WABASHA BARGE FACILITY

State of Minnesota

Final Environmental Impact Statement

Wabasha Port Authority, City of Wabasha, Minnesota

September 2024

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FINAL ENVIRONMENTAL IMPACT STATEMENT

For

WABASHA BARGE FACILITY

Wabasha Port Authority

City of Wabasha, Minnesota

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Abstract: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the City of Wabasha, Minnesota. The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract out the port operations and transportation of materials.

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List of Acronyms

ACHP – Advisory Council on Historic Preservation
AADT – Annual Average Daily Traffic
ADT – Average Daily Traffic
APE – Area of Potential Effect
AST – Aboveground Storage Tank
B/C – Benefit-Cost
BMPs – Best Management Practices
CAAA – Clean Air Act Amendments
CCC – Civilian Conservation Corps
CEQ – Council on Environmental Quality
CO – Carbon Monoxide
CR – County Road
CRP – Conservation Reserve Program
CSAH – County and State Aid Highway
CWA – Clean Water Act
dBA – A-weighted Decibel
EAW – Environmental Assessment Worksheet
EIS – Environmental Impact Statement
EPA – Environmental Protection Agency
ESA – Environmental Site Assessment
EQB – Environmental Quality Board
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
FIRM – Flood Insurance Rate Map
FSA – Farm Service Agency
GIS – Geographic Information System
HCADT – Heavy Commercial Average Daily Traffic
HCM – Highway Capacity Manual
JD – Jurisdiction Determination
LAWCON – Land and Water Conservation
LGU – Local Government Unit
LOS – Level of Service
LUST – Leaking Underground Storage Tank
MARAD – Maritime Administration
MDA – Minnesota Department of Agriculture
MDH – Minnesota Department of Health
MEPA – Minnesota Environmental Policy Act
Mn/DOT – Minnesota Department of Transportation
MNDNR – Minnesota Department of Natural Resources
MOA – Memorandum of Agreement
MPCA – Minnesota Pollution Control Agency
MSL – Mean Sea Level
MSAT – Mobile Source Air Toxics
MVM – Million Vehicle Miles
NAAQS – National Ambient Air Quality Standard
NATA – National Air Toxics Assessment
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NHIS – Natural Heritage Information System
NHS – National Highway System
NPDES – National Pollutant Discharge Elimination System
NRCS – Natural Resource Conservation Service
NRHP – National Register of Historic Places
NWI – National Wetland Inventory
OHW – Ordinary High Water
OMLS – Online Multiple Listing Service
PA – Participating Agencies
PAC – Project Advisory Committee
RCV – Remaining Capital Value
RGU – Responsible Governmental Unit
ROD – Record of Decision
ROW – Right-of-Way
SD – Scoping Document
SDD – Scoping Decision Document
SHPO – State Historic Preservation Office
SWPPP – Storm Water Pollution Prevention Plan
SQG – Small Quantity Generator
T & E – Threatened & Endangered
THPO – Tribal Historic Preservation Officer
TMDL – Total Maximum Daily Load
UP – Union Pacific
USACE – United States Army Corps of Engineers
USDOT – United States Department of Transportation
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Service
UST – Underground Storage Tank
VHT – Vehicle Hours Traveled
VMT – Vehicle Miles Traveled
VPD – Vehicles Per Day
WCA – Wetland Conservation Act
WMA – Wildlife Management Area
WPA – Waterfowl Production Area
WSD – Watershed District

1. EXECUTIVE SUMMARY

1.1 Purpose of the Final Environmental Impact Statement

The construction of the Proposed Barge Facility site would involve dredging an access channel from the main navigation channel to the Barge Facility with an estimated total of 37,000 cubic yards (CY) of material removed. This exceeds the threshold of dredging 1,000 CY outlined in Minnesota Rules, 4410.4400, Subpart 17, thus requiring the preparation of an Environmental Impact Statement (EIS).

1.2 Project Description

The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the City of Wabasha, Minnesota. The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract the port operations and transportation of materials.

After construction, it is anticipated that the City of Wabasha would partner with the United States Army Corps of Engineers ("USACE," "the Corps") for the initial 10-year operational period to transfer material that is annually dredged from the Upper Mississippi River 9-foot navigation channel through the Wabasha Barge Facility for transport to off-site facilities. The material would be used for beneficial uses, such as construction, reclamation, or fill material.

Navigational channel dredging, and all other activities performed by the USACE related to the maintenance of the Mississippi River navigation channel, are federal actions, considered separate from the Proposed Project, and are addressed in the 2023 Lower Pool 4 Dredged Material Management Plan (DMMP)[1] and integrated Environmental Assessment (EA).

