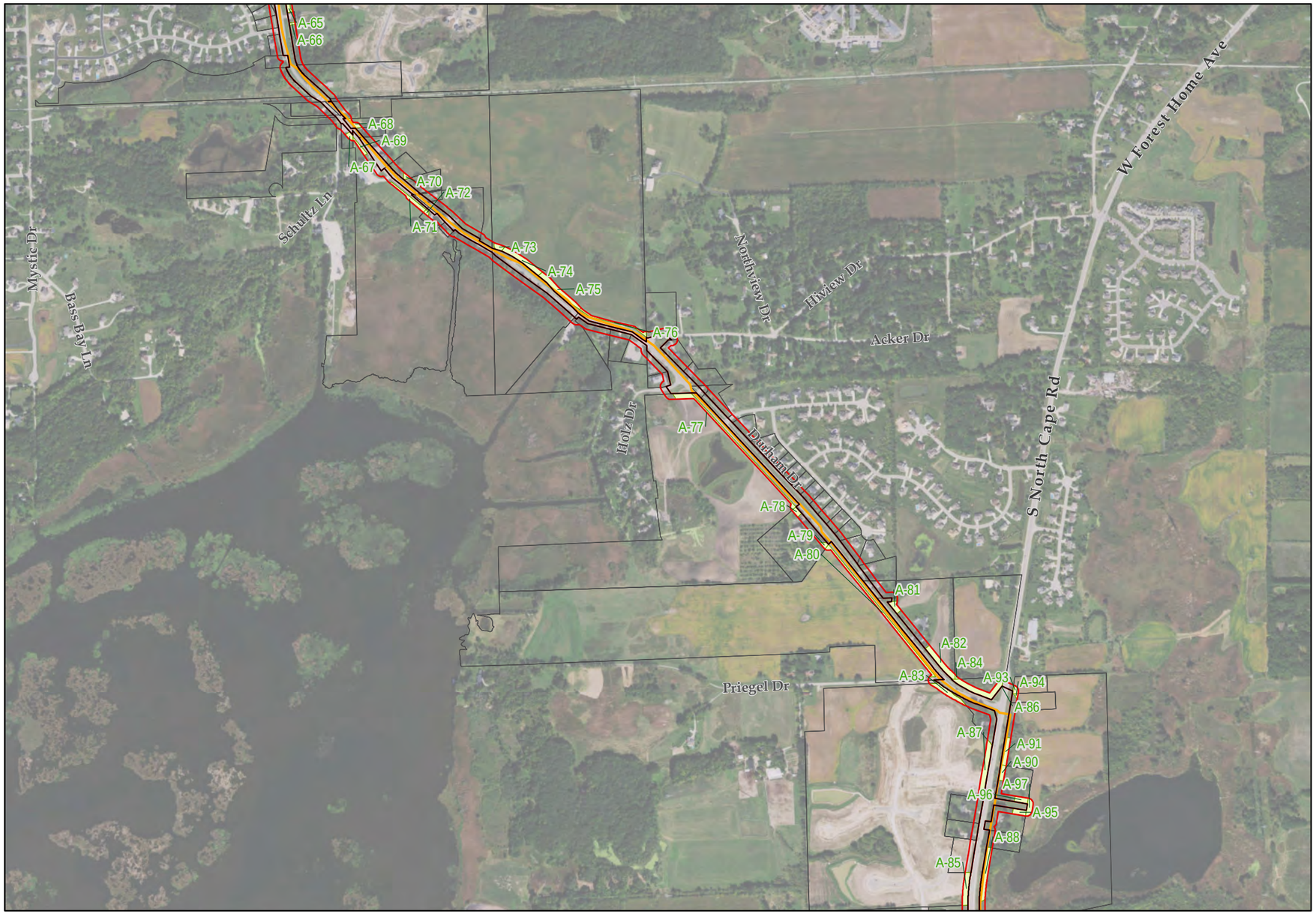
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6H



Legend

- 50' BUFFER
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- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
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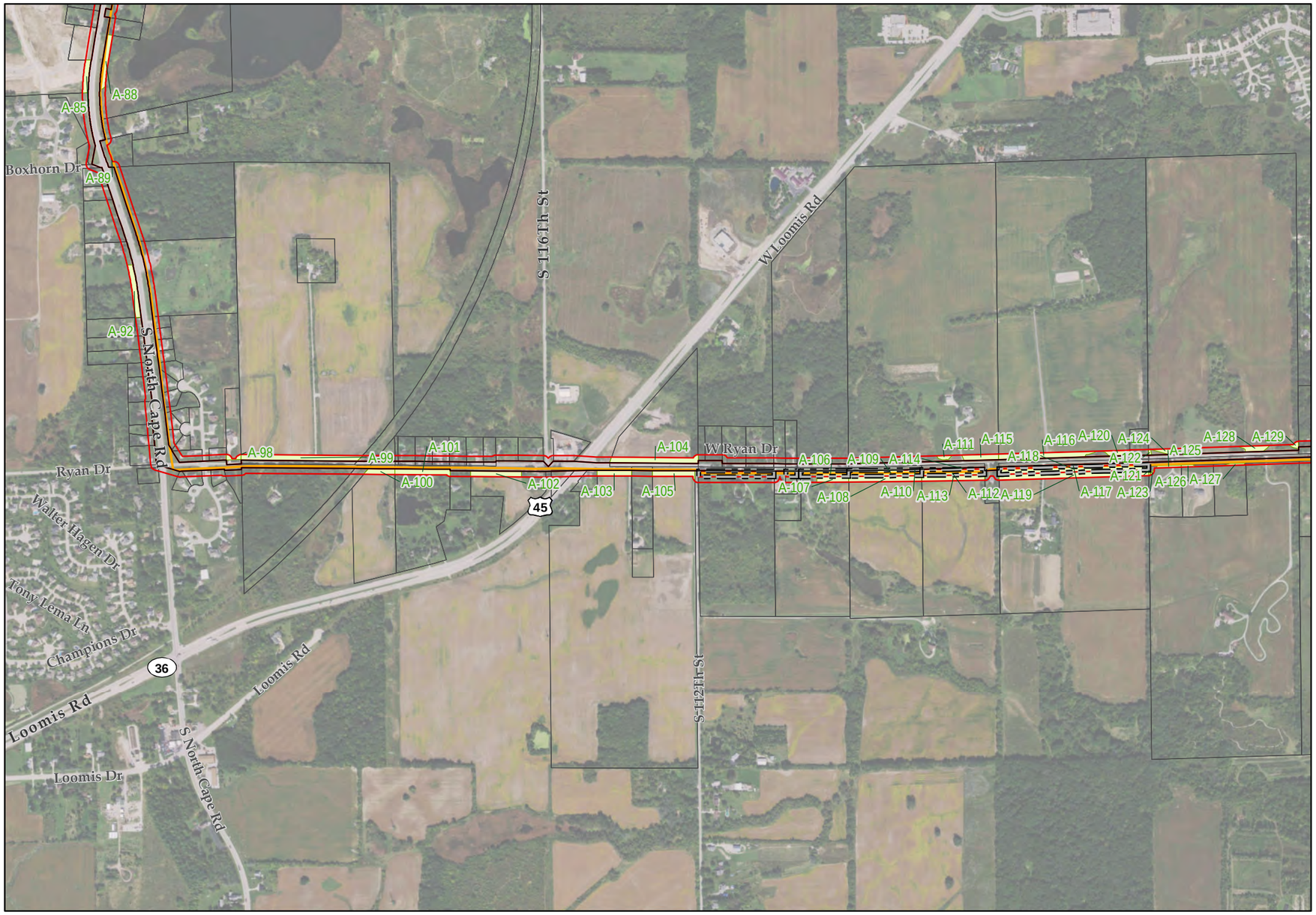
FIGURE NO. 6I



Legend

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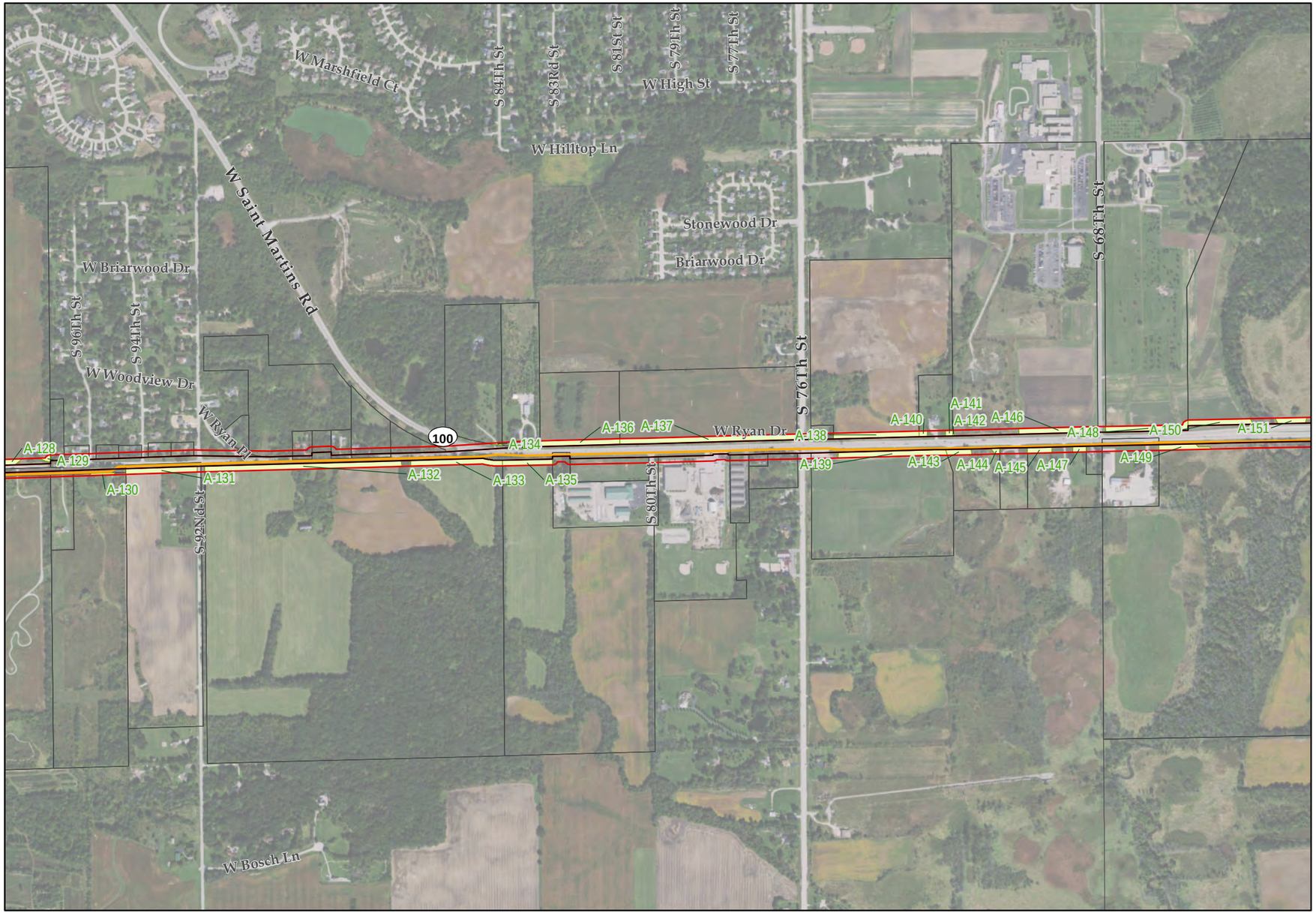
FIGURE NO. 6J



Legend

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- EASEMENT
- RIGHT OF WAY (ROW)
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- ROUTE 3 AGRICULTURE AREAS
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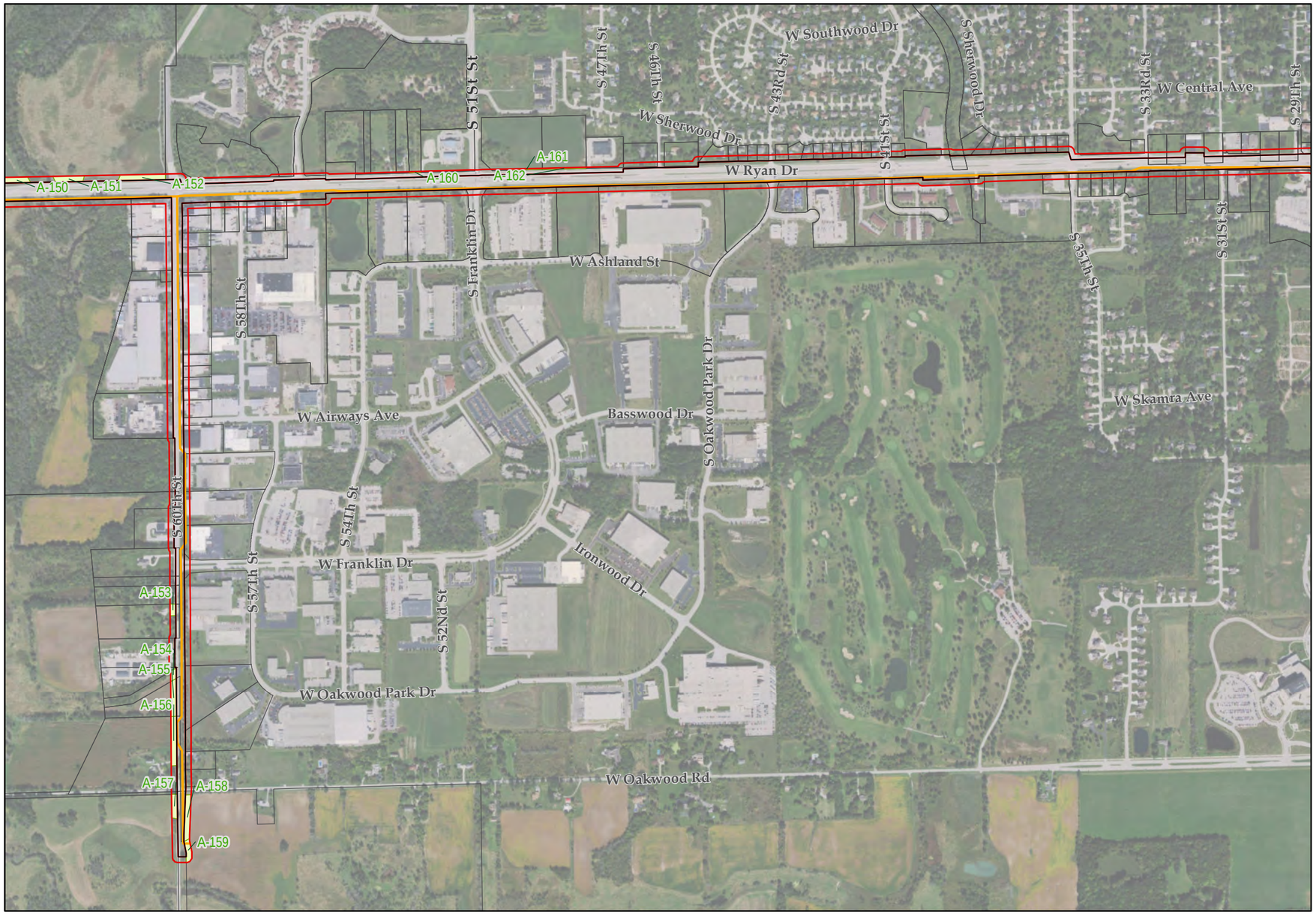
Date: 7/18/2017

FIGURE NO. 6K



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

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0 500 1,000 2,000 Feet

Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT3_Agmb.mxd

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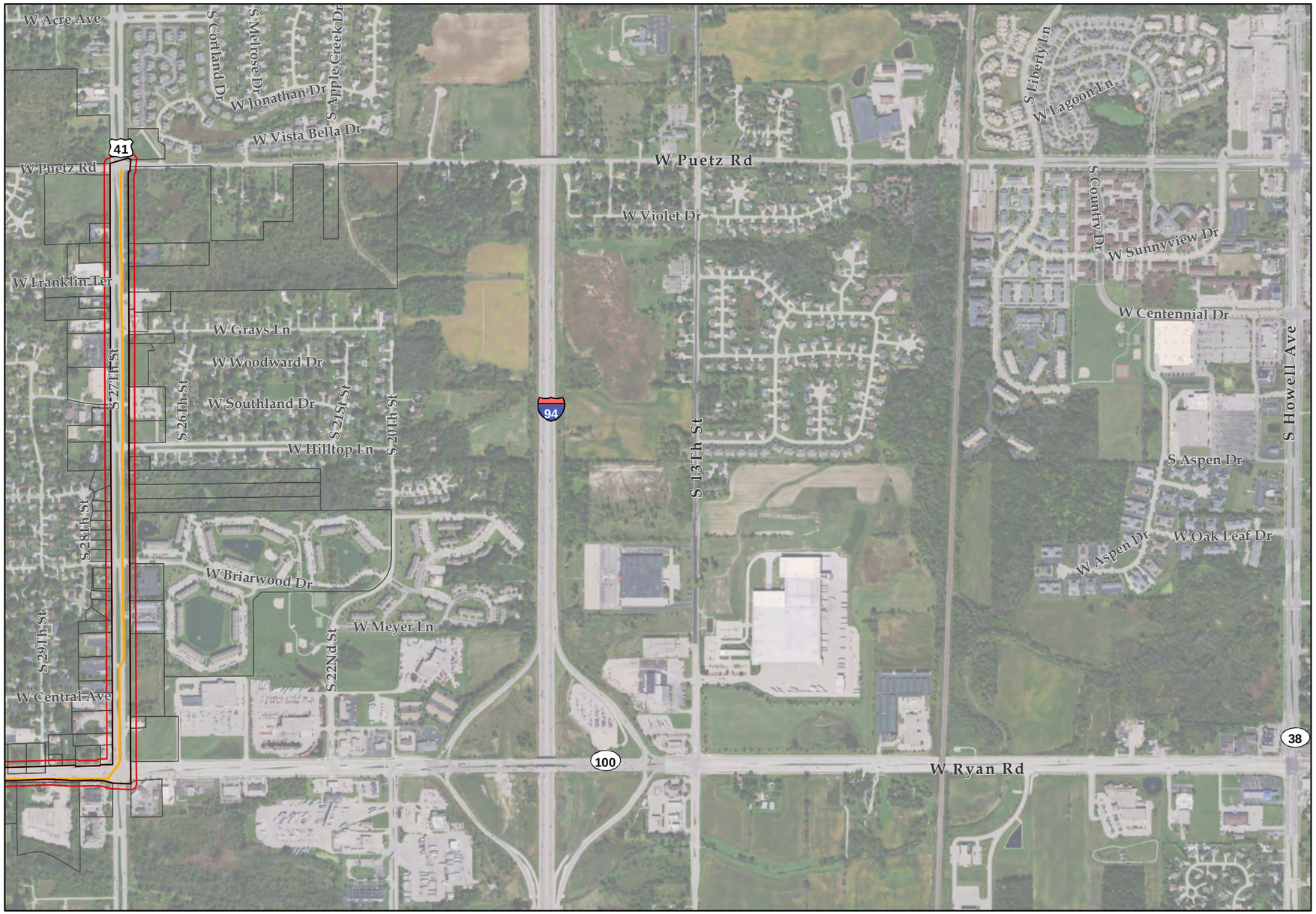
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 6L



Legend

- 50' BUFFER
- EASEMENT
- RIGHT OF WAY (ROW)
- ROUTE 3
- ROUTE 3 AGRICULTURE AREAS
- A-## AGRICULTURE TAG NO.