1.3 Purpose and Need for the Proposed Action

The Project Site is located within Lower Pool 4, a portion of the Upper Mississippi River (UMR), which is a vital component of the United States' inland navigation system. Periodic removal (dredging) of sediment material deposited within the Lower Pool 4 navigation channel and placement of the material on temporary upland locations is necessary to maintain the navigation channel requirements for commercial vessels. The Proposed Project is to construct a barge terminal to primarily facilitate the transport of this dredged material from the Mississippi River temporary holding sites to final locations for beneficial uses, such as construction and mining reclamation material. Following an initial 10-year period, where the focus is solely on dredged material movement, the city may evaluate the potential to move other dry commodities, such as grain and cement.

The Proposed Project is intended to achieve the city's goals of prioritizing safety, environmental protection, and economic development for this small riverfront community. The project prioritizes safety by locating the facility away from residential areas and minimizing truck traffic through city streets. It emphasizes environmental stewardship through sustainable design and construction practices

[1] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

to minimize impacts on wetlands, wildlife, and recreation. The project also aims to achieve economic development by attracting new industries and creating jobs within the community.

1.4 Alternatives

The Wabasha Barge Facility project proposes a solution for the efficient transport of dredged material from the Mississippi River, prioritizing safety, environmental stewardship, and economic development. This EIS comprehensively evaluates the potential impacts of the project alongside a range of alternatives to ensure informed decision-making.

- *No-Build Alternative:* This scenario explores the continued reliance on existing USACE dredged material placement sites. The potential for exceeding existing site capacity and resorting to non-designated placement locations with potentially higher environmental risks is investigated.
- *Preferred Alternative (Carrels Property):* This alternative proposes the construction of a barge facility at the Carrels property. A thorough assessment details potential impacts on the surrounding community infrastructure, transportation routes, and natural resources among other factors.
- *Alternate Locations:* Several alternate locations within the city's jurisdiction were evaluated using criteria including site size, river access, zoning compatibility, safety considerations, noise and visual impacts, proximity to transportation routes, and potential infrastructure and recreational impacts. This evaluation will inform the final decision on the most suitable project location.
- *Alternate Design and Magnitude:* The evaluation considers variations in the design and magnitude of the proposed barge facility to optimize functionality while minimizing environmental and resource impacts. This includes exploring options for minimizing the project design and required channel access to accommodate the minimum requirements for one to two barges per day during the operational season.

This assessment employs a comprehensive approach to evaluate each alternative. Detailed analyses will assess potential impacts on social, economic, and environmental resources. Public input and agency collaboration was integral to this process. Following a thorough review of all alternatives, a final decision will be made, ensuring the selected solution best meets the project's goals while minimizing environmental and community impacts.

1.5 Potential Environmental Effects

Anticipated environmental effects for the Preferred Alternative include: an increase in barge traffic to and from the Proposed Barge Facility Site; temporary impacts to aquatic organisms during access channel dredging; change in site flood elevations from site regrading; tree clearing and ground disturbance; impacts to waters of the US including one permanently-impacted 0.40-acre wetland and the Mississippi River; increase in impervious surface; increase in truck traffic during construction and operation; disturbance of and minor reduction in terrestrial organism habitat; altered visual aesthetic of the project site; and temporary noise effects during construction and seasonal operation. Impacts to federally-listed species were analyzed using the determination keys in the United States Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system. Impacts to federally and state-listed species will be minimized or avoided as discussed in Section 4.15. As proposed, all potential environmental effects from the construction and operation of the Proposed Project would be

avoided or minimized to the fullest possible extent. Unavoidable environmental impacts will be mitigated through ongoing coordination between the City of Wabasha and applicable local, State, and Federal agencies.

1.6 Project Cost and Funding Source

The estimated total cost of the project is $4.6 million (2024 dollars). This cost includes construction, contingency, engineering, administrative, and legal costs. Funding for the project currently includes a Port Development Assistance Program (PDAP) grant from the Minnesota Department of Transportation in the amount of $754,876. Remaining project funding is anticipated to come from potential additional MnDOT PDAP grant funding, potential US Department of Transportation Maritime Administration (MARAD) Port Infrastructure Development Program (PIDP) grant funding[2], and Wabasha Port Authority and/or City of Wabasha bond sales.

1.7 Permits and Approvals

Government Agency	Type of Application/Permit	Status*
Federal Agencies		
U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Notification	To be updated
	No Rise Certification	To be completed
	Section 10 Rivers & Harbors Appropriation Act	To be updated
State Agencies		
Minnesota Department of Natural Resources (MNDNR)	Permit to Take	To be applied for, if necessary
	Public Waters Work Permit	To be updated
	Water Appropriations Permit	To be applied for, if necessary
Minnesota Board of Water and Soil Resources (BWSR)	Minnesota Wetland Conservation Act (WCA) Notification	To be updated
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System (NPDES) Construction General Storm Water Permit	To be updated
	Industrial Stormwater Permit	To be updated
Local Agencies		
	Conditional Use Permit	To be updated

[2] The city is aware that MARAD PIDP funding requires additional Federal environmental review.