Notes

1. BASEMAP IMAGERY FROM ESRI, NAIP 2015.
2. AGRICULTURE AREAS FROM WAUKESHA COUNTY OPEN DATA PORTAL WEBSITE, LANDUSE 2010.
3. MILWAUKEE COUNTY AGRICULTURE AREAS FROM MILWAUKEE COUNTY LANDUSE 2010 LAYER.
4. REFER TO ATTACHED TABLES FOR AG PARCEL INFORMATION CORRESPONDING WITH A-1, A-2, ETC.

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0 500 1,000 2,000 Feet

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Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT3_Agmb.mxd

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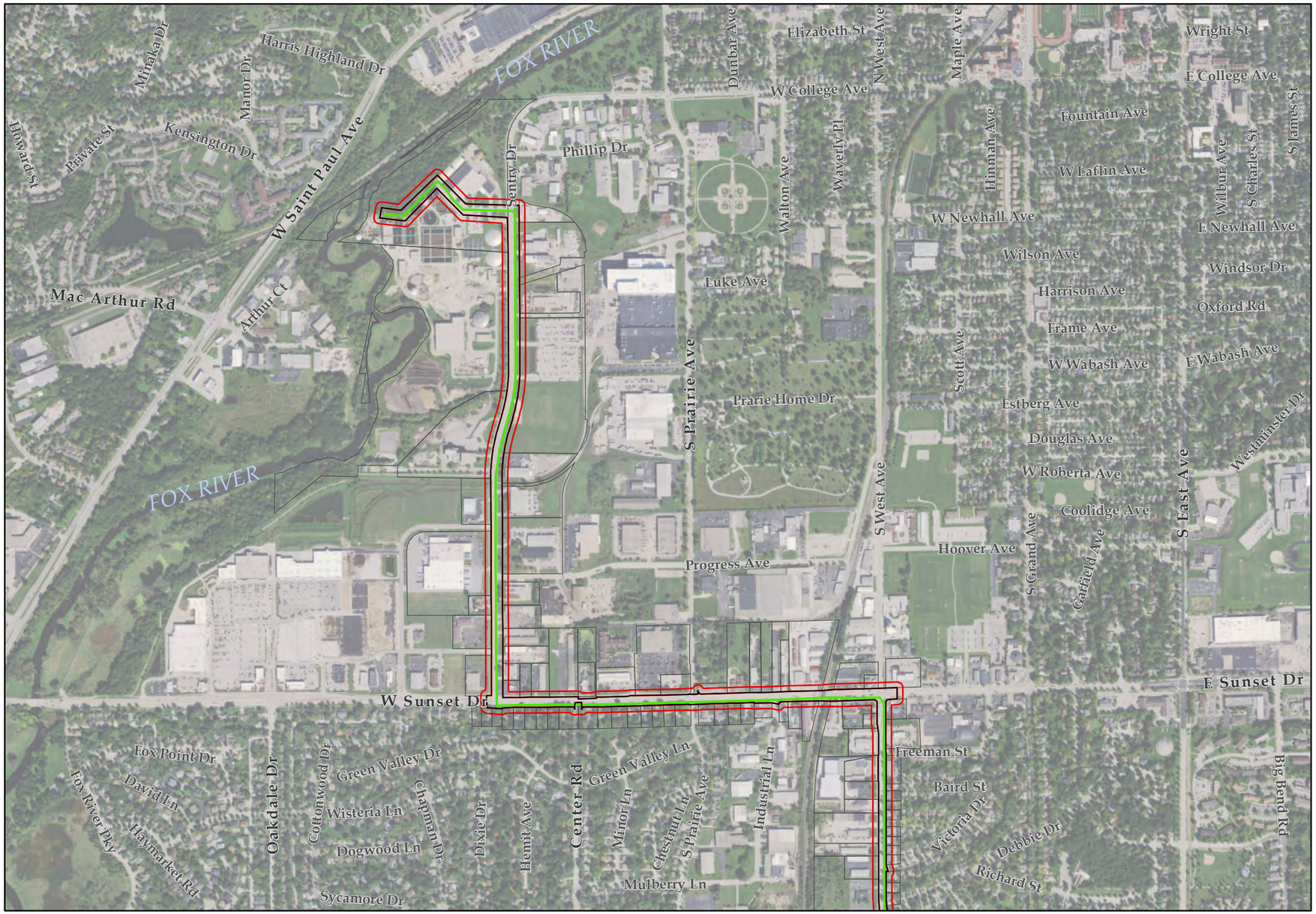
ROUTE 3-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7A



Legend

- 50' BUFFER
- 50' BUFFER WE ENERGIES CORRIDOR
- EASEMENT
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- ROUTE 4
- ROUTE 4 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

Notes

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Plotted: 7/18/2017
Document Path: E:\WetlandsGeneral\WaukeshaPipeline\2016_263344\263344-GHv2-RT4_Agmb.mxd

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ROUTE 4-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7B

Legend

- 50' BUFFER
- 50' BUFFER WE ENERGIES CORRIDOR
- EASEMENT
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- ROUTE 4
- ROUTE 4 AGRICULTURE AREAS
- PARCEL BOUNDARIES
- A-## AGRICULTURE TAG NO.

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Plotted: 7/18/2017
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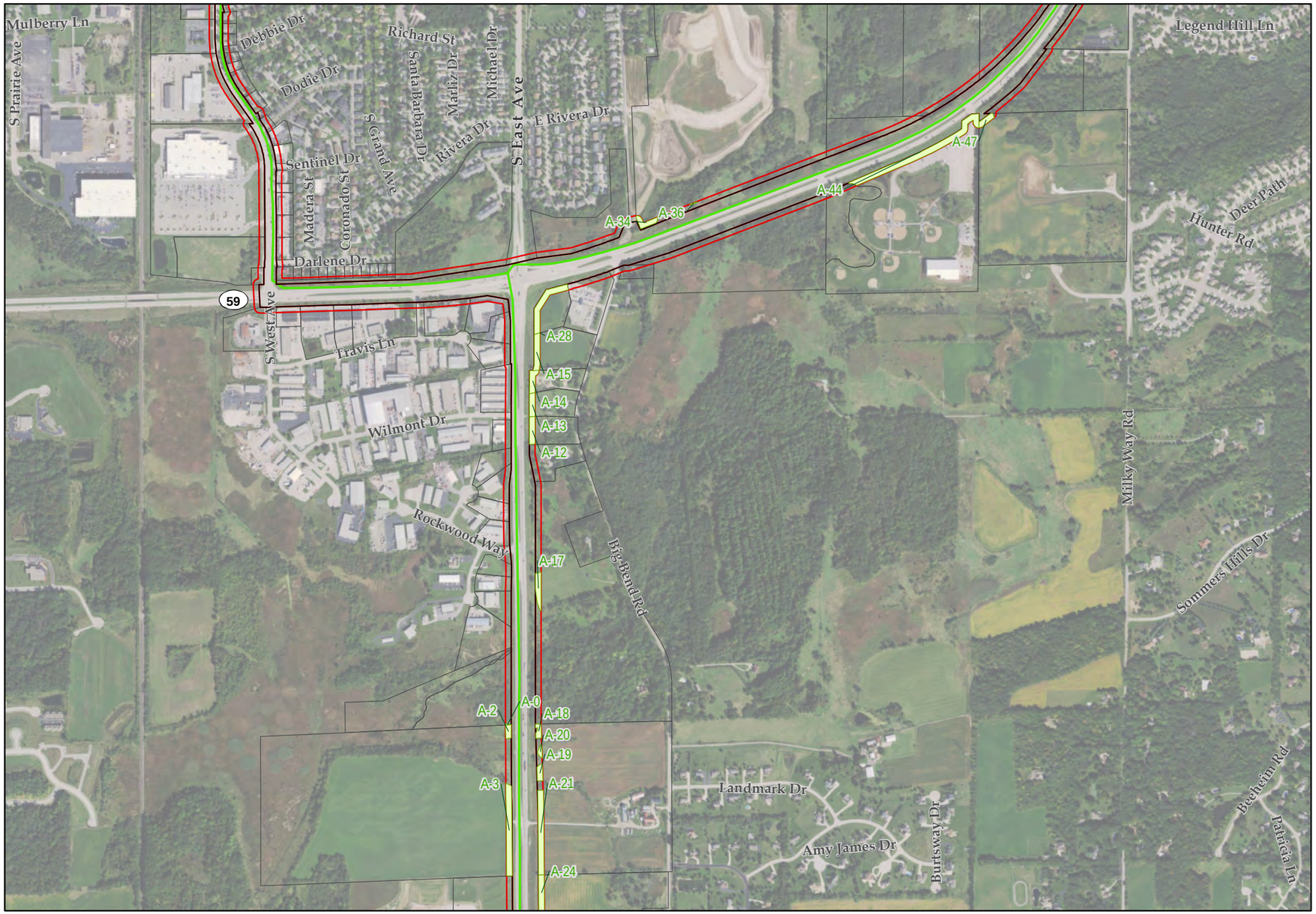
Date: 7/18/2017

FIGURE NO. 7C



Legend

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- EASEMENT
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
- ROUTE 4
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- PARCEL BOUNDARIES
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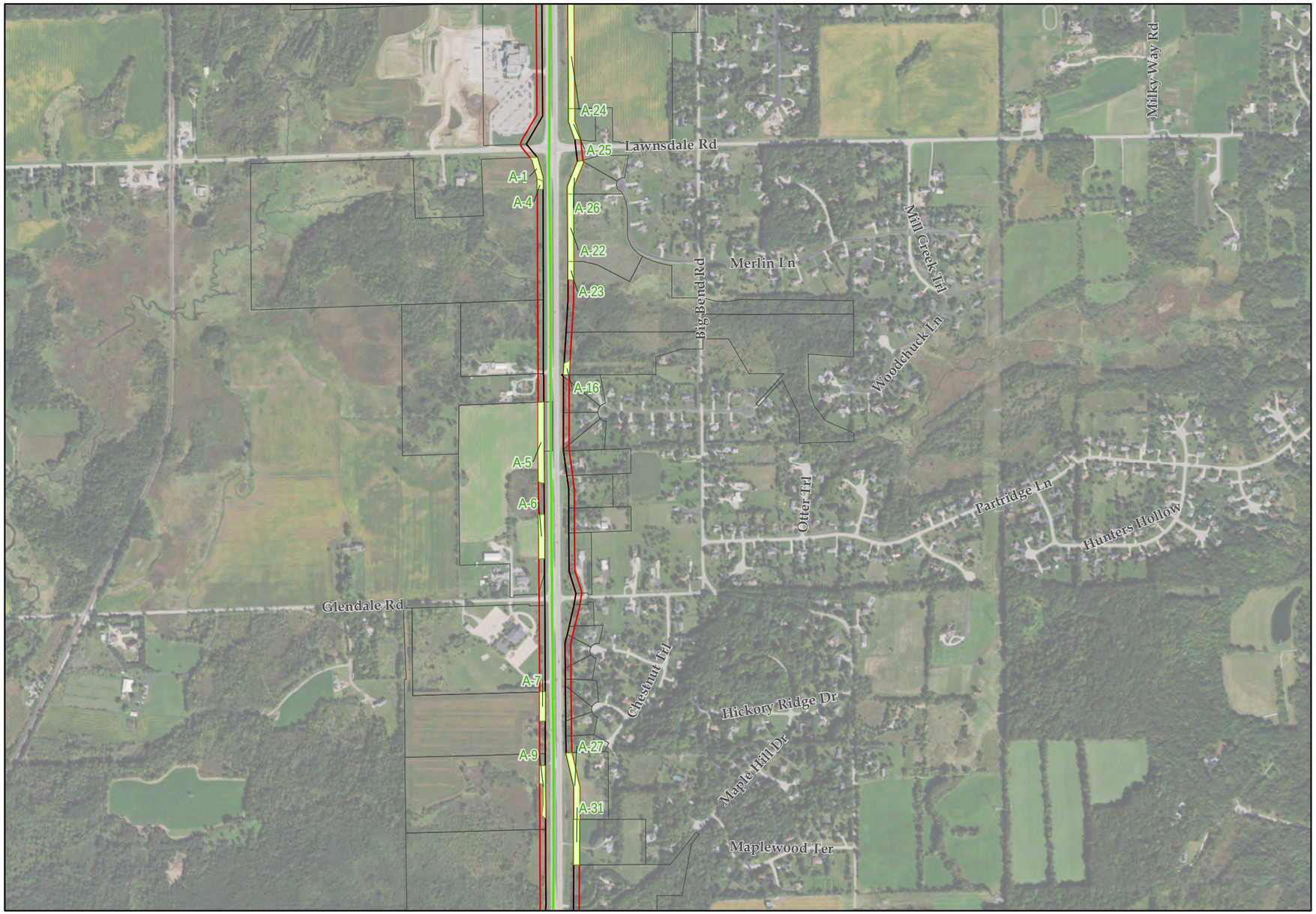
Date: 7/18/2017

FIGURE NO. 7D



Legend

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- 50' BUFFER WE ENERGIES CORRIDOR
- EASEMENT
- RIGHT OF WAY (ROW)
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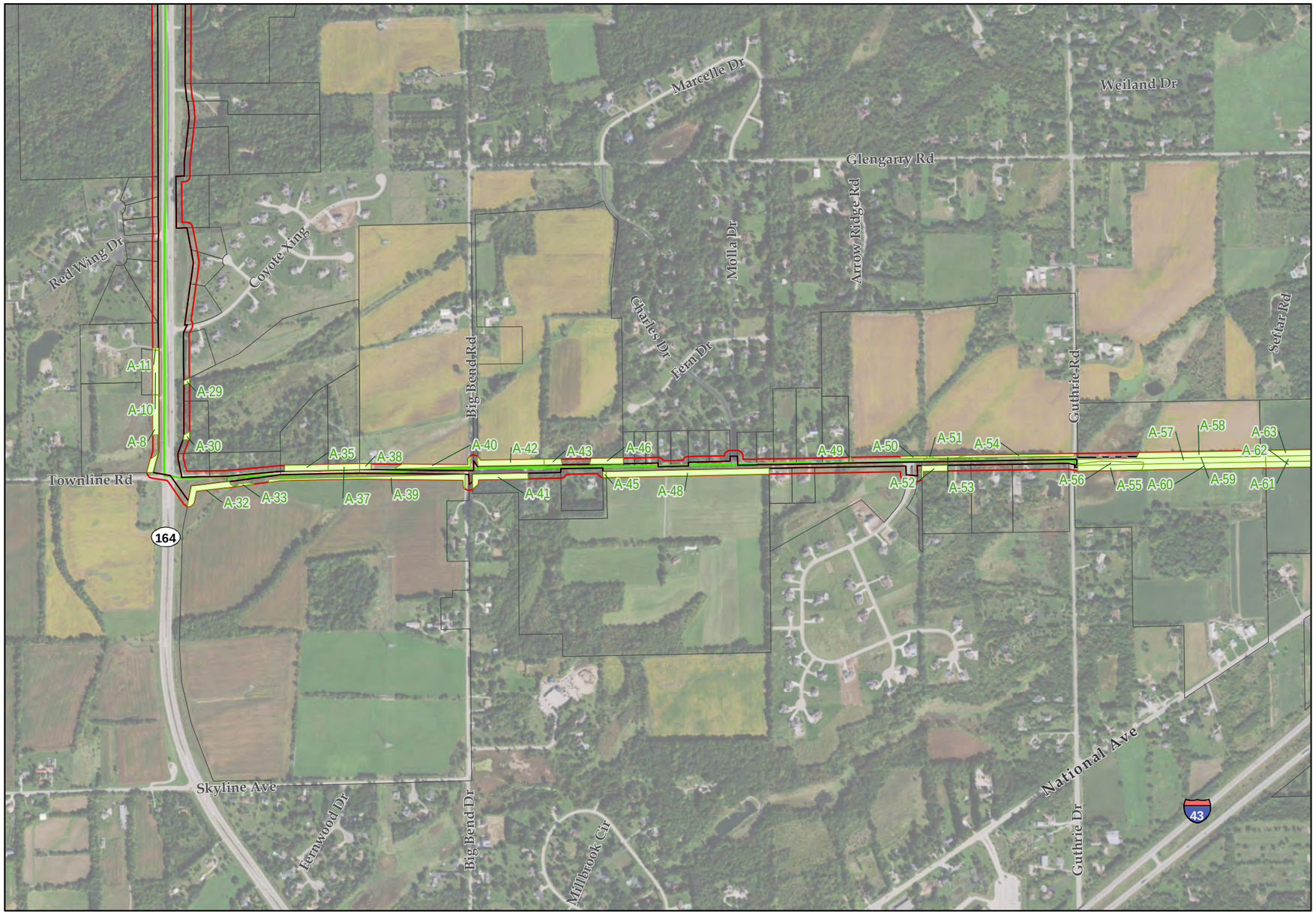
Date: 7/18/2017

FIGURE NO. 7E



Legend

- 50' BUFFER
- 50' BUFFER WE ENERGIES CORRIDOR
- EASEMENT
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
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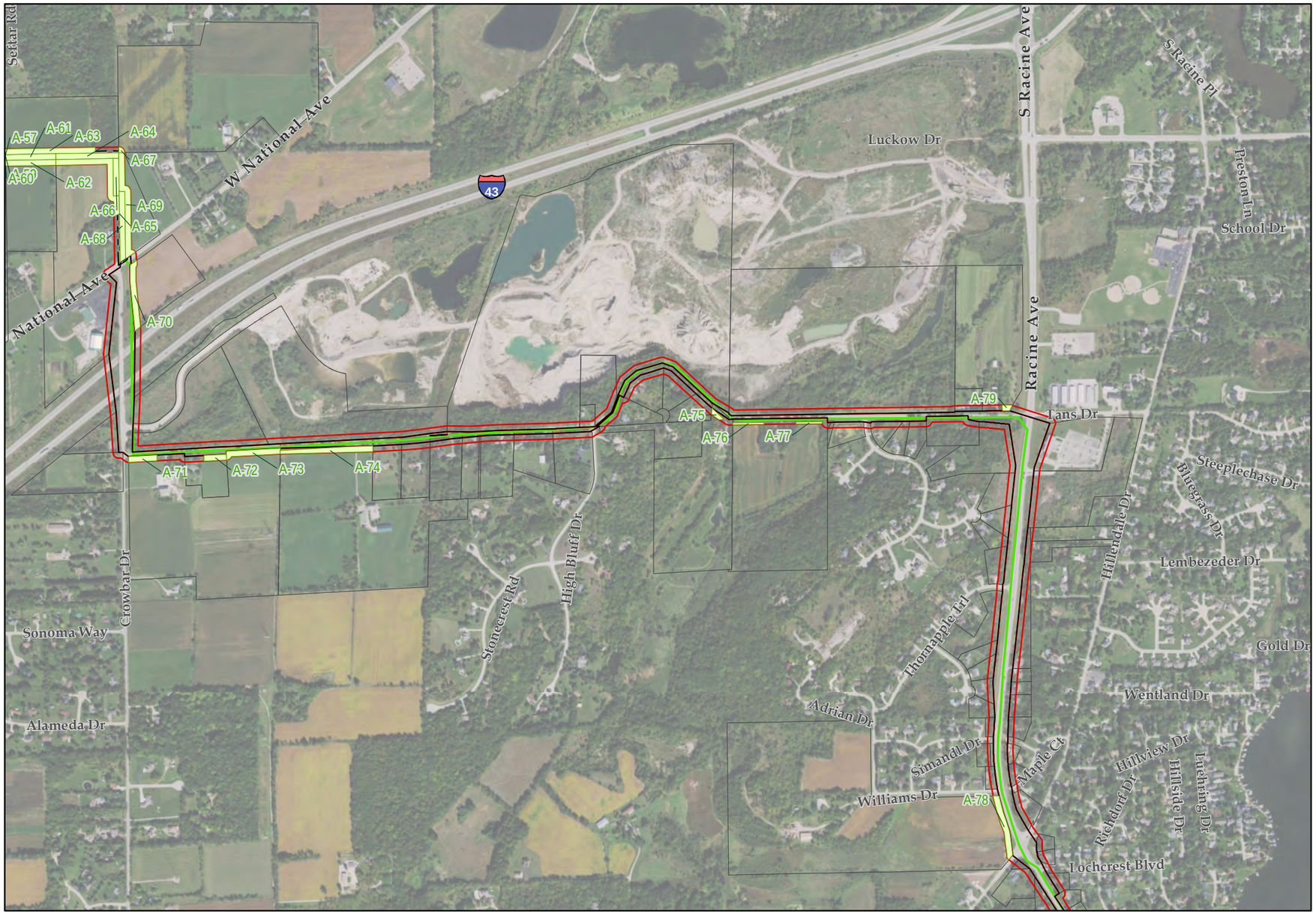
Date: 7/18/2017