Government Agency	Type of Application/Permit	Status*
City of Wabasha	Floodplain Permit / No Rise Certification	To be updated
	Rezone to be compliant with Land Use	To be updated
	Purchase Agreement	To be completed

* All permit requirements will be applied for prior to project construction.

1.9 Project Schedule

- Final Design – September 2024 – February 2025
- Permitting – September 2024 – May 2025
- Tree Removal Contract Bidding – February 2025
- Tree Removal – March 2025
- Site, Dock, and Dredging Contract Bidding – June 2025
- Site, Dock, and Dredging Construction – July 2025 – November 2025

1.10 Public Engagement

The Proposed Project underwent a rigorous environmental review process, involving multiple opportunities for public and agency feedback and in-depth analysis.

The Scoping EAW and Scoping EAW Comments are available in Appendices I and J, respectively. The original Draft EIS document submitted to EQB in October 2023 is available on the city's website and through the EQB Monitor. Following several agency coordination conversations and meetings, an updated Draft EIS was distributed to three key agencies for their review and comment, including the Minnesota Department of Natural Resources, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. The updated Draft EIS (base document) is available in Appendix O, along with the public engagement information from the October 2023 submittal and the November 2023 public meeting.

Numerous comments were received and addressed as part of the Draft EIS phase of this environmental review process. Those comments and responses are available in Appendix P. Additional evaluation occurred following those comments and are provided in the updated Draft EIS (Appendix O) and in this Final EIS document. The comment tracker in Appendix P outlines what those changes included and where in the Final EIS the comment is addressed.

The following phases of the environmental review process include:

- Draft EIS Publication Date: October 2, 2023
- Draft EIS Public Meeting Date: Tuesday, October 17, 2023
- Draft EIS Public Meeting Time: 5:30 pm -7:30 pm
- Draft EIS Public Meeting Location: 900 Hiawatha Dr E, Wabasha, MN 55981
- Draft EIS Comment Deadline: November 1, 2023
- Draft EIS Comment Response and Update – Agency Review: May 30, 2024
- Final EIS Publication Date: September 3, 2024

Following the submittal of the Final EIS for public and agency review, comments will be considered and evaluated following the 10-day review period on September 13, 2024. The Notice of Adequacy determination is anticipated for discussion and decision at the September Wabasha Port Authority meeting.

2. PROJECT DESCRIPTION

2.1 Project Description

The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility ("Wabasha Barge Facility") at Upper Mississippi River mile 760 in Wabasha, Minnesota. The project site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha, Wabasha County, Minnesota (Section 30, Township 111N, Range 010W). These parcels are presently privately owned, and the city anticipates purchasing the requisite area to house the facility from a willing seller prior to construction activities.

The 26.8-acre site ("Study Area," "Project Site") would house the Wabasha Barge Facility on approximately 8.2 acres ("Proposed Barge Facility," "Proposed Project") and would facilitate the transfer of materials, including dredge material and other commodities, from river barges to trucks for transport to off-site facilities. Although precluded for at least 10 years, should other dry commodities be transported in the future, additional city approvals would be necessary. Regardless, there would be no hazardous materials transported to or from the proposed project location. The City of Wabasha would own the barge facility site and contract out the port operations and transportation of materials. The city does not currently anticipate expanding the project beyond the proposed 8.2 acres, although that decision will be revisited at a future time if warranted.

Upon environmental clearance and acquisition of all required permits, the work elements to be completed as part of the Proposed Project include:

- Dredging an access channel from the main Mississippi River navigation channel to the proposed dock area. This will be performed by either hydraulic or mechanical dredging techniques and include deepening the side channel to enable barge traffic to access the proposed fleeting area for loading and unloading material.
- Dredging an area to accommodate barge maneuvering and docking. This will be performed by either hydraulic or mechanical dredging techniques and include widening the area immediately adjacent to the proposed fleeting area for improved barge maneuverability.
- The dredged material would be used as fill material on the barge terminal site to raise the site above the 100-year flood elevation. Initial dredge material offloaded at the site will be used, in addition to regrading the proposed area, to ensure the access road and temporary storage locations are removed from the 100-year floodplain.
- Construct the barge terminal pad and access road. This will include constructing a sheet pile dock face and upstream/downstream steel pipe pile clusters for barge mooring and maneuvering system. Additionally, the access road off of 5th Grant Boulevard West will be improved for truck and vehicle traffic hauling material to and from the proposed barge mooring site.
- Construct footings for conveyors and hoppers for material handling and loadout. These will be located immediately adjacent to the barge terminal pad to enable loading and unloading material from moored barges.
- Install electric, sewer and water utilities to the project site.

- Install a loading scale and construct a scale house/field office building (proposed future action).

The City of Wabasha has prepared this final Environmental Impact Statement (FEIS) in accordance with Minnesota Rules 4410.4400, Subpart 17, "Barge Fleeting Facilities." This FEIS assesses the potential for the Proposed Project—i.e., the above-listed work elements related to the construction of, and operations within, the Wabasha Barge Facility—to result in significant adverse environmental impacts.

Following Wabasha Barge Facility construction completion, it is anticipated that the City of Wabasha would partner with the United States Army Corps of Engineers ("USACE" or "the Corps"), pursuant to Section 217(d) of the Water Resources Development Act of 1996, to transfer material that is annually dredged from the Upper Mississippi River 9-foot navigation channel through the Wabasha Barge Facility for transport to off-site facilities. Navigational channel dredging and all other activities performed by the USACE under the Section 217(d) agreement related to the maintenance of the Mississippi River navigation channel are federal actions, considered separate from the Proposed Project, and are addressed in the 2023 Lower Pool 4 Dredged Material Management Plan (DMMP)[3] and integrated Environmental Assessment.

The Wabasha Barge Facility would facilitate the transfer of dredged material from river barges to trucks for transport to off-site facilities for use as reclamation material for existing sand and gravel mines, local construction material, or other potential beneficial reuse options.

While detailed construction plans have not been completed, conceptual site design plans are provided in Figure 4, "Site Layout." Site design documents are anticipated to be completed in early 2024. The proposed letting date for construction is late Summer 2024. Construction is proposed to be completed with site operations commencing in Summer 2025, pending receipt of all permits and approvals.

2.2 Responsible Governmental Unit

The Wabasha Port Authority is the Responsible Governmental Unit (RGU) and the Proposer for the Wabasha Barge Facility project.

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[3] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

2.3 Purpose of Final Environmental Impact Statement

Minnesota Rules, 4410.4400, Subpart 17, "Barge Fleeting Facilities," states that an Environmental Impact Statement (EIS) is required for projects involving the construction of a barge fleeting facility at a new off-channel location that involves the dredging of 1,000 or more cubic yards.

The Proposed Project would facilitate dredging an access channel from the main navigation channel to the Barge Facility with an estimated total of 37,000 cubic yards (CY) of material removed. This exceeds the threshold of dredging 1,000 CY outlined in Minnesota Rules, 4410.4400, Subpart 17, thus requiring the preparation of this EIS document.

2.4 Purpose and Need for the Proposed Action

The proposed Wabasha Barge Facility project aims to address pressing river shipping needs, prioritizing economic growth, environmental stewardship, and public safety.

The city has recognized the necessity of establishing a small barge facility to facilitate the efficient transportation of dredged material and support infrastructure and economic development projects. Situated in the middle of Lower Pool 4, the city's strategic location provides convenient access to the main Mississippi River navigation channel, bridging a crucial service gap in the region.

2.4.1. Project Goals

The following goals were identified as key evaluation areas to identify reasonable and feasible alternatives for the proposed barge facility.

Safety: The city's top priority is ensuring the safety of Wabasha residents. The proposed barge terminal location will allow for the truck transport of dredged material directly to County and MnDOT highway truck routes, avoiding significant truck traffic through residential areas of the city, and minimizing the safety concerns of Wabasha residents.

Strategic Location: The proposed location for the barge facility offers a strategic advantage. It is located in the heart of the Mississippi River Lower Pool 4 and in close proximity to existing County and MnDOT highway truck routes. This allows for efficient transfer of dredged material to final resting places, minimizing traffic impacts within the city, and avoiding residential areas and streets.

Environmental Stewardship: The city is committed to minimizing environmental impacts throughout the project lifecycle. A permanent and well-designed barge facility will reduce noise and visual disruptions for residents. The project will be designed and constructed through a sustainable development approach to minimize impacts to wetlands, wildlife, and recreation, ensuring compliance with all pertinent regulations.

Balancing Needs with Opportunities: While environmental protection is a top priority, the project also presents increased economic development opportunities for this small Class 4 Minnesota city. The barge facility has the potential to attract new industries and create jobs, boosting the local economy and diversifying its base. By balancing economic growth with environmental stewardship, the city can create a vibrant future for residents while protecting the natural beauty that defines this river community.

The city's primary project objectives emphasize safety, environmental stewardship, economic development, and efficient transportation. The city acknowledges the importance of regulations and

reviews to avoid, minimize, and/or mitigate anticipated environmental impacts, and will continue coordinating with regulatory authorities throughout this project.