FIGURE NO. 7F



Legend

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- EASEMENT
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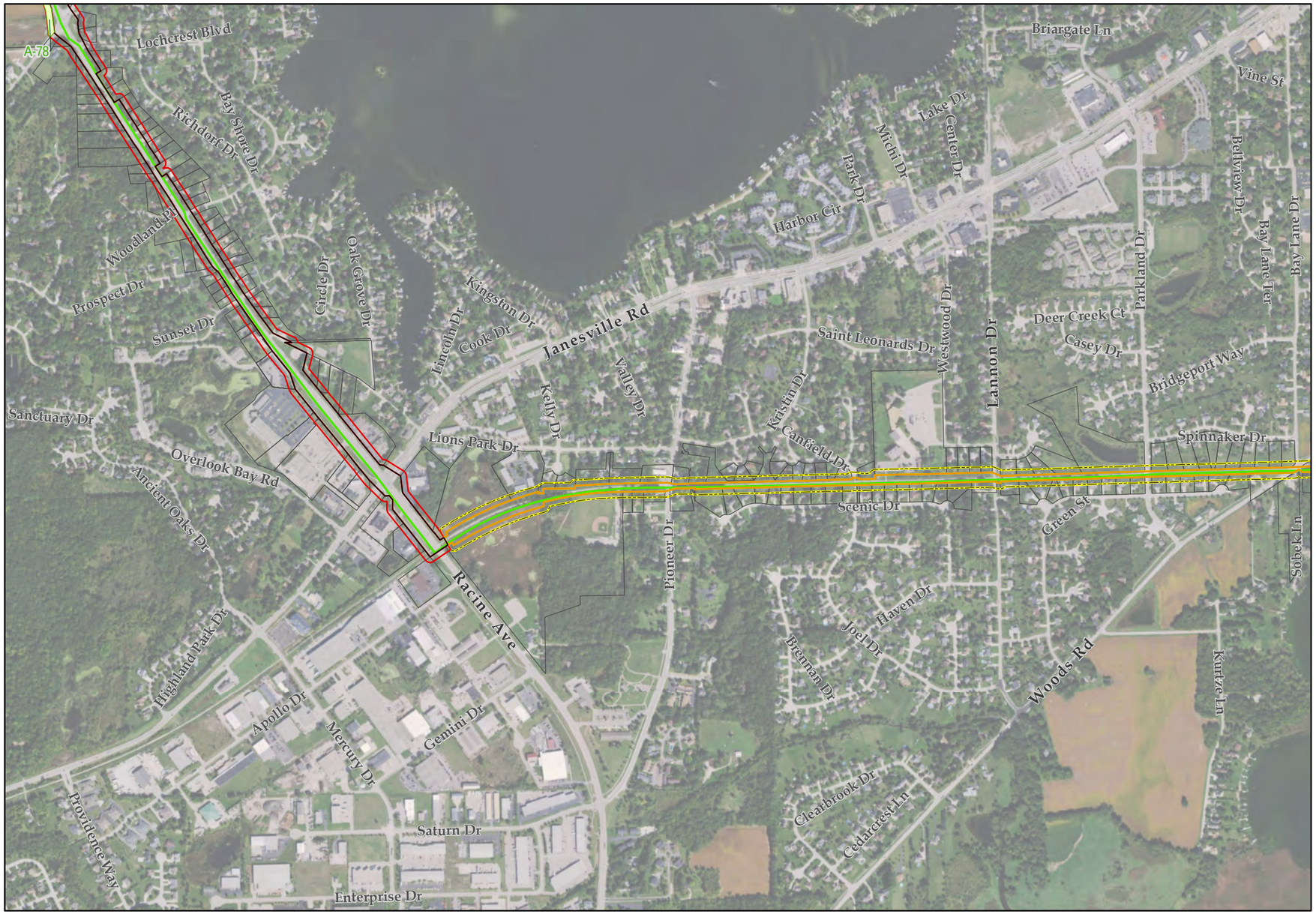
Date: 7/18/2017

FIGURE NO. 7G



Legend

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- EASEMENT
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Plotted: 7/18/2017
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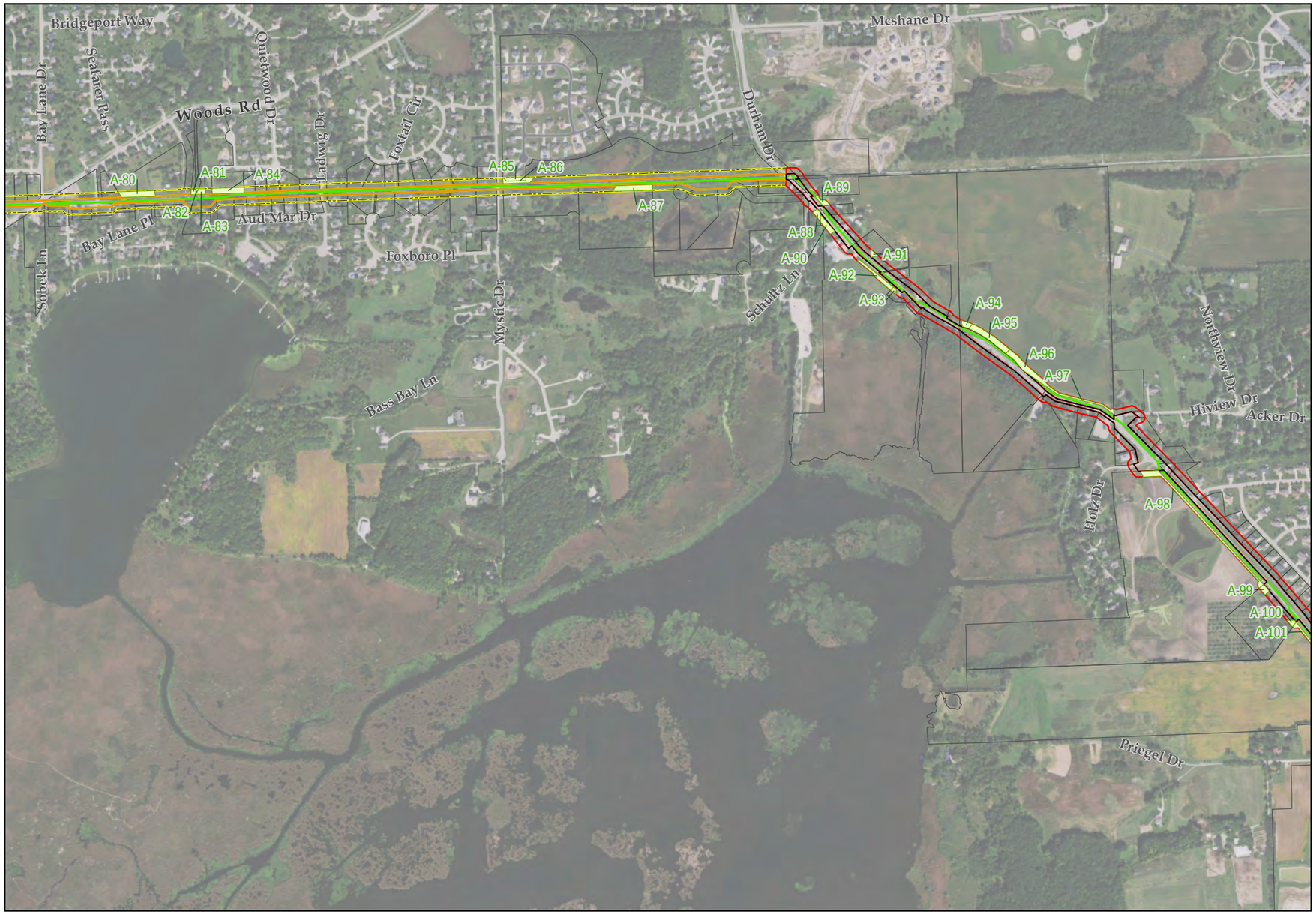
ROUTE 4-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7H



Legend

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- EASEMENT
- RIGHT OF WAY (ROW)
- RIGHT OF WAY (ROW) WE ENERGIES CORRIDOR
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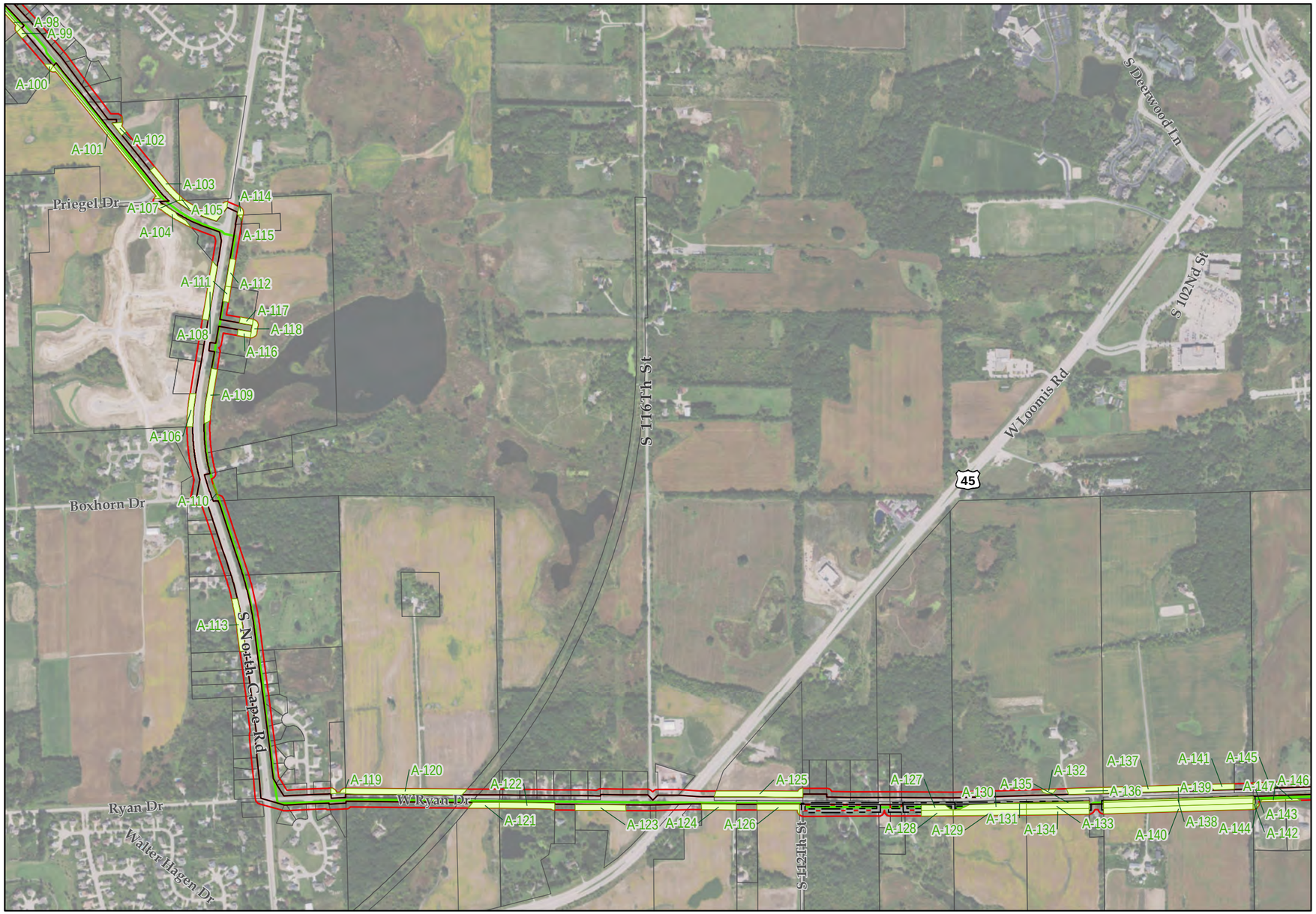
ROUTE 4-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7I



Legend

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- EASEMENT
- RIGHT OF WAY (ROW)
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- ROUTE 4
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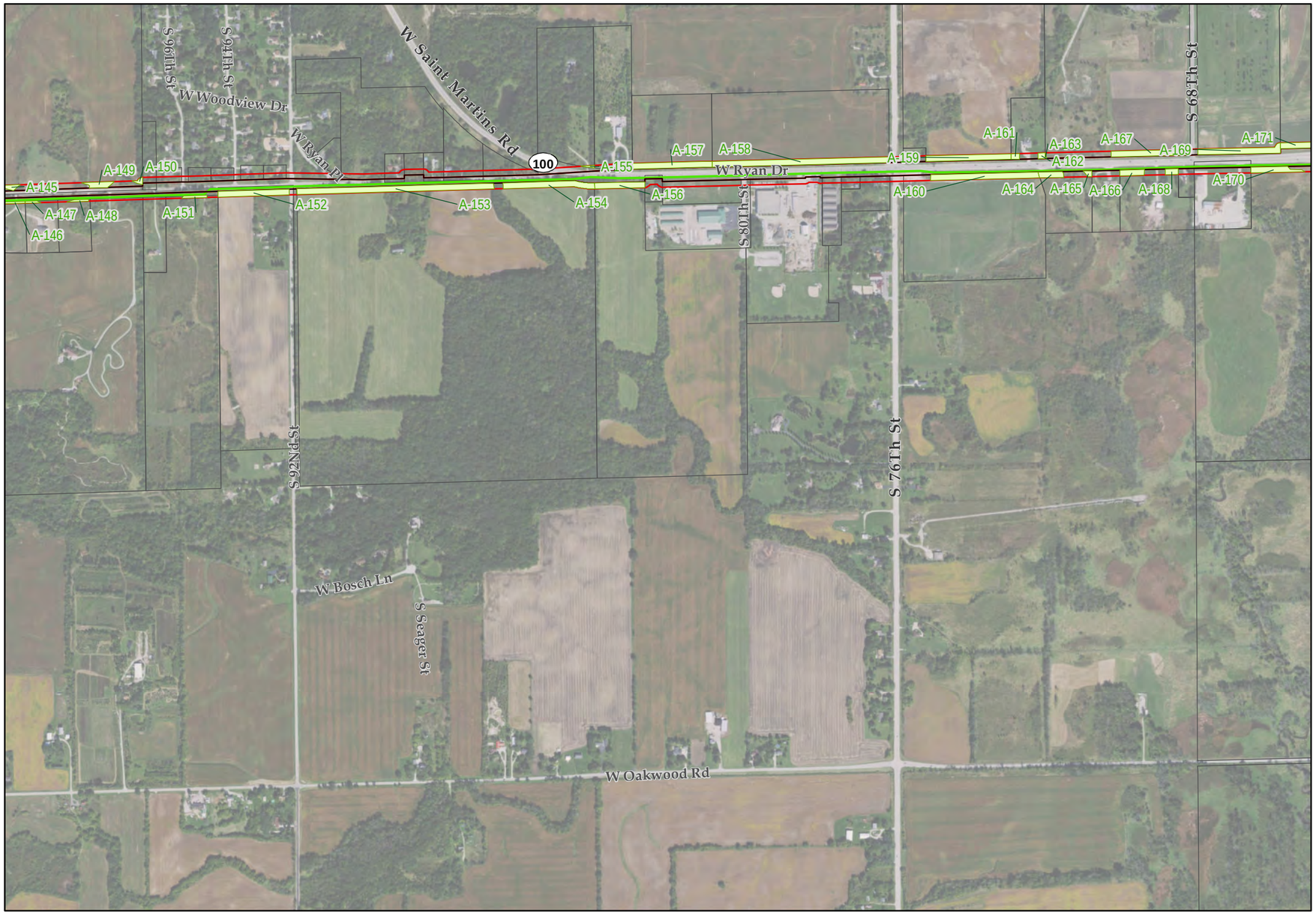
Date: 7/18/2017

FIGURE NO. 7J



Legend

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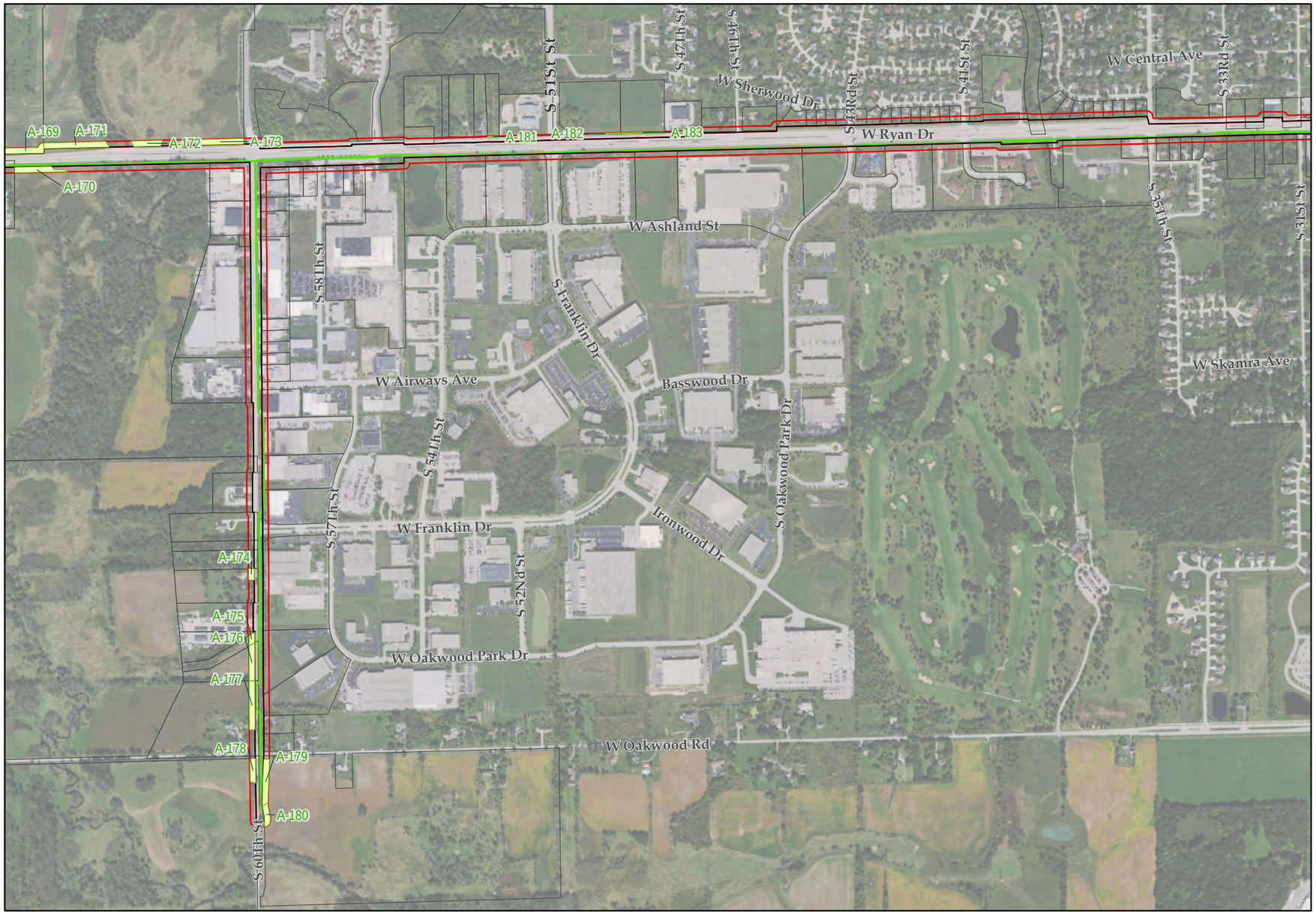
ROUTE 4-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7K