2.4.2. Coordination with USACE

The City of Wabasha has entered into agreement with the U.S. Army Corps of Engineers (USACE) under Section 217(d) of the Water Resources Development Act of 2007 to provide facilities for the management of dredged material generated from the USACE's continued operation and maintenance of the 9-foot Navigation Channel in Lower Pool 4 of the Upper Mississippi River (UMR).

The USACE's plan for the management of dredged material in Lower Pool 4 is fully described in the Final Lower Pool 4 Dredged Material Management Plan (DMMP), published by the USACE in November 2022.[4] The DMMP is the USACE's integrated feasibility report and National Environmental Policy Act (NEPA) document, completed in accordance with USACE regulations.

While the Recommended Plan described in the DMMP represents the federal standard for Lower Pool 4 and complies with USACE policy for managing dredged material pursuant to the Federal standard (33 CFR 335.7) for dredged material placement sites, this is but one justification for the city's decision to facilitate this facility development process. The DMMP has gone through federal environmental review with the outcome of the city's Proposed Project site identified as the Preferred Alternative for the USACE dredged material management. The USACE standard is defined as, "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process…"

The following is a general description of dredged material management in Lower Pool 4 and the tiered implementation plan described in the DMMP. The purpose of providing this general background information is to allow for a better understanding of the purpose and need for the Wabasha Barge Facility project.

Purpose and Need for Barge Facility under Section 217(d) Agreement

The Wabasha Port Authority proposes to create a barge facility that would allow for the onshore transfer of dredged material to fulfill the City of Wabasha's obligations under its Section 217(d) Agreement with the USACE. The construction of a barge facility is necessary for the city to be able to cost-effectively facilitate the onshore transfer of dredged material over the 10-year period of its agreement with the USACE. Cost-effectiveness is a key component due to the fact that the USACE can only use the Section 217(d) Agreement with the city as the priority approach if it is the most economical and sustainable alternative in the tiered Recommended Plan.

The USACE states in Section 8.2 of the DMMP that the "….city is contemplating the development of a modern commercial port at the Carrels Site. While such a port would facilitate its use for dredged material management, the existence of a commercial port is not necessary for this purpose, which can be conducted as described in 6.3.3." The referenced section of the DMMP (6.3.3) describes the use of the Carrels Site (proposed barge facility location) for onshore transfer of dredged material either by the city through the Section 217(d) agreement or by the USACE under Tier 4 of the Recommended Plan. This section also describes the use of temporary structures to facilitate the onshore transfer of dredged

[4] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

materials from barges to trucks and the dredging of the channel for barge access to the Carrels Site. While temporary features could be used to facilitate onshore transfer of dredged material, it would not be cost-effective over a 10-year period to use such temporary features. The cost of constructing temporary features to facilitate onshore transfer at the Proposed Project site over the 10-year Section 217(d) agreement period would amount to approximately $1.8 million. This is more than the estimated construction cost of the permanent dock proposed as a part of the barge facility, which is approximately $980,000. A detailed cost estimate is available in Appendix N. The following table shows a breakdown of the temporary facility costs:

Cost for Temporary Dock Facility				
Item	**Quantity**	**Unit**	**Unit Price**	**Amount**
Mobilization	1	LS	$20,000	$20,000
Common Borrow	700	CY	$25	$17,500
Aggregate Base	120	CY	$32	$3,840
Temporary Dock/Spud Barge	1	LS	$72,500	$72,500
Erosion Control BMP's	1	LS	$15,000	$15,000
Demobilization	1	LS	$29,600	$29,600
Subtotal				$158,440
15% Contingency				$23,766
Total Annual Cost				**$182,206**
Total 10-yr Agreement Cost				**$1,822,060**

Additionally, requiring an annual establishment of temporary structures to facilitate material transfer would likely increase cumulative impacts over time due to heavy equipment maneuvering on the site. The City of Wabasha anticipates, and the Corps recognizes that dredging will be a long-term solution to the 9-foot Navigation Channel maintenance operations. This is not a 10-year fix, but a longer maintenance need that will require a more permanent solution for Minnesota shippers and receivers. With the construction of the barge terminal, the City of Wabasha can prioritize the sustainable development option that will facilitate this consistent transfer of dredged materials, reduce impacts to adjacent landowners and the river shoreline, and ensure transportation networks are sufficient for material transfer operations for the foreseeable future.

Alternative locations for the onshore transfer of dredged material were considered and discarded as a part of the USACE DMMP due to traffic and noise concerns given their proximity to residential neighborhoods, distance to final placement sites, and other concerns. Additional alternate locations for the barge terminal are presented and evaluated in the Alternate Locations section.