Legend

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ROUTE 4-DESKTOP AGRICULTURE LAND INVESTIGATION

Date: 7/18/2017

FIGURE NO. 7L

Legend

- 50' BUFFER
- 50' BUFFER WE ENERGIES CORRIDOR
- EASEMENT
- RIGHT OF WAY (ROW)
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Date: 7/18/2017

GREELEY AND HANSEN

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Waukesha, WI 53186

2-10 Endangered Resources Desktop Review for Route Alternatives

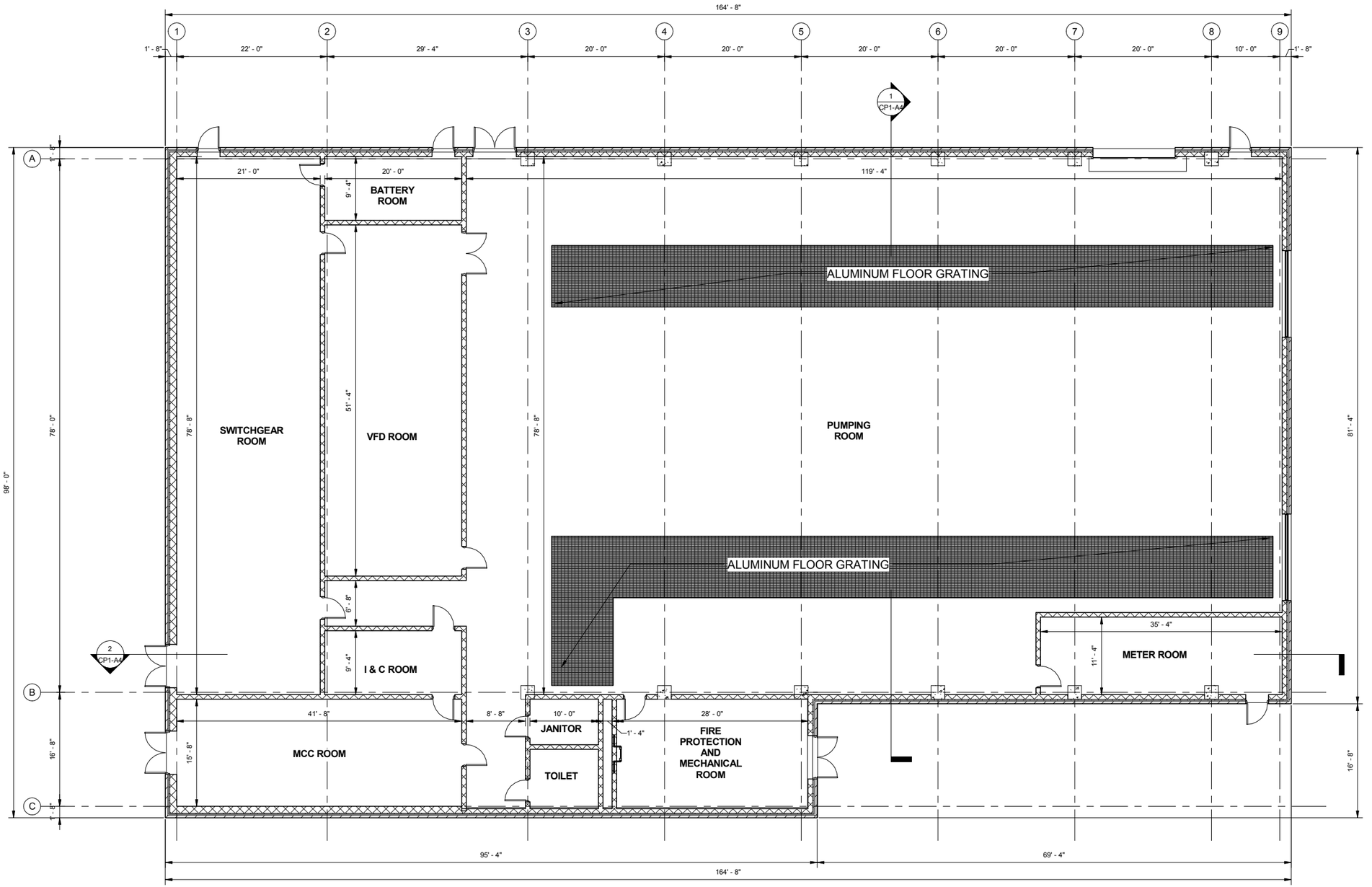
Confidential

Confidential information is provided under a separate cover.

Appendix 3 – Proposed Program Facilities Maps

3-1 Proposed Program Facilities

Maps – Water Supply Pump Station



1 FLOOR PLAN AT EL 100.00'
SCALE: 1/8" = 1'-0"

NORTH TO BE DETERMINED ONCE SITE IS CHOSEN

ELEVATIONS NOTE:
ELEVATION VALUES ARE CONCEPTUAL AND UNRELATED TO DATUM INFORMATION

8 0 8 16 FT
1/8" =1' - 0"

GREELEY AND HANSEN
ARCHITECTS

DRAFT PDR
JANUARY 2018

NO.	DATE	APPD	DESCRIPTION

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
741 N. GRAND AVE; SUITE 308
WAUKESHA, WI 53186

GREAT WATER ALLIANCE™

GREAT LAKES WATER SUPPLY PROGRAM
CONTRACT PKG 1: WATER SUPPLY P.S.

FLOOR PLAN AT EL 100.00'

APPROVED

SEAL AFFIXED
MONTH / DAY / YEAR

JANUARY 2018

JOB NO.: 15310			
DESGN	JJS	CHCK	TCB
APPRV	TCB	DRWN	JJS
SCALE:	1/8" = 1'-0"		

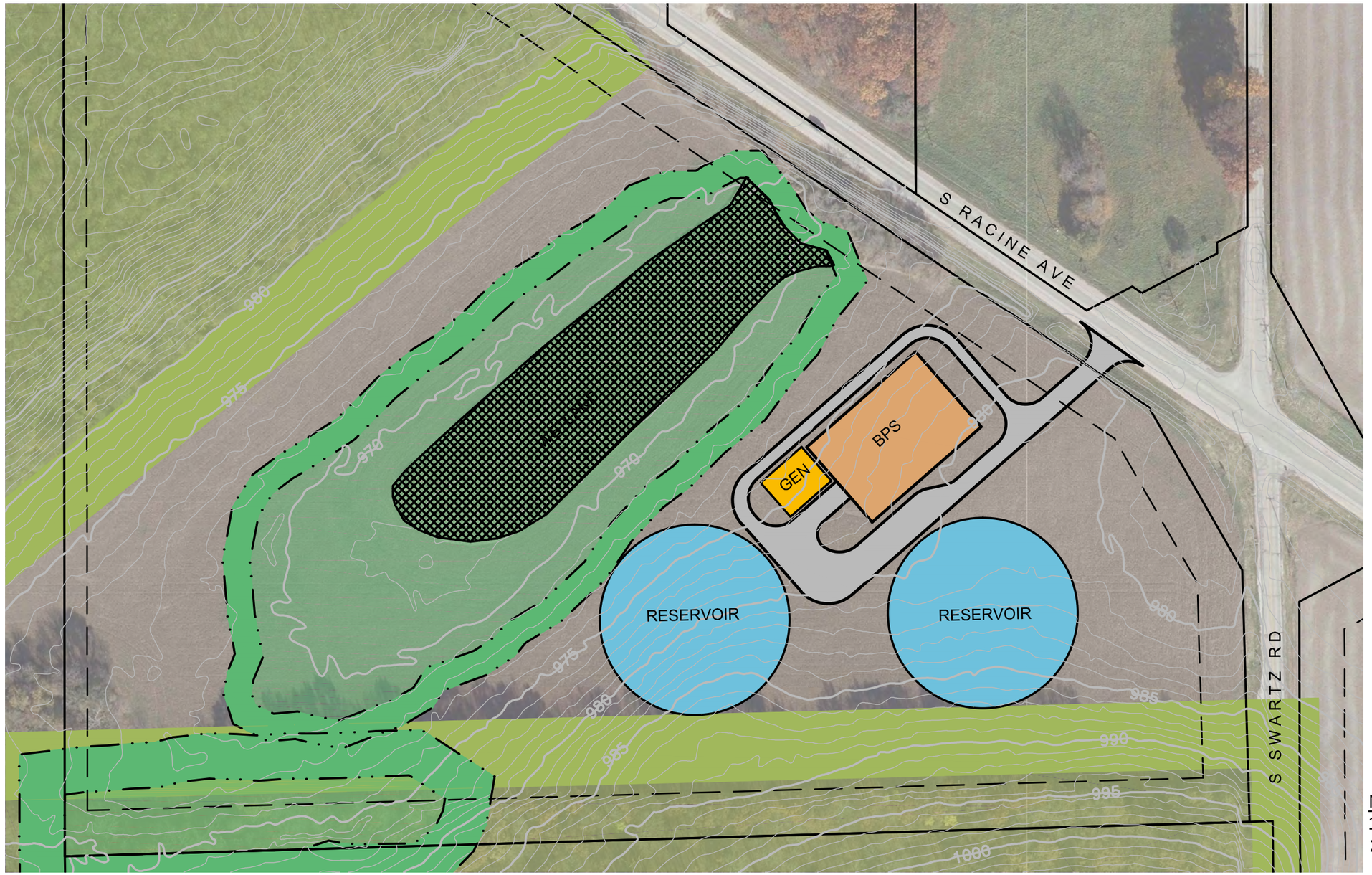
DRAWING NUMBER

CP1-A2

SHEET -- OF ### REV 0

3-2 Proposed Program Facilities Maps – Booster Pump Station Conceptual Site Diagram

CONCEPTUAL SITE DIAGRAM B-10.1B



Notes
1. GEN - Generator Room
2. BPS - Booster Pump Station

120 0 120 240 FT

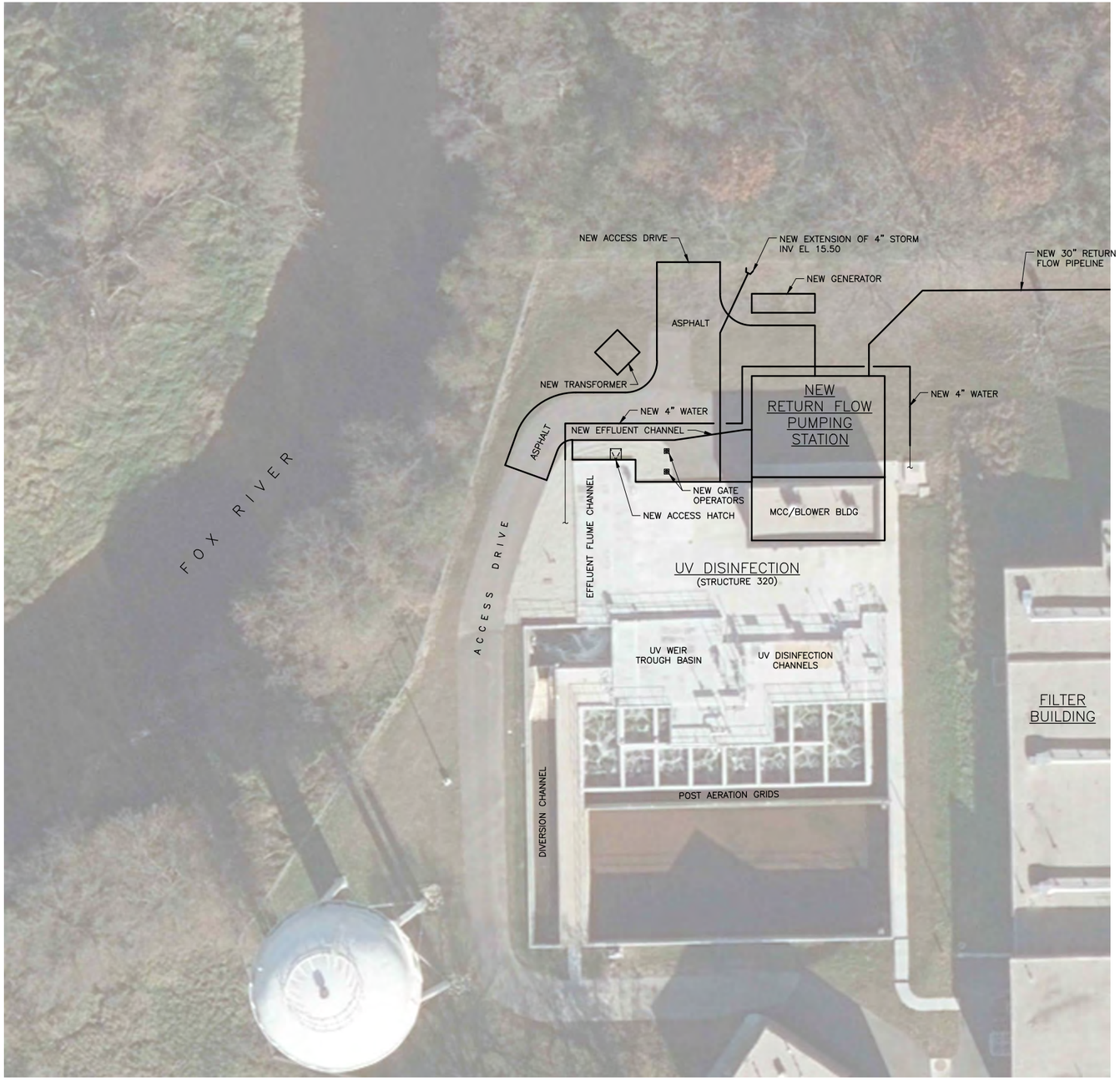
1"=120'

WAUKESHA, WISCONSIN
GREAT LAKES WATER SUPPLY PROGRAM
BOOSTER PUMP STATION
CONCEPTUAL SITE DIAGRAM B-10.1B
09/26/2017

GREAT WATER ALLIANCE™ Waukesha Water Utility SERVING WAUKESHA SINCE 1886 GREELEY AND HANSEN

G:\15310-WAUKESHA GREAT LAKES WATER SUPPLY PM-CM\21 CADD\21.03 RPT FIGURES\01 - PUMPING STATIONS\CONTRACT PACKAGE 3 - BPSF\GLWSP-P3-BPSF-SITE_PLAN_KB 2017/09/26 6:16 PM WRAIGHT, CONNOR

3-3 Proposed Program Facilities Maps – Return Flow Pump Station



NEW YARD PIPING PLAN
SCALE: 1" = 20'

DRAFT PDR
JANUARY 2018

20 0 20 40 FT
1"=20'

NO.	DATE	APPD	REVISION

Waukesha Water Utility

GREELEY AND HANSEN
741 N. GRAND AVE. SUITE 308
WAUKESHA, WI 53186

GREAT WATER ALLIANCE™

GREAT LAKES WATER SUPPLY PROGRAM
CONTRACT PACKAGE 4: RETURN FLOW PUMPING STATION

NEW YARD PIPING PLAN

APPROVED

SEAL AFFIXED
MONTH / DAY / YEAR

JANUARY 08, 2018

JOB NO.:	15310		
DESGN	DVH	CHCK	RCM
APPRV	AJM	DRWN	OR
SCALE:	1" = 20'		

DRAWING NUMBER

CP4-C5

SHEET ---- OF ---- REV 0

3-4 Proposed Program Facilities Maps – Return Flow Discharge Facilities

100-YEAR FLOOD ELEVATION
250' WETLAND SETBACK FROM EXISTING WELL
APPROXIMATE LOCATION OF EXISTING WELL
EXISTING VEGETATION
40' BUILDING SETBACK
R/W-PL LINE
RETURN FLOW PIPE
RETURN FLOW CONTROL BUILDING APPROX. ELE. 701'
RE-AERATION STRUCTURE APPROX. ELE 700'
W. OAKWOOD ROAD
S. 60TH STREET
ROOT RIVER
USGS GAGE STRUCTURE
OUTFALLS
EXISTING, NON-FARMED WETLAND

RETURN FLOW DISCHARGE SITE: CONCEPT PLAN

N

NOT FOR SCALING

PARCEL AREA UNDER CONSIDERATION

FARMED WETLANDS

ch2m

DECEMBER 2017

Appendix 4 – Open House Invitations

GREAT WATER ALLIANCE SEEKING CITIZEN INPUT AT OPEN HOUSES IN FRANKLIN, MUSKEGO, AND NEW BERLIN

WAUKESHA, Wis. (June 26, 2017) —The Great Water Alliance, a new program designed to carry fresh water from Lake Michigan, treat it, and return the same amount, is hosting community open houses regarding the pipeline alignments June 27, 28, and 29, 2017. The public is encouraged to attend this first series of meetings, meet project team members, review return flow route alternatives, and discuss the program.

"This is the next step in providing Waukesha's 71,000 residents with a clean, reliable, and sustainable drinking water source," said Mayor Shawn Reilly. "We've been meeting with the leaders of our partner communities and want those who reside or do business in those communities to know more about our proposed plans for constructing these pipelines and how they may affect them."

Under terms unanimously approved by the eight Great Lakes governors and two Canadian premiers, Waukesha may access up to 8.2 million gallons a day of drinking water from Lake Michigan and return the same amount to the lake.

Current plans call for constructing a pipeline to carry Lake Michigan water through the communities of Franklin, Muskego, and New Berlin to Waukesha for use as the city's water supply. A second pipeline will return treated water from Waukesha's Clean Water Plant to an outfall point in Franklin that empties into the Root River, ultimately flowing back to Lake Michigan.

Three route alternatives are being considered. Construction is expected to begin in early 2020 with completion in 2023.

The open houses are scheduled for:

- **Franklin:** Tuesday, June 27: 5:30 - 7:30 p.m. at Hunger Task Force Farm, 9000 S. 68th Street
- **Muskego**: Wednesday, June 28: 5:30 - 7:30 p.m. at Muskego High School, Room 243, W185S8750 Racine Avenue
- **New Berlin**: Thursday, June 29: 5:30 - 7:30 p.m. at New Berlin Public Library - Community Room, 15105 W. Library Lane

"The open houses are intended to allow residents to learn more, ask questions and provide comments to the water utility and its program engineering partners," said Dan Duchniak, General Manager of the Waukesha Water Utility.

Residents can examine maps of the three alternative routes and offer comments, learn more about why Waukesha is making use of Lake Michigan as its drinking water source, and how the highly treated water will improve the health of the Root River.

About the Great Water Alliance

The Great Water Alliance will provide the City of Waukesha's citizens with a safe, sustainable, and environmentally responsible source of drinking water. The Great Water Alliance also is a model for regional cooperation among neighboring communities. For more information, log on to http://greatwateralliance.com. Sign up to stay informed of program updates.

# # #

Media contact:
Dan Duchniak, P.E.
Waukesha Water Utility
(262) 409-4440 office / (262) 352-5142 cell
dduchniak@waukesha-water.com

WAUKESHA IS SEEKING CITIZEN INPUT AT LOCAL OPEN HOUSE

WAUKESHA, Wis. (September 5, 2017) — On Wednesday, September 6, 2017, the Waukesha Water Utility will present detailed information to the public regarding the long-term, sustainable water supply solution for City of Waukesha, called the Great Water Alliance (GWA). During this open house, residents can review and discuss what it means for them, benefits of the project, and proposed pipeline routes.

"We encourage everyone to come at their convenience to learn more about this program to provide Waukesha's 71,000 residents with a reliable and sustainable supply of safe drinking water," said Mayor Shawn Reilly. "

The open house is scheduled for:

Wednesday, September 6, 2017
5:30 p.m. to 7:30 p.m.
Waukesha Rotary Building
1150 Baxter Street

The GWA program will carry fresh water from Lake Michigan, treat it, and return the same amount to the Great Lakes Basin. The open house will provide updates on this historic project, along with detailed maps of proposed pipeline routes and information on water quality.

"We want to hear from our community," said Dan Duchniak, general manager of the Waukesha Water Utility. "We encourage people to discuss this historic project with experts, ask questions, and provide comments as we move forward with project planning."

The City of Waukesha needs a long-term, sustainable alternative to its existing water supply. The aquifer which has been the City's primary source of drinking water has become depleted. This is due in large part to a layer of shale rock that restricts rainwater and snowmelt from recharging the aquifer, and has resulted in elevated levels of radium and other naturally-occurring contaminants.

The eight Great Lakes governors and two Canadian premiers who reviewed the Waukesha project concluded that Waukesha has no reasonable alternative to a Great Lakes water supply. Waukesha may access up to 8.2 million gallons a day of drinking water from Lake Michigan and return the same amount to the Basin. The project will construct a pipeline from the water source to Waukesha. After being used in Waukesha, a second pipeline will return treated water from Waukesha's Clean Water Plant to an outfall point in Franklin that empties into the Root River, ultimately flowing back to Lake Michigan. Construction is expected to begin in early 2020 with completion in 2023.

About the Great Water Alliance

The Great Water Alliance will provide the City of Waukesha's citizens with a safe, sustainable, and environmentally responsible source of drinking water. The Great Water Alliance also is a model for regional cooperation among neighboring communities. For more information, log on to http://greatwateralliance.com. Sign up to stay informed of program updates.

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dduchniak@waukesha-water.com

GREAT WATER ALLIANCE™

MEDIA ALERT

GREAT WATER ALLIANCE HOLDS OPEN HOUSES IN WAUKESHA ON NOVEMBER 28, 29 & 30

WHO: Dan Duchniak, General Manager of Waukesha Water Utility
Project team members of the Great Water Alliance
Residents and business leaders in Waukesha

WHAT: Waukesha Water Utility will hold three open houses to share the latest updates on the water supply program. Attendees will hear a presentation and be able to view in-depth program displays. Topics include the historic new partnership between Waukesha and Milwaukee and the proposed pipeline routes.

WHEN & WHERE:

WAUKESHA:

Tuesday, November 28	*Waukesha West High School - Media Center* *3301 Saylesville Rd, Waukesha* *5:30-7:30 PM*
Wednesday, November 29	*Waukesha South High School - Media Center* *401 E Roberta Ave, Waukesha* *5:30-7:30 PM*
Thursday, November 30	*Waukesha North High School - Media Center* *2222 Michigan Ave, Waukesha* *5:30-7:30 PM*

WHY: The Waukesha open houses provide an opportunity for residents to learn more about the Great Water Alliance program, ask questions, and give feedback.

MORE INFO: **About the Great Water Alliance**
The Great Water Alliance will provide the City of Waukesha's citizens with a safe, sustainable, and environmentally responsible source of drinking water. The Great Water Alliance also is a model for regional cooperation among neighboring communities. For more information, log on to http://greatwateralliance.com. Sign up to stay informed of program updates.

# # #

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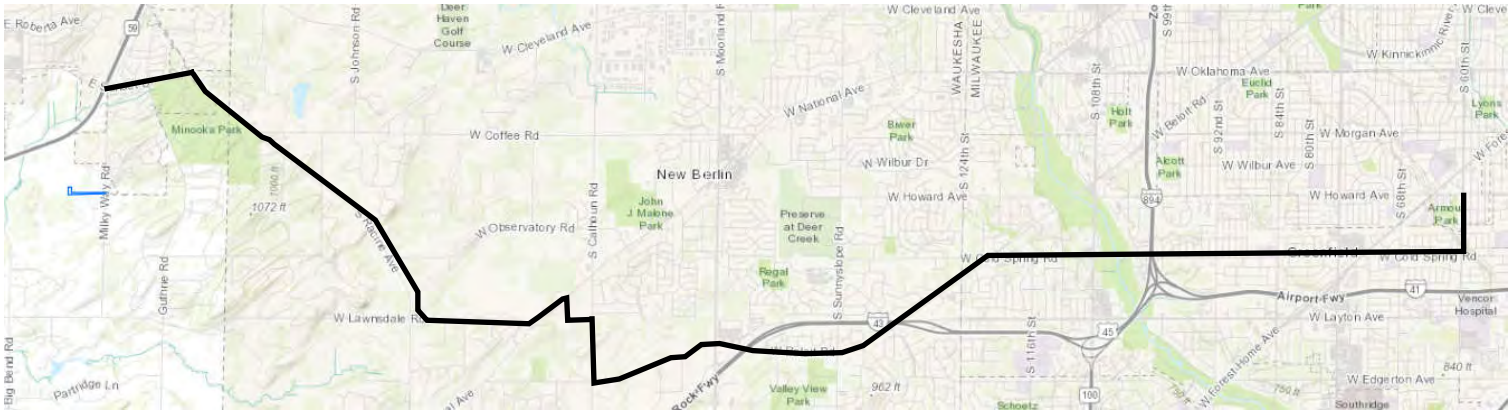
dduchniak@waukesha-water.com

Appendix 5 – Proposed Program

Natural Resource Impacts

5-1 Conservation Easement Search Results

5-1: Part 1 - Proposed Milwaukee Supply Alternative



There are no conservation easements located along the Milwaukee Route.

5-1: Part 2 - Proposed Milwaukee Return Flow Alternative and Other Alternatives Considered

NCED NATIONAL CONSERVATION EASEMENT DATABASE

Ducks Unlimited | The Trust for Public Land

Easement Name

Scattered Wildlife

Easement Holder

Wisconsin Department of Natural Resources

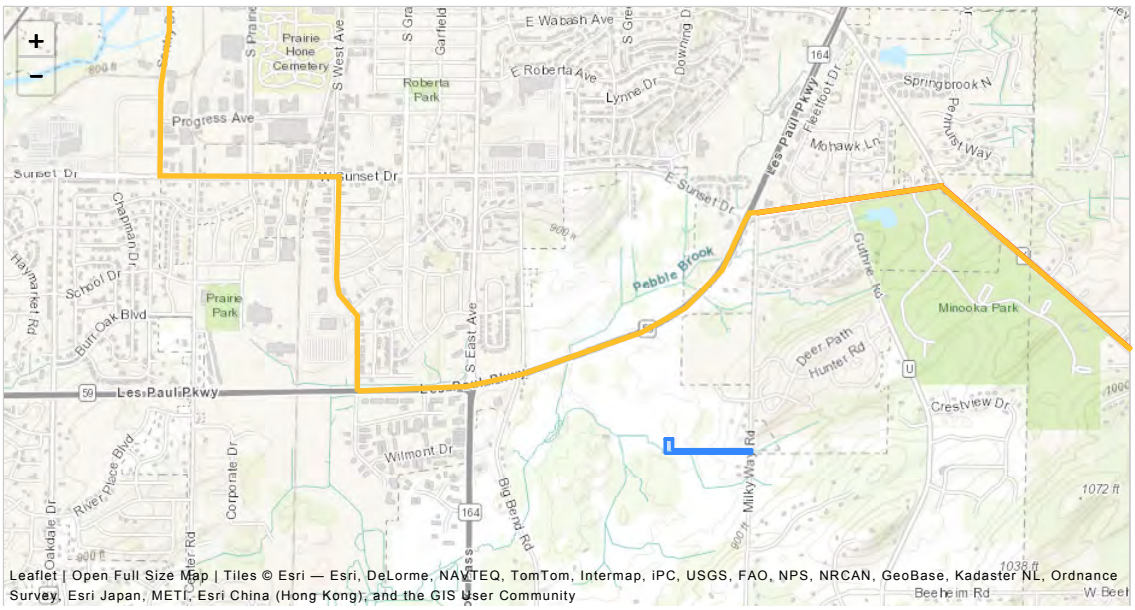
Location (County / State)

Waukesha, Wisconsin

Date Est.	Total Acres	Owner Type
December, 2010	3	State

Conservation Purpose	Public Access
Environmental System	Restricted Access

Easement Map



The Scattered Wildlife conservation easement is approximately 2,170 feet from the Project Route Alignment and therefore far enough away to not be impacted by construction.

Easement Data Attributes

Unique ID:	1029195
Data Entry:	1474502400000
Site Name:	Scattered Wildlife
Date Established:	December 2, 2010
Purpose:	Environmental System
Comments:	
Owner Type:	State
Easement Holder:	Wisconsin Department of Natural Resources
State:	Wisconsin
Data Aggregate:	DU
Total Acres:	3.32759031
Shape Area:	13466.2801996592
Shape Length:	

* The NCED does not include landowner's names for privacy considerations but, if available, the NCED is interested in capturing the type of landowner. This information can be helpful for conservation planning and decision making purposes.

* The term "conservation purpose" refers to the definitions under Section 170(h) of the Internal Revenue Service tax code that qualifies an easement for tax benefits. It is the primary purpose of the easement.

Easements in this search result may not have publicly available spatial information. You can download a tabular dataset of all easements on the downloads page.

NCED NATIONAL CONSERVATION EASEMENT DATABASE

DUCKS UNLIMITED THE TRUST FOR PUBLIC LAND

Easement Name

Big Muskego Lake Wildlife Area

Easement Holder

Wisconsin Department of Natural Resources

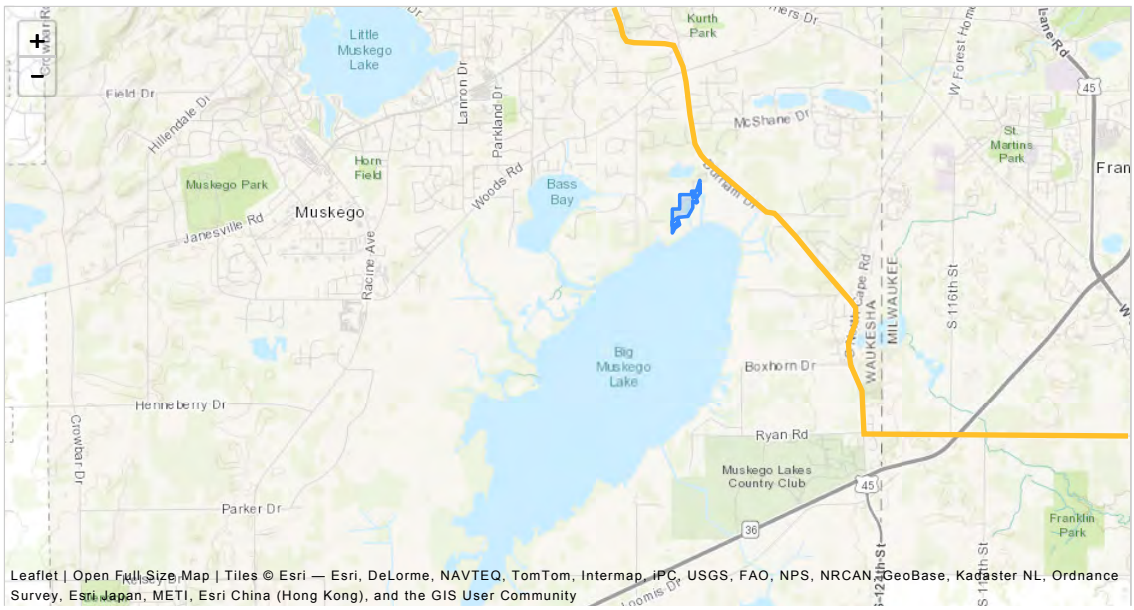
Location (County / State)

Waukesha, Wisconsin

Date Est.	Total Acres	Owner Type
October, 2008	15	Jointly Held

Conservation Purpose	Public Access
Environmental System	Restricted Access

Easement Map



The Big Muskego Lake Wildlife Area conservation easement is approximately 690 feet from the Project Route Alignment and therefore far enough away to not be impacted by construction.

Easement Data Attributes

Unique ID:	910996
Data Entry:	1474502400000
Site Name:	Big Muskego Lake Wildlife Area
Date Established:	October 20, 2008
Purpose:	Environmental System
Comments:	
Owner Type:	Jointly Held
Easement Holder:	Wisconsin Department of Natural Resources
State:	Wisconsin
Data Aggregate:	DU
Total Acres:	15.17701341
Shape Area:	61419.1942000867
Shape Length:	

* The NCED does not include landowner's names for privacy considerations but, if available, the NCED is interested in capturing the type of landowner. This information can be helpful for conservation planning and decision making purposes.

* The term "conservation purpose" refers to the definitions under Section 170(h) of the Internal Revenue Service tax code that qualifies an easement for tax benefits. It is the primary purpose of the easement.

Easements in this search result may not have publicly available spatial information. You can download a tabular dataset of all easements on the downloads page.

NCED NATIONAL CONSERVATION EASEMENT DATABASE

DUCKS UNLIMITED THE TRUST FOR PUBLIC LAND

Easement Name

Big Muskego Lake Wildlife Area 9

Easement Holder

Wisconsin Department of Natural Resources

Location (County / State)

Waukesha, Wisconsin

Date Est.	Total Acres	Owner Type
2007	49	Private

Conservation Purpose	Public Access
Unknown	Closed

Easement Map

The Big Muskego Lake Wildlife Area 9 conservation easement is approximately 2,415 feet from the Project Route Alignment and therefore far enough away to not be impacted by construction.

Easement Data Attributes

Unique ID:	7131
Data Entry:	1497571200000
Site Name:	Big Muskego Lake Wildlife Area 9
Date Established:	2007
Purpose:	Unknown
Comments:	
Owner Type:	Private
Easement Holder:	Wisconsin Department of Natural Resources
State:	Wisconsin
Data Aggregate:	TPL
Total Acres:	49.66649623
Shape Area:	200993.179239821
Shape Length:	

* The NCED does not include landowner's names for privacy considerations but, if available, the NCED is interested in capturing the type of landowner. This information can be helpful for conservation planning and decision making purposes.

* The term "conservation purpose" refers to the definitions under Section 170(h) of the Internal Revenue Service tax code that qualifies an easement for tax benefits. It is the primary purpose of the easement.

Easements in this search result may not have publicly available spatial information. You can download a tabular dataset of all easements on the downloads page.

5-2 WDNR Construction Permits Workshop

WORKSHOP SUMMARY

The Great Lakes Water Supply Program WDNR Construction Permits Workshop was held in the WDNR Offices located at 101 S. Webster St, Madison, WI 53707 at 11:00 a.m. on June 5, 2017 to introduce the Program to the WDNR staff, discuss the Program Critical Path Schedule, and to discuss workgroup organization, and specific permits and approvals related to each subworkgroup.

The attendees are listed on the attached sign-in sheet. The agenda is also attached.

	Action Item	Action By	Due Date
1.	Identify all of the appropriate WDNR Representatives to participate in each Sub-Workgroup.	B. Callan, WDNR	Ongoing
2.	Contact USACE and set up a meeting with the USACE, WDNR, and the Program team coordinated with the Permitting Task Lead.	R. Londre, TRC	06/20/2017
3.	Contact State Historic Preservation Office and set up a meeting with the Program team coordinated with the Permitting Task Lead.	A. Van Dyke, TRC	06/20/2017
4.	Confirm the reorganization of permits per today's comments with Ben Callan and revise the WDNR Workgroup Organization Chart.	C. Richardson, GH	06/20/2017
5.	Schedule Construction and Discharge General Permit Sub-Workgroup meeting with Ben Callan at the WDNR office in Madison, WI at 10:00 a.m. on September 12th.	C. Richardson, GH	06/20/2017
6.	Schedule meeting with Ben Callan and Jim Pardee to discuss EIS requirements and the contents of the draft letter.	M. Mittag, CH2M	07/07/2017

1) Introductions
   a) Workshop attendees introduced themselves and their role in the Program.
   b) Ben Callan explained the purpose of the Workgroups and how they would be implemented.
   c) Katie Richardson explained the Program Schedule and Workshop objectives.
   d) Ben Callan stated that the Workgroup meetings are intended for the exchanging of information, where the WDNR can clearly identify informational needs / formats / timelines, and the Program team members will provide the information or ask clarifying questions. The decision-making process will take place outside of the Workgroup setting, generally after internal WDNR review and consultation.

2) Workgroup Organization
   a) Three workgroups have been established: Water Supply Approvals, Construction Permits, and WPDES and Return Flow Permits and Approvals.
      i) The focus of this workshop was on the Construction Permits Workgroup.

b) The Organization Chart for the Construction Permits Workgroup was discussed.
c) Some of the WDNR Representatives for construction and general permits (GP) have not yet been assigned to the Construction Permits Workgroup. Ben Callan explained that he is working to identify all WDNR representatives for each sub-workgroup. Ben and Katie will further discuss the following possible changes to the permits in each workgroup.
    ii) The Wastewater Construction Permit could be moved to the WPDES and Return Flow Workgroup.
    iii) Water Supply Permits like Hydrant Flushing could be moved to the WPDES and Return Flow Workgroup.
    iv) Water Supply Construction permits could be moved to the Water Supply Approval Workgroup.

3) Program Critical Path Schedule
a) An overview of the Program Schedule was presented. This included a description of the six contract packages.
b) Katie Richardson reviewed two route figures, one figure with the six preliminary routes and a figure with three routes currently being evaluated.

4) Breakout: Construction and Discharge Permitting Sub-Workgroup

This summary describes discussion in the Construction and Discharge Permitting Sub-Workgroup Breakout Session. The attendees in this Breakout Session were Cathy Busking (GH), Lee Melcher (GH), Paul Hurley (GH), Megan Bender (CH2M), and Kim Gonzalez (WDNR).

<u>Stormwater</u>

a) There is a 14-working day review period for DNR staff to review a storm water permit application.
b) The archaeological, cultural, and endangered resources permits must all be approved before the approval (and submission) of the Stormwater Management Plan.
    i) The Stormwater Management Plan can be submitted electronically with an assured wetland/waterway delineation attached, and it does not have to wait for the wetland permit to be issued. Ron Londre (TRC) is an assured delineator.
c) A construction project may be split into two or more storm water permit applications.
    ii) The same contract packages can be split up into different submissions too; this would allow for segments that are more difficult to get approved to fulfill the permit requirements without postponing construction on the rest of the contract package.
d) The Stormwater Management Plans should include, but not limited to, the following information:
    i) The design and modeling calculations (WinSLAMM) for permanent installations.
    ii) The plans and specification illustrating Best Management Practices.
    iii) Special requirements that may not be well enough defined in the plans and specs (i.e. Notice of Termination and other information that is not necessary for Contractors).
e) New impervious areas should be sited to meet the protective area performance standard in Section NR 151.125 Wis. Adm. Code.
f) All information is submitted electronically in the WDNR ePermitting Window.
    i) The owner is the project proponent and the consultant can apply on behalf of the owner. The project proponent needs to sign off to grant permission for the consultant to submit on their behalf.

g) Should direction from a municipality conflict with direction from DNR regarding storm water permitting, notify Kim Gonzalez so she may help resolve the issue.