Other Potential Products

The City of Wabasha and the Wabasha Port Authority may utilize the port for other dry commodities, such as gravel, grains, and cement at some point in the future; however, the operations agreement between the Port Authority and the port operator will restrict movement of commodities other than dredge-material for at least the first 10-years. This agreement specifically precludes the use of the barge facility for other products. In addition, the physical design of the port facility limits the port to a maximum of two barges and 100 trucks per day, so the potential environmental impact of other products would be no greater than that of the dredged material as proposed.

Additionally, the proposed barge terminal is designed and sized to allow only one 195'x35' hopper barge (1,000 CY capacity) at a time to maneuver through the channel and the dredged maneuvering area

adjacent to the dock. The proposed mooring system for the dock is designed and sized to allow for two loaded hopper barges to be moored abreast of each other at the dock, with only a single hopper barge being unloaded at any given time. The mooring system will also allow for one empty hopper barge to be moored to the side of the dock, while it waits to be removed. The port operator estimates that it will take the proposed material handler approximately four (4) hours to unload one 1,000 CY hopper barge at a time. The proposed barge facility is designed and sized to accommodate one barge at a time and a maximum of two loaded 195'x35', 1,000 CY hopper barges in an 8-hour working day. To transport 2,000 CY of dredged material in a day will take approximately 100 trucks with a single hopper belly dump trailer. Therefore, the expected total truck traffic from the facility in a typical working day is approximately 100 trucks in and out of the facility per day.

The City of Wabasha and Wabasha Port Authority do not have any plans to expand the proposed facility. Should the city choose, in the future, to pursue other products, the most likely products would be other dry commodities, such as grain, cement, or gravel. The port operator estimates that it would take more than 4 hours to load or unload a 1,000 CY hopper barge of grain. This means that expected barge and truck traffic from other dry products, like grain, would result in less barge and truck traffic than dredged material. In addition, the proposed facility is not designed to accommodate the transport of and will not have the facilities to deal with bulk liquid products, so that specific type of commodity transfer is not anticipated at this facility in the future.

Based on this information, the design and size of the facility are the most limiting factors for the Proposed Project, and the transfer of dredged material represents the highest expected level of barge and truck traffic from the facility. Therefore, the use of the port facility in this EIS will focus on the transfer of dredged material under the Section 217(d) Agreement which anticipates a total of two (2) barges a day and approximately 100 truck trips in and out of the facility per day, representing the maximum threshold from barge and truck traffic from the site for any likely commodity to be considered at the facility in the future.

2.4.3. Economic Impact

The proposed Wabasha Barge Facility offers a strategic opportunity to unlock economic development potential for the City of Wabasha and the surrounding region. The city has entered into a 10-year agreement with the USACE to take responsibility for a part of the dredged material management activities as described above. The estimated gross annual revenue for the city, as compensation from the USACE for taking on these activities, is approximately $4.8 million. After accounting for expenses related to the operation of the barge facility, the annual net revenue for the city is estimated at a minimum of $200,000. This revenue will provide the city with a dedicated revenue stream to fund additional economic development initiatives.

Opportunities to transfer agricultural and commercial commodities may be evaluated in the future, but as noted above, the 10-year agreement the Wabasha Port Authority has with the operator of the barge facility specifically precludes the use of the barge facility for other products. If additional products are pursued, after the 10-year contract with USACE, the facility could continue to transport up to two (2) hopper barges a day becoming a key logistics hub on the Upper Mississippi River, opening opportunities to boost and diversify the local economy by creating jobs and attracting new industries that rely on a key connection to river transport.

2.5 Project Cost, Funding, and Schedule

The estimated total cost of the Proposed Project is $4.6 million (2024 dollars). This cost includes construction, contingency, engineering, administrative, and legal costs. Funding for the project currently includes a Port Development Assistance Program (PDAP) grant from the Minnesota Department of Transportation in the amount of $754,876. Remaining project funding is anticipated to come from potential additional MnDOT PDAP grant funding, potential US Department of Transportation Maritime Administration (MARAD) Port Infrastructure Development Program (PIDP) grant funding[5], and Wabasha Port Authority and/or City of Wabasha bond sales. The addition of MARAD funding will also trigger a federal Environmental Assessment review process.

The current schedule for the project is as follows:

- Final Design – September 2024 – February 2025
- Permitting – September 2024 – May 2025
- Tree Removal Contract Bidding – February 2025
- Tree Removal – March 2025
- Site, Dock, and Dredging Contract Bidding – June 2025
- Site, Dock, and Dredging Construction – July 2025 – November 2025

Following completion of the site access, dock, and side channel access dredging, the agreement between the Corps and the City of Wabasha is anticipated to go into effect. This would initiate operations of offloading dredge material at the Proposed Project location, dewatering, and hauling to follow-on sites for potential construction, fill, and other uses based on the material quality.

2.6 Public Engagement

The Proposed Project underwent a rigorous environmental review process, involving multiple opportunities for public and agency feedback and in-depth analysis.