Pit Trench Dewatering

a) The General Permit may be able to get coverage across counties and keep it open so it can be used if an area is encountered that needs to be dewatered. It could be approved ahead of construction. Ben Callan is aware of permittees who have used this special arrangement.
b) Pit Trench Dewatering of less than 70 gpm of clean water is classified as a local Stormwater construction permit (this needs to be confirmed).

Floodplains

a) The WDNR Representative for Floodplains has been identified as Michelle Hase. Michelle was present for the beginning of the meeting but was unable to attend the breakout session.

Scheduling

a) The next meeting of the Construction and Discharge General Permit Sub-Workgroup needs to be coordinated. The proposed time is 10:00 a.m. on September 12th at the WDNR offices in Madison, WI.

5) Breakout: Construction Permit Sub-Workgroup

This summary describes discussion in the Cultural Resources, Wetlands, Natural Heritage Conservation, and EIS Sub-Workgroup Breakout Session. The attendees in this Breakout Session were Ben Callan (WDNR), Mark Dudzik (WDNR), Stacy Rowe (WDNR), Lindsay Tekler (WDNR), Chris DeSilva (GH), Mark Mittag (CH2M), Ron Londre (TRC), and Al Van Dyke (TRC).

Other Agency Involvement

a) The lead federal agency needs to be identified and contacted. Ron Londre will reach out to the United States Army Corps of Engineers (USACE) to discuss a meeting with USACE, WDNR, and the program team.
b) The State Historic Preservation Office needs to be contacted. Al Van Dyke will contact them.
c) The Wisconsin Department of Transportation (WisDOT) may require WDNR's approval of the Program before they issue their approval.

Endangered Species

a) TRC will submit a Natural Heritage Inventory (NHI) data request and utilize a certified reviewer from TRC.
b) Utilities are exempt from needing an endangered or threatened species permit for plants.
c) The Endangered Resources review will be completed with the Design Report submission. Updated reviews will need to be completed within one year of construction for each Contract Package.

Wetlands

a) The program is completing a desktop analysis for three routes and potential facility locations and will perform a field delineation of the final route and facility locations.
b) A detailed record for Practicable Alternatives Analysis (PAA) will be documented during the route and facility location selection process.
c) Forested wetland impacts need to be minimized.

d) Wetland mitigation options will be discussed when expected impacts are known.

Application

a) One Design Report application will be submitted for the program for a Certificate of Authority review by PSC and permit decisions for WDNR.
b) WDNR could request Construction Mitigation Plans (CMPs) with the approval of the application that can be submitted for each Contract Package before construction. The CMPs would include finalized design information and final environmental impact numbers. The CMPs could not be contested.

Environmental Impact Statement (EIS)

a) Jim Pardee is drafting a letter for compliance with the Public Service Commission (PSC) and the Wisconsin Environmental Protection Agency (WEPA). This letter will include required updates to the EIS.
b) A meeting will be held to discuss the contents of the letter.

Communication

a) Ben Callan requested that he be included in communication for meetings and informed of any required decisions. Ben also stated that the decision-making process will take place outside of the Workgroup setting, generally after internal WDNR review and consultation.

6) Breakout: Solid Waste Sub-Workgroup
   a) The WDNR Representative for solid waste is yet to be confirmed.

7) Wrap-up
   a) Ben Callan will continue to identify the appropriate Representatives from the WDNR to be the point person and participate in each Workgroup.
   b) GH will work with WDNR to establish meetings with the WDNR Representatives who were not yet identified.

This workshop summary reflects the discussions and decisions reached at the meeting. If no objections are put forth within 5 business days from issuance, the minutes will be considered to be an accurate record of the issues discussed and conclusions reached at the workshop.

GREAT WATER ALLIANCE

WDNR Construction Permits Workshop
SIGN-IN SHEET

June 5, 2017

No.	Name	Company	Initials
1	Cathy Busking	Greeley and Hansen	CB
2	Chris DeSilva	Greeley and Hansen	CD
3	Paul Hurley	Greeley and Hansen	PH
4	Lee Melcher	Greeley and Hansen	LM
5	Katie Richardson	Greeley and Hansen	CMR
6	Megan Bender	CH2M	MB
7	Mark Mittag	CH2M	MM
8	Kathy Huibregtse	Ramboll	KRH
9	Donna Volk	Ramboll	DMV
10	Ron Londre	TRC	RAL
11	Al VanDyke	TRC	AVD
12	Ben Callan	WDNR	BC
13	Mark Dudzik	WDNR	
14	Michelle Hase	WDNR	
15	Christine Gonzalez	WDNR	CKG
16	Stacy Rowe	WDNR	SR
17	Linsday Tekler	WDNR	LT
18	Adam Ingwell	PSC	
19	Stephen Kemna	PSC	
20	Steve Knudsen	PSC	
21	Stacy Schumacher	PSC	

GREAT WATER ALLIANCE

WDNR Construction Permits Workshop
SIGN-IN SHEET

June 5, 2017

No.	Name	Company	Initials
22	Samantha Jordt	DNR - SDWLP	
23	Michelle Hase	WDNR	Phone
24			
25			
26			
27			
28			
29			
30			
31			
32			

Date/Time: June 05, 2017, 11:00 a.m. – 1:00 p.m.

Location: WDNR Office, 101 S. Webster St, Madison, WI 53707

Attendees:

Cathy Busking, GH
Chris DeSilva, GH
Paul Hurley, GH
Lee Melcher, GH
Katie Richardson, GH
Megan Bender, CH2M
Mark Mittag, CH2M
Kathy Huibregtse, Ramboll
Donna Volk, Ramboll
Ron Londre, TRC
Al Van Dyke, TRC
Ben Callan, WDNR
Mark Dudzik, WDNR
Michelle Hase, WDNR
Christine Gonzalez, WDNR
Stacy Rowe, WDNR
Lindsay Tekler, WDNR
Adam Ingwell, PSC
Stephen Kemna, PSC
Steve Knudson, PSC
Stacy Schumacher, PSC

Time	Topic	Presenter(s)
11:00 a.m.	Welcome – Introductions – Agenda Review – Meeting Objectives	Katie Richardson
11:10 a.m.	Workgroup Organization – Sub-workgroups	Chris DeSilva
11:20 a.m.	Program Critical Path Schedule	Katie Richardson
11:40 a.m.	Sub-Workgroup Breakout – Meeting Frequency – Anticipated Permits and Approvals – Permit Protocols – Deliverable formats – Field Investigations – Design and Construction Considerations – Level of Detail Needed for Permit Approval – Other Agency Involvement	All
12:50 p.m.	Summary Wrap-up and Next Steps	Katie Richardson
1:00 p.m.	Adjourn	

Appendix 6 – Proposed Program

WDNR Wetland and Waterway Tables

PSC DOCKET NUMBER:

Table 1 DNR Wetland/Waterway Impact Location Table

Supplement Document to WDNR Form 3500-53. Check all that apply.

Note: Any revisions to this table must be agreed upon by all parties before filing.

RESOURCE				CONSTRUCTION METHOD/ACTIVITY											LOCATION						RESOURCE IMPACT				DNR DOCKET [13]
				Waterway Impact Activity						Wetland Impact Activity															
					Dredge [4]					Temporary Impact															
Route/ Segment/ Contract	Wetland Type or Waterway Name [1]	Feature Unique ID [2]	Permit Required	Bridge [3]	square feet	cubic yards	Grading on banks (upland) over 10,000 sq. ft. [5]	HDD (linear feet)	Plow (linear feet)	Trench [6] (square feet)	Matting [7] (square feet)	Bore Pits [8] (square feet)	Grading [9] (square feet)	Permanent Structure/Fill Placement [10] (square feet)	County	Municipality	QQ	Q	Section	Township (N), Range (E/W)	ASNRI [11]	Temporary Fill (square feet)	Permanent Fill (square feet)	Conversion [12] (square feet)	
S. Racine Avenue	Hardwood Swamp, Fresh (wet) Meadow	F2-W01	X							6.4			1677.8		Waukesha	City of New Berlin	SW	SE	18	6 N, 20 E		1684		TBD	
West Oakwood Road	Floodplain Forest, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow, Sedge Meadow	F3-W01	X							0.0			753192.0		Milwaukee	City of Franklin	MULTI	NW	35	5 N, 21 E		753192		TBD	
HWY 59/Les Paul Parkway	Waterway	R-S01						117							Waukesha	City of Waukesha	NE	SE	15	6 N, 19 E					
HWY 59/Les Paul Parkway	Waterway	R-S02						0							Waukesha	City of Waukesha	NW	SW	14	6 N, 19 E					
HWY 59/Les Paul Parkway	Waterway	R-S03						0							Waukesha	City/Town of Waukesha	NE	SW	14	6 N, 19 E					
HWY 59/Les Paul Parkway	Waterway	R-S04						340.8							Waukesha	City/Town of Waukesha	NE	SW	14	6 N, 19 E					
HWY 59/Les Paul Parkway	Floodplain Forest, Deep and Shallow Marsh, Fresh (wet) Meadow, Shrub-carr	R-W08	X							4626.0			12106.0		Waukesha	Town of Waukesha	NW	SE	14	6 N, 19 E		16732		TBD	
HWY 59/Les Paul Parkway	Waterway	R-S05						350.5							Waukesha	City/Town of Waukesha	SE	NE	14	6 N, 19 E					
HWY 59/Les Paul Parkway	Waterway	R-S06						318.1							Waukesha	City/Town of Waukesha	SE	NE	14	6 N, 19 E					
HWY 59/Les Paul Parkway	Waterway	R-S07						0							Waukesha	City/Town of Waukesha	NE	NE	14	6 N, 19 E					
S. Racine Avenue	Fresh (wet) Meadow	R-W15	X							5063.0			83.5		Waukesha	City of New Berlin	NE	NE	19	6 N, 20 E		5146			
S. Racine Avenue	Fresh (wet) Meadow	R-W17	X							63.7			86.9		Waukesha	City of New Berlin	SW	NW	20	6 N, 20 E		151			
S. Racine Avenue	Fresh (wet) Meadow	R-W18	X							32.4			260.6		Waukesha	City of New Berlin	SW	NW	20	6 N, 20 E		293			
S. Racine Avenue	Fresh (wet) Meadow	R-W19	X							0.0			1195.3		Waukesha	City of New Berlin	NE	SW	20	6 N, 20 E		1195			
S. Racine Avenue	Fresh (wet) Meadow	R-W20	X							124.6			162.3		Waukesha	City of New Berlin	SW	SE	20	6 N, 20 E		287			
S. Racine Avenue	Fresh (wet) Meadow	R-W21	X							0.0			15.1		Waukesha	City of New Berlin	NE	NW	29	6 N, 20 E		15			
W. Lawnsdale Road	Hardwood Swamp	MKE-R-W01	X							0.0			1126.7		Waukesha	City of New Berlin	NW	NE	29	6 N, 20 E		1127		TBD	
W. Lawnsdale Road	Hardwood Swamp	MKE-R-W03	X							0.0			2457.1		Waukesha	City of New Berlin	NW	NE	29	6 N, 20 E		2457		TBD	
W. Lawnsdale Road	Hardwood Swamp, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow	MKE-R-W04	X							0.6			27799.2		Waukesha	City of New Berlin	MULTI	NE	29	6 N, 20 E		27800		TBD	
S. Racine Avenue	Deep and Shallow Marsh	R-W27	X							0.0			507.5		Waukesha	City of New Berlin	MULTI	NE	32	6 N, 20 E		508			
S. Racine Avenue	Fresh (wet) Meadow	R-W29	X							630.4			2585.2		Waukesha	City of New Berlin	SE	NW	32	6 N, 20 E		3216			
S. Racine Avenue	Deep and Shallow Marsh, Fresh (wet) Meadow, Hardwood Swamp	R-W35	X							1333.9			7004.7		Waukesha	City of New Berlin	NE	SW	32	6 N, 20 E		8339		TBD	
I43	Waterway	R-S08						305.2							Waukesha	City of New Berlin	NE	SE	32	6 N, 20 E					
I43	Waterway	R-S09						189.9							Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E					
I43	Fresh (wet) Meadow	R-W36	X							0.0			49180.9		Waukesha	City of New Berlin	MULTI	SE	32	6 N, 20 E		49181			
I43	Fresh (wet) Meadow	R-W37	X							120.6			76.1		Waukesha	City of New Berlin	NW	SE	32	6 N, 20 E		197			
I43	Fresh (wet) Meadow	R-W38	X							0.0			330.2		Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E		330			
I43	Fresh (wet) Meadow	R-W39	X							0.0			43.2		Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E		43			
I43	Fresh (wet) Meadow	R-W40	X							0.0			192.9		Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E		193			
I43	Fresh (wet) Meadow	R-W41	X							82.2			899.9		Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E		982			
I43	Waterway	R-S10						287							Waukesha	City of New Berlin	SW	NE	33	6 N, 20 E					
I43	Fresh (wet) Meadow	R-W42	X							150.2			1277.1		Waukesha	City of New Berlin	SW	NW	33	6 N, 20 E		1427			
I43	Fresh (wet) Meadow	R-W43	X							0.0			2881.5		Waukesha	City of New Berlin	MULTI	NW	33	6 N, 20 E		2881			
I43	Fresh (wet) Meadow	R-W44	X							0.0			1173.0		Waukesha	City of New Berlin	SE	NW	33	6 N, 20 E		1173			
I43	Fresh (wet) Meadow	R-W45	X							0.0			5994.9		Waukesha	City of New Berlin	SE	NW	33	6 N, 20 E		5995			
I43	Fresh (wet) Meadow	R-W46	X							0.0			5733.6		Waukesha	City of New Berlin	MULTI	NW	33	6 N, 20 E		5734			
I43	Fresh (wet) Meadow	R-W47	X							0.0			4692.4		Waukesha	City of New Berlin	SW	NE	33	6 N, 20 E		4692			
I43	Fresh (wet) Meadow	R-W48	X							69.4			8206.7		Waukesha	City of New Berlin	MULTI	NE	33	6 N, 20 E		8276			
I43	Fresh (wet) Meadow	R-W49	X							0.0			2950.8		Waukesha	City of New Berlin	MULTI	NE	33	6 N, 20 E		2951			
I43	Fresh (wet) Meadow	R-W50	X							0.0			895.2		Waukesha	City of New Berlin	NE	NE	33	6 N, 20 E		895			
I43	Fresh (wet) Meadow	R-W51	X							0.0			515.0		Waukesha	City of New Berlin	NW	NW	34	6 N, 20 E		515			
I43	Fresh (wet) Meadow	R-W52	X							0.0			93.8		Waukesha	City of New Berlin	NW	NW	34	6 N, 20 E		94			
I43	Fresh (wet) Meadow	R-W53	X							141.0			34.5		Waukesha	City of New Berlin	NE	NW	34	6 N, 20 E		176			
Mooreland Road	Fresh (wet) Meadow	R-W56	X							0.0			921.4		Waukesha	City of New Berlin	SE	NE	34	6 N, 20 E		921			
Mooreland Road	Fresh (wet) Meadow	R-W57	X							0.0			142.2		Waukesha	City of New Berlin	SE	NE	34	6 N, 20 E		142			
Mooreland Road	Fresh (wet) Meadow	R-W58	X							0.0			723.1		Waukesha	City of New Berlin	SE	NE	34	6 N, 20 E		723			
Mooreland Road	Fresh (wet) Meadow	R-W59	X							0.0			1409.9		Waukesha	City of New Berlin	NE	SE	34	6 N, 20 E		1410			
Mooreland Road	Fresh (wet) Meadow	R-W60	X							0.0			1727.6		Waukesha	City of New Berlin	NE	SE	34	6 N, 20 E		1728			
Mooreland Road	Fresh (wet) Meadow	R-W62	X							0.0			1983.1		Waukesha	City of New Berlin	NE	SE	34	6 N, 20 E		1983			
Mooreland Road	Fresh (wet) Meadow	R-W63	X							0.0			207.7		Waukesha	City of New Berlin	NE	SE	34	6 N, 20 E		208			
Mooreland Road	Fresh (wet) Meadow	R-W65	X							0.0			1752.8		Waukesha	City of New Berlin	NE	SE	34	6 N, 20 E		1753			
Mooreland Road	Fresh (wet) Meadow	R-W67	X							34.4			2619.5		Waukesha	City of New Berlin	SE	SE	34	6 N, 20 E		2654			
Mooreland Road	Fresh (wet) Meadow	R-W68	X							0.0			96.4		Waukesha	City of New Berlin	MULTI	SE	34	6 N, 20 E		96			
Mooreland Road	Fresh (wet) Meadow	R-W69	X							0.0			689.1		Waukesha	City of New Berlin	SW	SE	34	6 N, 20 E		689			
Mooreland Road	Fresh (wet) Meadow	R-W72	X							0.0			588.0		Waukesha	City of New Berlin	SW	SE	34	6 N, 20 E		588			
Mooreland Road	Shrub-carr	R-W73	X							293.5			85.6		Waukesha	City of Muskego	NW	NE	3	5 N, 20 E		379			
Mooreland Road	Deep and Shallow Marsh	R-W74	X							282.4			18.5		Waukesha	City of Muskego	NW	NE	3	5 N, 20 E		301			
Mooreland Road	Fresh (wet) Meadow	R-W77	X							20.3			2244.4		Waukesha	City of Muskego	NW	NE	3	5 N, 20 E		2265			
Mooreland Road	Fresh (wet) Meadow	R-W79	X							0.0			355.5		Waukesha	City of Muskego	SW	NE	3	5 N, 20 E		356			
Mooreland Road	Fresh (wet) Meadow	R-W80	X							0.0			220.6		Waukesha	City of Muskego	SE	NE	3	5 N, 20 E		221			
Mooreland Road	Fresh (wet) Meadow	R-W82	X							45.4			55.3		Waukesha	City of Muskego	SE	NE	3	5 N, 20 E		101			
Mooreland Road	Fresh (wet) Meadow	R-W85	X							0.0			625.3		Waukesha	City of Muskego	SE	NE	3	5 N, 20 E		625			
Mooreland Road	Fresh (wet) Meadow	R-W87	X							0.0			339.7		Waukesha	City of Muskego	SE	NE	3	5 N, 20 E		340			
Mooreland Road	Fresh (wet) Meadow	R-W88	X							350.7			1426.8		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		1777			
Mooreland Road	Fresh (wet) Meadow	R-W90	X							3976.1			6053.8		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		10030			
Mooreland Road	Hardwood Swamp, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow	R-W92	X							3276.1			4546.7		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		7823		TBD	
Mooreland Road	Fresh (wet) Meadow	R-W93	X							0.0			26.7		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		27			
Mooreland Road	Fresh (wet) Meadow	R-W94	X							0.0			121.6		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		122			
Mooreland Road	Fresh (wet) Meadow	R-W95	X							0.0			285.5		Waukesha	City of Muskego	NE	SE	3	5 N, 20 E		285			
Mooreland Road	Fresh (wet) Meadow	R-W96	X							2763.1			794.6		Waukesha	City of Muskego	SW	SW	2	5 N, 20 E		3558			
Mooreland Road	Fresh (wet) Meadow	R-W103	X							757.2			1263.8		Waukesha	City of Muskego	NW	NW	11	5 N, 20 E		2021			
Mooreland Road	Wet Mesic Prairie, Shrub-carr	R-W104	X							1.4			595.0		Waukesha	City of Muskego	NE	NW	11	5 N, 20 E		596			
Mooreland Road	Fresh (wet) Meadow	R-W106	X							4.6			6677.7		Waukesha	City of Muskego	NE	NW	11	5 N, 20 E		6682			
Mooreland Road	Fresh (wet) Meadow	R-W99	X							371.2			27.9		Waukesha	City of Muskego	NW	NW	11	5 N, 20 E		399			

PSC DOCKET NUMBER:

Table 1 DNR Wetland/Waterway Impact Location Table

Supplement Document to WDNR Form 3500-53. Check all that apply.

Note: Any revisions to this table must be agreed upon by all parties before filing.

RESOURCE				CONSTRUCTION METHOD/ACTIVITY											LOCATION						RESOURCE IMPACT				DNR DOCKET [13]
				Waterway Impact Activity						Wetland Impact Activity															
					Dredge [4]					Temporary Impact															
Route/ Segment/ Contract	Wetland Type or Waterway Name [1]	Feature Unique ID [2]	Permit Required	Bridge [3]	square feet	cubic yards	Grading on banks (upland) over 10,000 sq. ft. [5]	HDD (linear feet)	Plow (linear feet)	Trench [6] (square feet)	Matting [7] (square feet)	Bore Pits [8] (square feet)	Grading [9] (square feet)	Permanent Structure/Fill Placement [10] (square feet)	County	Municipality	QQ	Q	Section	Township (N), Range (E/W)	ASNRI [11]	Temporary Fill (square feet)	Permanent Fill (square feet)	Conversion [12] (square feet)	
Durham Drive	Fresh (wet) Meadow	R-W108	X							3.8			5710.6		Waukesha	City of Muskego	MULTI	NW	11	5 N, 20 E		5714			
Durham Drive	Fresh (wet) Meadow	R-W109	X							19.7			1244.4		Waukesha	City of Muskego	NE	NW	11	5 N, 20 E		1264			
Durham Drive	Fresh (wet) Meadow	R-W112	X							1218.5			760.6		Waukesha	City of Muskego	MULTI	NW	11	5 N, 20 E		1979			
Durham Drive	Fresh (wet) Meadow	R-W113	X							32.8			153.0		Waukesha	City of Muskego	SW	NE	11	5 N, 20 E		186			
Mooreland Road	Fresh (wet) Meadow, Deep and Shallow Marsh	R-W114	X							7.6			550.6		Waukesha	City of Muskego	SW	NE	11	5 N, 20 E		558			
Mooreland Road	Fresh (wet) Meadow	R-W115	X							10.7			1125.9		Waukesha	City of Muskego	SW	NE	11	5 N, 20 E		1137			
Durham Drive	Fresh (wet) Meadow	R-W118	X							0.0			41.7		Waukesha	City of Muskego	NW	SE	11	5 N, 20 E		42			
Durham Road	Waterway	R-S11						0							Waukesha	City of Muskego	SW	NW	13	5 N, 20 E					
Durham Drive	Fresh (wet) Meadow	R-W122	X							0.0			73.1		Waukesha	City of Muskego	SW	NW	13	5 N, 20 E		73			
Durham Drive	Fresh (wet) Meadow	R-W125	X							0.0			479.1		Waukesha	City of Muskego	MULTI	SW	13	5 N, 20 E		479			
S. Cape Road	Fresh (wet) Meadow	R-W129	X							1.4			199.1		Waukesha	City of Muskego	NE	NE	24	5 N, 20 E		200			
S. North Cape Road	Waterway	R-S12						251.8							Waukesha	City of Muskego	SE	NE	24	5 N, 20 E					
S. North Cape Road	Fresh (wet) Meadow	R-W133	X							779.6			589.1		Waukesha	City of Muskego	SE	SE	24	5 N, 20 E		1369			
Ryan Road	Hardwood Swamp, Shrub-carr	R-W135	X							0.0			902.8		Milwaukee	City of Franklin	NW	NW	30	5 N, 21 E		903		TBD	
Ryan Road	Hardwood Swamp, Fresh (wet) Meadow	R-W137	X							311.1			2960.5		Milwaukee	City of Franklin	NW	NW	30	5 N, 21 E		3272		TBD	
Ryan Road	Deep and Shallow Marsh	R-W138	X							19.8			201.9		Milwaukee	City of Franklin	NW	NW	30	5 N, 21 E		222			
Ryan Road	Fresh (wet) Meadow	R-W141	X							1310.1			181.3		Milwaukee	City of Franklin	NE	NW	30	5 N, 21 E		1491			
Ryan Road	Fresh (wet) Meadow	R-W146	X							367.0			34.2		Milwaukee	City of Franklin	NE	NW	30	5 N, 21 E		401			
Ryan Road	Fresh (wet) Meadow	R-W147	X							4.6			119.5		Milwaukee	City of Franklin	NW	NE	30	5 N, 21 E		124			
Ryan Road	Waterway	R-W149	X							950.7			86.2		Milwaukee	City of Franklin	NW	NE	30	5 N, 21 E		1037			
Ryan Road	Fresh (wet) Meadow	R-S13						775.7							Milwaukee	City of Franklin	SE	SE	19	5 N, 21 E					
Ryan Road	Fresh (wet) Meadow	R-W150	X							418.6			77.6		Milwaukee	City of Franklin	NW	NE	30	5 N, 21 E		496			
Ryan Road	Floodplain Forest, Fresh (wet) Meadow	R-W152	X							0.0			1623.3		Milwaukee	City of Franklin	NE	NE	30	5 N, 21 E		1623		TBD	
Ryan Road	Shrub-carr	R-W154	X							0.0			1480.6		Milwaukee	City of Franklin	MULTI	NW	29	5 N, 21 E		1481			
Ryan Road	Fresh (wet) Meadow	R-W159	X							0.0			222.1		Milwaukee	City of Franklin	NE	NW	29	5 N, 21 E		222			
Ryan Road	Hardwood Swamp, Fresh (wet) Meadow	R-W161	X							0.0			2510.4		Milwaukee	City of Franklin	MULTI	NE	29	5 N, 21 E		2510		TBD	
Ryan Road	Hardwood Swamp, Fresh (wet) Meadow	R-W162	X							774.8			7594.2		Milwaukee	City of Franklin	NW	NE	29	5 N, 21 E		8369		TBD	
Ryan Road	Fresh (wet) Meadow	R-W163	X							0.0			205.3		Milwaukee	City of Franklin	NW	NE	29	5 N, 21 E		205			
Ryan Road	Floodplain Forest, Deep and Shallow Marsh, Fresh (wet) Meadow, Shrub-carr	R-W165	X							1357.2			5485.2		Milwaukee	City of Franklin	MULTI	NE	29	5 N, 21 E		6842		TBD	
Ryan Road	Deep and Shallow Marsh	R-W166	X							1096.7			2669.8		Milwaukee	City of Franklin	NE	NE	29	5 N, 21 E		3767			
Ryan Road	Shrub-carr, Fresh (wet) Meadow	R-W169	X							744.1			7.8		Milwaukee	City of Franklin	NE	NE	29	5 N, 21 E		752			
Ryan Road	Fresh (wet) Meadow	R-W170	X							218.4			1276.8		Milwaukee	City of Franklin	NW	NW	28	5 N, 21 E		1495			
Ryan Road	Fresh (wet) Meadow	R-W171	X							698.8			230.1		Milwaukee	City of Franklin	NW	NW	28	5 N, 21 E		929			
Ryan Road	Waterway	R-S14						425.9							Milwaukee	City of Franklin	SE	SW	21	5 N, 21 E					
Ryan Road	Shrub-carr	R-W173	X							0.0			100.4		Milwaukee	City of Franklin	NE	NW	28	5 N, 21 E		100			
Ryan Road	Fresh (wet) Meadow	R-W175	X							731.7			401.1		Milwaukee	City of Franklin	NE	NW	28	5 N, 21 E		1133			
Ryan Road	Fresh (wet) Meadow	R-W177	X							0.0			309.6		Milwaukee	City of Franklin	NW	NE	28	5 N, 21 E		310			
Ryan Road	Fresh (wet) Meadow	R-W179	X							0.0			1923.1		Milwaukee	City of Franklin	NW	NE	28	5 N, 21 E		1923			
Ryan Road	Fresh (wet) Meadow	R-W181	X							0.0			126.9		Milwaukee	City of Franklin	NE	NE	28	5 N, 21 E		127			
Ryan Road	Fresh (wet) Meadow	R-W183	X							0.0			530.0		Milwaukee	City of Franklin	NE	NE	28	5 N, 21 E		530			
Ryan Road	Waterway	R-S15						0							Milwaukee	City of Franklin	SE	SW	22	5 N, 21 E					
Ryan Road	Fresh (wet) Meadow, Deep and Shallow Marsh	R-W185	X							4689.3			3805.8		Milwaukee	City of Franklin	NW	NW	27	5 N, 21 E		8495			
Ryan Road	Hardwood Swamp, Deep and Shallow Marsh	R-W186	X							2727.3			2513.0		Milwaukee	City of Franklin	NE	NW	27	5 N, 21 E		5240		TBD	
Ryan Road	Fresh (wet) Meadow	R-W188	X							125.1			105.4		Milwaukee	City of Franklin	NE	NW	27	5 N, 21 E		230			
Ryan Road	Waterway	R-S16						1423.2							Milwaukee	City of Franklin	SE	SE	22	5 N, 21 E					
Ryan Road	Fresh (wet) Meadow	R-W189	X							0.0			61.8		Milwaukee	City of Franklin	NE	NW	27	5 N, 21 E		62			
Ryan Road	Fresh (wet) Meadow	R-W190	X							30.8			865.1		Milwaukee	City of Franklin	NE	NW	27	5 N, 21 E		896			
Ryan Road	Fresh (wet) Meadow	R-W191	X							678.1			679.6		Milwaukee	City of Franklin	NW	NE	27	5 N, 21 E		1358			
Ryan Road	Fresh (wet) Meadow	R-W192	X							10545.9			23485.6		Milwaukee	City of Franklin	MULTI	NE	27	5 N, 21 E		34032			
S. 60th St	Fresh (wet) Meadow	R-W193	X							1.9			34.6		Milwaukee	City of Franklin	SW	NW	26	5 N, 21 E		37			
S. 60th St	Fresh (wet) Meadow	R-W194	X							45.0			89.2		Milwaukee	City of Franklin	SW	NW	26	5 N, 21 E		134			
W. Lawnsdale Road	Fresh (wet) Meadow	MKE-R-W05	X							2494.3			2780.9		Waukesha	City of New Berlin	NE	NE	29	6 N, 20 E		5275			
W. Lawnsdale Road	Waterway	MKE-R-S01	X					0							Waukesha	City of New Berlin	SE	SE	20	6 N, 20 E					
W. Lawnsdale Road	Fresh (wet) Meadow	MKE-R-W06	X							327.9			1592.0		Waukesha	City of New Berlin	NE	NE	29	6 N, 20 E		1920			
W. Lawnsdale Road	Fresh (wet) Meadow	MKE-R-W07	X							0.0			913.5		Waukesha	City of New Berlin	MULTI	NW	28	6 N, 20 E		913			
W. Lawnsdale Road	Fresh (wet) Meadow	MKE-R-W08	X							0.0			312.2		Waukesha	City of New Berlin	MULTI	NW	28	6 N, 20 E		312			
W. Lawnsdale Road	Waterway	MKE-R-S02						0							Waukesha	City of New Berlin	NE	NW	28	6 N, 20 E					
Farmland	Fresh (wet) Meadow	MKE-R-PI11	X							149.5			623.3		Waukesha	City of New Berlin	SE	SE	21	6 N, 20 E		773			
W. Beloit Road	Waterway	MKE-R-S03						341.2							Waukesha	City of New Berlin	SW	NW	27	6 N, 20 E					
S. Calhoun Road	Fresh (wet) Meadow	MKE-R-W15	X							2.3			831.3		Waukesha	City of New Berlin	SW	NW	27	6 N, 20 E		834			
W. Beloit Road	Waterway	MKE-R-S04						354.6							Waukesha	City of New Berlin	NE	NE	27	6 N, 20 E					
W. Beloit Road	Waterway	MKE-R-S05						0							Waukesha	City of New Berlin	NW	NW	26	6 N, 20 E					
W. Beloit Road	Deep and Shallow Marsh	MKE-R-W21	X							0.0			405.8		Waukesha	City of New Berlin	NW	NW	26	6 N, 20 E		406			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W22	X							558.6			2412.9		Waukesha	City of New Berlin	NE	NW	26	6 N, 20 E		2971			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W25	X							83.6			0.0		Waukesha	City of New Berlin	NE	NE	26	6 N, 20 E		84			
W. Beloit Road	Waterway	MKE-R-S06						7475							Waukesha	City of New Berlin	NE	NW	25	6 N, 20 E					
W. Beloit Road	Waterway	MKE-R-S07						0							Waukesha	City of Greenfield	NW	SW	19	6 N, 21 E					
W. Beloit Road	Waterway	MKE-R-S08						7475							Waukesha	City of Greenfield	NW	SW	19	6 N, 21 E					
W. Beloit Road	Deep and Shallow Marsh	MKE-R-W29	X							3813.0			1169.1		Waukesha	City of New Berlin	NW	NW	25	6 N, 20 E		4982			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W30	X							2395.9			1199.5		Waukesha	City of New Berlin	MULTI	NW	25	6 N, 20 E		3595			
W. Beloit Road	Fresh (wet) Meadow, Deep and Shallow Marsh	MKE-R-W31	X							2295.1			2350.7		Waukesha	City of New Berlin	NE	NW	25	6 N, 20 E		4646			
W. Beloit Road	Fresh (wet) Meadow, Deep and Shallow Marsh	MKE-R-W33	X							1139.5			7072.1		Waukesha	City of New Berlin	NE	NW	25	6 N, 20 E		8212			
W. Beloit Road	Deep and Shallow Marsh	MKE-R-W35	X							0.0			188.6		Waukesha	City of New Berlin	NE	NW	25	6 N, 20 E		189			

PSC DOCKET NUMBER:

Table 1 DNR Wetland/Waterway Impact Location Table

Supplement Document to WDNR Form 3500-53. Check all that apply.

Note: Any revisions to this table must be agreed upon by all parties before filing.

RESOURCE				CONSTRUCTION METHOD/ACTIVITY										LOCATION						RESOURCE IMPACT				DNR DOCKET [13]
				Waterway Impact Activity				Wetland Impact Activity																
					Dredge [4]				Temporary Impact															
Route/ Segment/ Contract	Wetland Type or Waterway Name [1]	Feature Unique ID [2]	Permit Required	Bridge [3]	square feet	cubic yards	Grading on banks (upland) over 10,000 sq. ft. [5]	HDD (linear feet)	Plow (linear feet)	Trench [6] (square feet)	Matting [7] (square feet)	Bore Pits [8] (square feet)	Grading [9] (square feet)	Permanent Structure/Fill Placement [10] (square feet)	County	Municipality	QQ	Q	Section	Township (N), Range (E/W)	ASNRI [11]	Temporary Fill (square feet)	Permanent Fill (square feet)	Conversion [12] (square feet)	
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W36	X							0.0			121.1		Waukesha	City of New Berlin	SW	SE	24	6 N, 20 E		121			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W40	X							0.4			22.0		Waukesha	City of New Berlin	SW	SE	24	6 N, 20 E		22			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W41	X							0.0			16.7		Waukesha	City of New Berlin	SW	SE	24	6 N, 20 E		17			
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W42	X							7.3			125.4		Waukesha	City of New Berlin	SW	SE	24	6 N, 20 E		133			
W. Coldspring Road	Waterway	MKE-R-S09						299.8							Waukesha	City of Greenfield	SE	NW	19	6 N, 21 E					
W. Beloit Road	Fresh (wet) Meadow	MKE-R-W50	X							0.6			183.3		Milwaukee	City of Greenfield	NW	SW	19	6 N, 21 E		184			
W. Beloit Road	Deep and Shallow Marsh	MKE-R-W52	X							440.7			171.1		Milwaukee	City of Greenfield	NW	SW	19	6 N, 21 E		612			
W. Coldspring Road	Waterway	MKE-R-S11	X					362.5							Milwaukee	City of Greenfield	SE	NE	19	6 N, 21 E					
W. Coldspring Road	Waterway	MKE-R-S12						839.6							Milwaukee	City of Greenfield	SW	NW	20	6 N, 21 E					
W. Coldspring Road	Fresh (wet) Meadow	MKE-R-W55	X							0.0			283.4		Milwaukee	City of Greenfield	NE	SE	19	6 N, 21 E		283			
W. Coldspring Road	Waterway	MKE-R-S13						0							Milwaukee	City of Greenfield	NE	SW	20	6 N, 21 E					
W. Coldspring Road	Fresh (wet) Meadow	MKE-R-W56	X							0.0			1782.4		Milwaukee	City of Greenfield	NW	SW	20	6 N, 21 E		1782			
W. Coldspring Road	Fresh (wet) Meadow, Deep and Shallow Marsh	MKE-R-W58	X							30.4			1275.2		Milwaukee	City of Greenfield	NE	SW	20	6 N, 21 E		1306			
W. Coldspring Road	Waterway	MKE-R-S14						0							Milwaukee	City of Greenfield	SE	NW	21	6 N, 21 E					
W. Coldspring Road	Waterway	MKE-R-S15						350.6							Milwaukee	City of Greenfield	SE	NE	22	6 N, 21 E					
																					Total (sq. ft.)	1101999	0	0	
																					Total (acre)	25.3	0	0	

Notes:

[1] For wetlands, state the wetland type using the Eggers and Reed Classification system. For waterways, indicate where water flows (e.g. UNT to Silver Creek) (UNT = unnamed tributary). Include all waterways mapped in the DNR Surface Water Data Viewer webtool that cross the project path.
[2] Insert the code or other reference used in application (e.g. Wetland 1, Stream 1)
[3] Indicate the number of bridges needed
[4] If the waterway will be dredged, indicate the area (length by width) and volume (length by width by depth) of bed material to be removed and backfilled (temporary dredge)
[5] Only complete this column if the upland banks of the waterway will be graded in excess of 10,000 sq. ft., and if the project is not located in Milwaukee County, if the project will not require a local grading permit, and if the project will not require a DNR construction stormwater permit
[6] If the wetland will be trenched, indicate the area (length by width) of soil to be removed and backfilled (temporary fill)
[7] If construction matting (i.e. timber, composite, etc.) will be placed in wetland for vehicle/equipment access or under soil stockpiles, indicate the area (length by width) of matting to be placed in wetland (temporary fill)
[8] If the area of temporary wetland disturbance (length by width) for each bore pit is unknown at this time, please use an estimate based on the size of the pipe
[9] Grading includes construction access, material stock piling, staging, as well as grading.
[10] If a permanent structure or permanent fill will be placed in wetland (i.e. valve station, lift station, hydrants, etc.), incidate the area (length by width) of permanent fill
[11] Indicate if the wetland or waterway is a DNR Area of Special Natural Resource Interest, which includes trout streams
[12] Conversion refers to vegetative clearing of shrub and/or forested wetlands, resulting in an herbaceous wetland, for the purposes of construction
TBD - Conversion impacts to be determined
[13] Assigned and to be completed by the DNR