The Scoping EAW and Scoping EAW Comments are available in Appendices I and J, respectively. The original Draft EIS document submitted to EQB in October 2023 is available on the city's website and through the EQB Monitor. Following several agency coordination conversations and meetings, an updated Draft EIS was distributed to three key agencies for their review and comment, including the Minnesota Department of Natural Resources, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. The updated Draft EIS (base document) is available in Appendix O, along with the public engagement information from the October 2023 submittal and the November 2023 public meeting.

Numerous comments were received and addressed as part of the Draft EIS phase of this environmental review process. Those comments and responses are available in Appendix P. Additional evaluation occurred following those comments and are provided in the updated Draft EIS (Appendix O) and in this Final EIS document. The comment tracker in Appendix P outlines what changes and updates were included in and where in the Final EIS the comment is addressed.

[5] The city is aware that MARAD PIDP funding will require additional Federal environmental review.

The in-depth environmental review process has included:

- Scoping EAW Publication Date: June 21, 2022
- Scoping EAW Public Meeting Date: July 19, 2022
- Draft EIS Publication Date: October 10, 2023
- Draft EIS Public Meeting Date: Thursday, October 19, 2023
- Draft EIS Public Meeting Time: 5:30 pm -7:30 pm
- Draft EIS Public Meeting Location: 900 Hiawatha Dr E, Wabasha, MN 55981
- Draft EIS Comment Deadline: November 1, 2023
- Draft EIS Comment Response and Update – Agency Review: May 30, 2024
- Final EIS Publication Date: September 3, 2024

Following the submittal of the Final EIS for public and agency review, comments will be considered and evaluated following the 10-day review period on September 13, 2024. The Notice of Adequacy determination is anticipated for discussion and decision at the September Wabasha Port Authority meeting.

3. ALTERNATIVES

This EIS document assesses the potential for the Proposed Project to result in significant adverse impacts by comparing conditions anticipated during the construction and operation of the Proposed Project ("Preferred Alternative") to conditions otherwise expected without the Proposed Project ("No-Build Alternative").

3.1 No-Build Alternative

3.1.1. Description

In the absence of the Proposed Project, the city or Wabasha Port Authority does not anticipate any development on the Project Site. Therefore, this EIS assumes that the physical condition of the Project Site without the Proposed Project generally would resemble existing conditions and remain vacant until the USACE requires access to additional upland storage locations for dredge-material storage. Under this scenario, responsibility for transporting dredged material from island transfer sites would revert to the USACE, following their tiered system outlined in the USACE's 2022 Final Lower Pool 4 Dredge Material Management Plan (DMMP), although no dock facility would be constructed, thereby limiting the city's authority over dredged material use and potential economic compensation for site access.

As described in the no-build alternative in the DMMP, if the tiered system in the Recommended Plan is not pursued, currently approved and available sites in Lower Pool 4 project area would not be expected to accommodate dredge material placement needs for the next 20 years. If approved DMMP sites are not available when dredging is required in Lower Pool 4 due to navigation emergency situations, dredged material may need to be placed at non-DMMP designated placement locations. Non-designated placement sites would likely include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). The use of non-designated placement sites may result in higher costs and greater environmental or social impacts. Presumably, these instances would be short-term, and USACE would initiate a new planning effort to identify the most acceptable dredged material management methods for the pool.

The use of DMMP-identified sites that would continue under the no-action alternative would be dredged material placement in the Read's Landing, Crats Island, Teepeeota Point, and Grand Encampment transfer sites, and in the Wabasha Gravel Pit and Alma Marina upland transfer sites. Also, as happens currently, material would be moved hydraulically to the Wabasha Gravel Pit. The use of the preferred location, which is identified in the DMMP, is possible but would require the acquisition of a real estate interest in the site because it is privately owned. Similarly, the Wabasha Sand and Gravel Pit was identified in the DMMP as an upland placement site but is also privately owned. Because these sites are in private ownership, their use is uncertain and cannot be relied upon. Additional details outlining the USACE alternatives are provided in the following section.

3.1.2. Dredged Material Management and the USACE DMMP Recommended Plan

The USACE DMMP was initiated due to uncertainty of the future availability of dredged material placement sites in the area of Lower Pool 4 and a need to identify the best strategy for the long-term management of dredged material within the pool.

According to the DMMP, to maintain the 9-foot Navigation Channel in Lower Pool 4, the USACE projects approximately 5.3 million cubic yards (CY) of dredged material will be generated over the next 20 years. Dredging is accomplished using either hydraulic or mechanical dredging methods. Once dredged, the material is moved either directly to an onshore transfer site or to an island transfer site, depending on location and dredging method.

From the onshore transfer sites, the dredged material is then trucked to permanent placement sites for beneficial re-use or permanent upland placement.