(please submit in excel and pdf format)

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
S. Racine Avenue	F2-W01	Wetland	Hardwood Swamp, Fresh (wet) Meadow	2	D		50	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Reed canary grass (*Phalaris arundinacea*) dominated depression in agriculture field		
West Oakwood Road	F3-W01	Wetland	Floodplain Forest, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow, Sedge Meadow	3	D		n/a	CH2M to provide additional data	Complex of different wetland plant communities; Large component is farmed wetland	Adjacent to Root River and within floodplain; Impact primarily associated with the farmed wetland	
HWY 59/Les Paul Parkway	R-S01	Potential Waterway	TRC Desk	9	C		200	No impact proposed; potential HDD			
HWY 59/Les Paul Parkway	R-S02	Potential Waterway	TRC Desk	10	C		250	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
HWY 59/Les Paul Parkway	R-S03	Potential Waterway	TRC Desk	10	C		280	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
HWY 59/Les Paul Parkway	R-S04	Potential Waterway	NHD	11	C		280	No impact proposed; potential HDD			
HWY 59/Les Paul Parkway	R-W08	Wetland	Floodplain Forest, Deep and Shallow Marsh, Fresh (wet) Meadow, Shrub-carr	11	D		260	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Complex of different wetland plant communities	Adjacent to Pebble Brook	
HWY 59/Les Paul Parkway	R-S05	Potential Waterway	NHD	12	C		250	No impact proposed; potential HDD			
HWY 59/Les Paul Parkway	R-S06	Potential Waterway	NHD	12	C		200	No impact proposed; potential HDD			
HWY 59/Les Paul Parkway	R-S07	Potential Waterway	TRC Desk	12	C		220	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
S. Racine Avenue	R-W15	Wetland	Fresh (wet) Meadow	20	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Edge of agricultural field / roadside swale		
S. Racine Avenue	R-W17	Wetland	Fresh (wet) Meadow	21	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
S. Racine Avenue	R-W18	Wetland	Fresh (wet) Meadow	21	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
S. Racine Avenue	R-W19	Wetland	Fresh (wet) Meadow	22	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Edge of agricultural field		
S. Racine Avenue	R-W20	Wetland	Fresh (wet) Meadow	23	D		245	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with stormwater outfall		
S. Racine Avenue	R-W21	Wetland	Fresh (wet) Meadow	23	D		245	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Maintained planted turfgrass		
W. Lawnsdale Road	MKE-R-W01	Wetland	Hardwood Swamp	23	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
W. Lawnsdale Road	MKE-R-W03	Wetland	Hardwood Swamp	23	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
W. Lawnsdale Road	MKE-R-W04	Wetland	Hardwood Swamp, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow	23	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Marsh component dominated by cattail (*Typha* spp.)		
S. Racine Avenue	R-W27	Wetland	Deep and Shallow Marsh	28	D		150	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Potential stormwater pond		
S. Racine Avenue	R-W29	Wetland	Fresh (wet) Meadow	28	D		150	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with stormwater conveyance		
S. Racine Avenue	R-W35	Wetland	Deep and Shallow Marsh, Fresh (wet) Meadow, Hardwood Swamp	29	D		150	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside ditch/stormwater conveyance		
I43	R-S08	Potential Waterway	NHD	30	C		300	No impact proposed; potential HDD			
I43	R-S09	Potential Waterway	NHD	30	C		345	No impact proposed; potential HDD			
I43	R-W36	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with stormwater conveyance;	Eastern portion is adjacent to an unnamed tributary to Muskego Creek	

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
I43	R-W37	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Small roadside seep with common reed (Phragmites) dominant		
I43	R-W38	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with small culvert discharge		
I43	R-W39	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
I43	R-W40	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Stormwater conveyance; *Phragmites* dominant		
I43	R-W41	Wetland	Fresh (wet) Meadow	30	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Stormwater conveyance; *Phragmites* dominant	Adjacent to unnamed tributary to Muskego Creek	
I43	R-S10	Potential Waterway	NHD	31	C		375	No impact proposed; potential HDD			
I43	R-W42	Wetland	Fresh (wet) Meadow	31	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Small roadside seep with *Typha* dominant		
I43	R-W43	Wetland	Fresh (wet) Meadow	31	D		350	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W44	Wetland	Fresh (wet) Meadow	31	D		350	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W45	Wetland	Fresh (wet) Meadow	31	D		350	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W46	Wetland	Fresh (wet) Meadow	31	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to Muskego Creek	
I43	R-W47	Wetland	Fresh (wet) Meadow	31	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to Muskego Creek	
I43	R-W48	Wetland	Fresh (wet) Meadow	32	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W49	Wetland	Fresh (wet) Meadow	33	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W50	Wetland	Fresh (wet) Meadow	33	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W51	Wetland	Fresh (wet) Meadow	33	D		400	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
I43	R-W52	Wetland	Fresh (wet) Meadow	33	D		390	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with culvert outfall		
I43	R-W53	Wetland	Fresh (wet) Meadow	34	D		300	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Mooreland Road	R-W56	Wetland	Fresh (wet) Meadow	35	D		130	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W57	Wetland	Fresh (wet) Meadow	35	D		130	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		

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DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
Mooreland Road	R-W58	Wetland	Fresh (wet) Meadow	35	D		130	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W59	Wetland	Fresh (wet) Meadow	36	D		280	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Mooreland Road	R-W60	Wetland	Fresh (wet) Meadow	36	D		280	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Mooreland Road	R-W62	Wetland	Fresh (wet) Meadow	36	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W63	Wetland	Fresh (wet) Meadow	36	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Mooreland Road	R-W65	Wetland	Fresh (wet) Meadow	36	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W67	Wetland	Fresh (wet) Meadow	37	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W68	Wetland	Fresh (wet) Meadow	37	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W69	Wetland	Fresh (wet) Meadow	37	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W72	Wetland	Fresh (wet) Meadow	37	D		315	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W73	Wetland	Shrub-carr	37	D		280	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W74	Wetland	Deep and Shallow Marsh	37	D		280	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W77	Wetland	Fresh (wet) Meadow	38	D		260	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W79	Wetland	Fresh (wet) Meadow	38	D		260	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W80	Wetland	Fresh (wet) Meadow	38	D		260	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W82	Wetland	Fresh (wet) Meadow	38	D		260	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with culvert outfall		
Mooreland Road	R-W85	Wetland	Fresh (wet) Meadow	39	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W87	Wetland	Fresh (wet) Meadow	39	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W88	Wetland	Fresh (wet) Meadow	39	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
Mooreland Road	R-W90	Wetland	Fresh (wet) Meadow	39	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W92	Wetland	Hardwood Swamp, Deep and Shallow Marsh, Shrub-carr, Fresh (wet) Meadow	40	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W93	Wetland	Fresh (wet) Meadow	40	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W94	Wetland	Fresh (wet) Meadow	40	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W95	Wetland	Fresh (wet) Meadow	40	D		210	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W96	Wetland	Fresh (wet) Meadow	40	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W103	Wetland	Fresh (wet) Meadow	41	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W104	Wetland	Wet Mesic Prairie, Shrub-carr	41	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Mooreland Road	R-W106	Wetland	Fresh (wet) Meadow	41	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W99	Wetland	Fresh (wet) Meadow	41	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Drive	R-W108	Wetland	Fresh (wet) Meadow	42	D		200	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Drive	R-W109	Wetland	Fresh (wet) Meadow	42	D		220	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Drive	R-W112	Wetland	Fresh (wet) Meadow	42	D		120	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Drive	R-W113	Wetland	Fresh (wet) Meadow	42	D		120	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W114	Wetland	Fresh (wet) Meadow, Deep and Shallow Marsh	42	D		250	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Mooreland Road	R-W115	Wetland	Fresh (wet) Meadow	42	D		250	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Drive	R-W118	Wetland	Fresh (wet) Meadow	43	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Durham Road	R-S11	Potential Waterway	TRC Desk	46	C		50	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
Durham Drive	R-W122	Wetland	Fresh (wet) Meadow	46	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Edge of agriculture field		
Durham Drive	R-W125	Wetland	Fresh (wet) Meadow	46	D		220	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
S. Cape Road	R-W129	Wetland	Fresh (wet) Meadow	48	D		175	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
S. North Cape Road	R-S12	Potential Waterway	TRC Field	50	D		100	No impact proposed; potential HDD			
S. North Cape Road	R-W133	Wetland	Fresh (wet) Meadow	51	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
Ryan Road	R-W135	Wetland	Hardwood Swamp, Shrub-carr	52	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W137	Wetland	Hardwood Swamp, Fresh (wet) Meadow	52	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W138	Wetland	Deep and Shallow Marsh	52	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Next to old railroad bed/trail		
Ryan Road	R-W141	Wetland	Fresh (wet) Meadow	53	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W146	Wetland	Fresh (wet) Meadow	53	D		75	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W147	Wetland	Fresh (wet) Meadow	53	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Ryan Road	R-W149	Potential Waterway	NHD	54	C		100	No impact proposed; potential HDD			
Ryan Road	R-S13	Wetland	Fresh (wet) Meadow	53	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside Swale		
Ryan Road	R-W150	Wetland	Fresh (wet) Meadow	54	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside Swale		
Ryan Road	R-W152	Wetland	Floodplain Forest, Fresh (wet) Meadow	54	D		90	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to Ryan Creek	
Ryan Road	R-W154	Wetland	Shrub-carr	55	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Buckthorn was dominant (*Rhamnus cathartica* and *Frangula alnus*)		
Ryan Road	R-W159	Wetland	Fresh (wet) Meadow	55	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Edge of agriculture field		
Ryan Road	R-W161	Wetland	Hardwood Swamp, Fresh (wet) Meadow	56	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W162	Wetland	Hardwood Swamp, Fresh (wet) Meadow	56	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W163	Wetland	Fresh (wet) Meadow	56	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W165	Wetland	Floodplain Forest, Deep and Shallow Marsh, Fresh (wet) Meadow, Shrub-carr	56	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Reed canary grass and cattail are prevalent		
Ryan Road	R-W166	Wetland	Deep and Shallow Marsh	56	D		90	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Reed canary grass and cattail are prevalent		
Ryan Road	R-W169	Wetland	Shrub-carr, Fresh (wet) Meadow	57	D		90	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Buckthorn and reed canary grass are prevalent		

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
Ryan Road	R-W170	Wetland	Fresh (wet) Meadow	57	D		90	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Mix of grass and sedge		
Ryan Road	R-W171	Wetland	Fresh (wet) Meadow	57	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
Ryan Road	R-S14	Potential Waterway	NHD	58	C		65	No impact proposed; potential HDD			
Ryan Road	R-W173	Wetland	Shrub-carr	58	D		65	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to unnamed tributary to Ryan Creek	
Ryan Road	R-W175	Wetland	Fresh (wet) Meadow	58	D		70	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W177	Wetland	Fresh (wet) Meadow	58	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Fallow edge of agriculture field		
Ryan Road	R-W179	Wetland	Fresh (wet) Meadow	59	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
Ryan Road	R-W181	Wetland	Fresh (wet) Meadow	59	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
Ryan Road	R-W183	Wetland	Fresh (wet) Meadow	59	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
Ryan Road	R-S15	Potential Waterway	NHD	60	C		120	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
Ryan Road	R-W185	Wetland	Fresh (wet) Meadow, Deep and Shallow Marsh	60	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Cattail, *Phragmites* and reed canary grass in the shallow marsh compnent.		
Ryan Road	R-W186	Wetland	Hardwood Swamp, Deep and Shallow Marsh	60	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
Ryan Road	R-W188	Wetland	Fresh (wet) Meadow	60	D		120	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Associated with culvert outfall		
Ryan Road	R-S16	Potential Waterway	NHD	61	C		160	No impact proposed; potential HDD			
Ryan Road	R-W189	Wetland	Fresh (wet) Meadow	61	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Ryan Road	R-W190	Wetland	Fresh (wet) Meadow	61	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Ryan Road	R-W191	Wetland	Fresh (wet) Meadow	61	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
Ryan Road	R-W192	Wetland	Fresh (wet) Meadow	61	D		115	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to the Root River	
S. 60th St	R-W193	Wetland	Fresh (wet) Meadow	63	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
S. 60th St	R-W194	Wetland	Fresh (wet) Meadow	63	D		80	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
W. Lawnsdale Road	MKE-R-W05	Wetland	Fresh (wet) Meadow	65	D		60	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			

PSC DOCKET NO.

DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
W. Lawnsdale Road	MKE-R-S01	Potential Waterway	TRC Field	65	D		100	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Lawnsdale Road	MKE-R-W06	Wetland	Fresh (wet) Meadow	65	D		50	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons			
W. Lawnsdale Road	MKE-R-S02	Potential Waterway	TRC Field	66	D		110	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Lawnsdale Road	MKE-R-W07	Wetland	Fresh (wet) Meadow	66	D		97	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Hillside seep - potential fen		
W. Lawnsdale Road	MKE-R-W08	Wetland	Fresh (wet) Meadow	66	D		97	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Hillside seep - potential fen		
Farmland	MKE-R-PI11	Wetland	Fresh (wet) Meadow	67	C	50 (Easement)		Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Swale within agriculture field		
W. Beloit Road	MKE-R-S03	Potential Waterway	NHD	69	C		25	No impact proposed; potential HDD			
S. Calhoun Road	MKE-R-W15	Wetland	Fresh (wet) Meadow	69	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
W. Beloit Road	MKE-R-S04	Potential Waterway	NHD	71	C		90	No impact proposed; potential HDD			
W. Beloit Road	MKE-R-S05	Potential Waterway	TRC Field	71	D		150	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Beloit Road	MKE-R-W21	Wetland	Deep and Shallow Marsh	72	D		150	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to unnamed tributary	
W. Beloit Road	MKE-R-W22	Wetland	Fresh (wet) Meadow	72	D		100	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
W. Beloit Road	MKE-R-W25	Wetland	Fresh (wet) Meadow	73	D			Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Beloit Road	MKE-R-S06	Potential Waterway	TRC Field	74	D		220	No impact proposed; potential HDD			
W. Beloit Road	MKE-R-S07	Potential Waterway	TRC Field	74	D		110	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Beloit Road	MKE-R-S08	Potential Waterway	TRC Field	74	D		110	No impact proposed; potential HDD			
W. Beloit Road	MKE-R-W29	Wetland	Deep and Shallow Marsh	74	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale	Appears to have surface water connection to unnamed tributary	
W. Beloit Road	MKE-R-W30	Wetland	Fresh (wet) Meadow	74	D		50	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale	Appears to have surface water connection to unnamed tributary	
W. Beloit Road	MKE-R-W31	Wetland	Fresh (wet) Meadow, Deep and Shallow Marsh	74	D		50	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale	Appears to have surface water connection to unnamed tributary	
W. Beloit Road	MKE-R-W33	Wetland	Fresh (wet) Meadow, Deep and Shallow Marsh	74	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Surface water connection to unnamed tributary	
W. Beloit Road	MKE-R-W35	Wetland	Deep and Shallow Marsh	75	D		180	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Beloit Road	MKE-R-W36	Wetland	Fresh (wet) Meadow	75	D		150	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Beloit Road	MKE-R-W40	Wetland	Fresh (wet) Meadow	76	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		

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DNR Table 2 - DNR Waterway/Wetland Environmental Inventory Table[1]

Route: MKE route

Segment	Feature ID[2]	Feature Type, Name and Designation	Resource Description[3]	Map Page Index	Survey Technique[4]	New/Additional ROW Width (feet)	Existing ROW Width[6] (feet)	Impact Justification	Waterway//Wetland Characteristics	Working Comments	DNR Comment __/__/__
W. Beloit Road	MKE-R-W41	Wetland	Fresh (wet) Meadow	76	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Beloit Road	MKE-R-W42	Wetland	Fresh (wet) Meadow	76	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Coldspring Road	MKE-R-S09	Potential Waterway	TRC Field/NHD	77	D		90	No impact proposed; potential HDD			
W. Beloit Road	MKE-R-W50	Wetland	Fresh (wet) Meadow	77	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance	Connects to an unnamed tributary	
W. Beloit Road	MKE-R-W52	Wetland	Deep and Shallow Marsh	77	D		190	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale/stormwater conveyance		
W. Coldspring Road	MKE-R-S11	Potential Waterway	TRC Field/NHD	79	D		110	No impact proposed; potential HDD			
W. Coldspring Road	MKE-R-S12	Potential Waterway	TRC Field/NHD	79	D		90	No impact proposed; potential HDD			
W. Coldspring Road	MKE-R-W55	Wetland	Fresh (wet) Meadow	79	D		110	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to unnamed tributary to the Root River	
W. Coldspring Road	MKE-R-S13	Potential Waterway	TRC Field	80	D		80	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Coldspring Road	MKE-R-W56	Wetland	Fresh (wet) Meadow	80	D		90	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons		Adjacent to Root River	
W. Coldspring Road	MKE-R-W58	Wetland	Fresh (wet) Meadow, Deep and Shallow Marsh	80	D		75	Using trench installation; HDD or Jack & Bore are not practicable for cost / logistical reasons	Roadside swale		
W. Coldspring Road	MKE-R-S14	Potential Waterway	NHD	82	C		90	N/A		Pipeline does not cross waterway, waterway located adjacent to limits of disturbance	
W. Coldspring Road	MKE-R-S15	Potential Waterway	NHD	86	C		110	No impact proposed; potential HDD			

1 This table may be used for environmental features other than waterways and wetlands, if the applicant chooses based on consultation with the DNR.

2 Feature ID: W# = wetland, WW# = waterway crossing, FW# =forested wetland, F# = forested upland, G# = grassland, SL# = shrub upland. (Note, segment precedes community designation)

3 Resource description follows the Wisconsin DNR Natural Heritage Inventory's (NHI) 2002 Natural Community Classification when applicable. Additional community type classifications may be included to capture communities not covered in the NHI Natural Community Classification
Waterways are named using the mapped river or creek name, or by naming the discharge point of an unnamed tributary if known (e.g. UNT to Embarrass River).

4 Delineation Method: A=aerial photo inspection (offsite delineation); D=1987 Manual delineation (onsite delineation); C=field-checked aerial photo (offsite and field observations); N=not surveyed.

5 Permanent Impacts can include Poles, Pedestals, Gate Stations, etc.
For transmission construction, the values should represent the preliminary worst-case estimate of the number and diameter of transmission structures to be placed in wetlands. A number-letter designation may be used to indicate the number of poles and the diameters of impact in feet. These dimensions should include an additional 3 feet beyond the borehole diameter for backfill/structural support around the hole. Sample letter diameter designations: A = 9 ft, B = 10 ft, C = 10.5 ft, D = 11 ft, E = 11.5 ft, F = 12 ft, G = 12.5 ft, and H = 13 ft.
For other types of construction parenthetic value should be the square footage of the impact area

6 For routes that share an existing ROW, identify the additional ROW width required.

7 Wetland/Waterway Crossing Methods:
Underground Utilities Specify: trench, plow, or bore.
Transmission Construction Specify: CT-1 = Typical upland construction procedures; CT-2 = Typical unstable wetland soil conditions; CT-3 = Typical stable wetland soil condition crossing procedures;
CT-4 = No stream crossing with equipment, wire pull only; CT-4W = Wire pull through wetland, small tracked vehicle only.
Additional Abbreviations: TCSB = Temporary Clear Span Bridge; Structure = any miscellaneous structures placed below the ordinary high water mark.

GREELEY AND HANSEN

741 N. Grand Ave., Suite 308
Waukesha, WI 53186