From the island transfer sites, the material is moved through either hydraulic or mechanical methods from the island sites to an onshore transfer site, where it is trucked to permanent placement sites for beneficial re-use or permanent upland placement. If moved through mechanical methods from the island transfer sites, the dredged material is loaded onto barges to be moved to the onshore transfer sites. If moved through hydraulic methods no barges are necessary to move the material to the onshore transfer sites.

Exhibit 1, taken from the DMMP, shows the dredge cut sites in the channel where the dredged material originates as well as the currently active island and onshore transfer sites. The island transfer sites are identified as Reads Landing, Crats Island, Teepeota Point, and Grand Encampment. The onshore transfer sites are identified as Wabasha Gravel Pit and Alma Marina.

Some of these areas within the City of Wabasha were further evaluated as alternate locations for the city's Proposed Project.

Exhibit 1 – Dredge Cuts and Transfer Sites
(Figure 1 from the USACE 2022 DMMP)

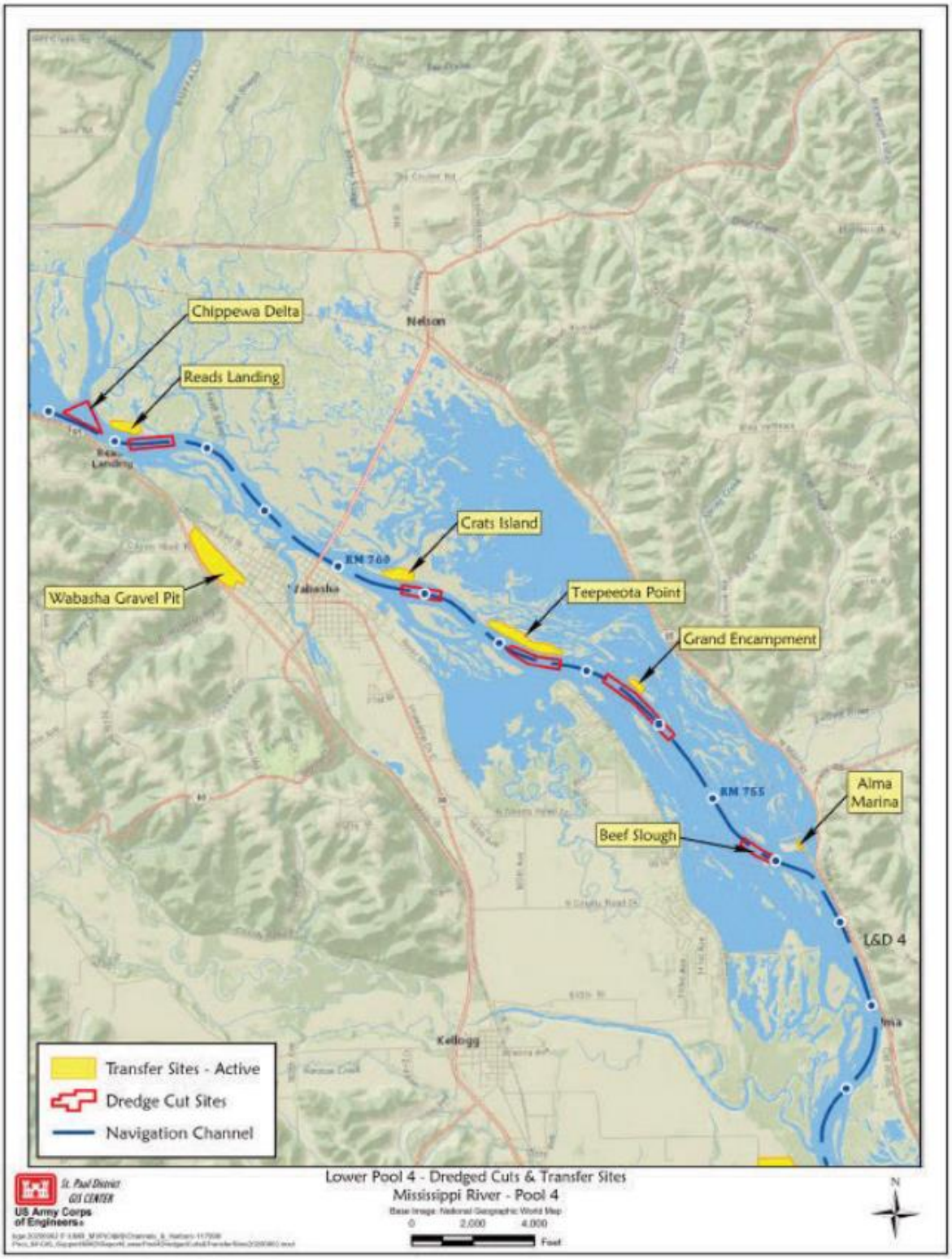
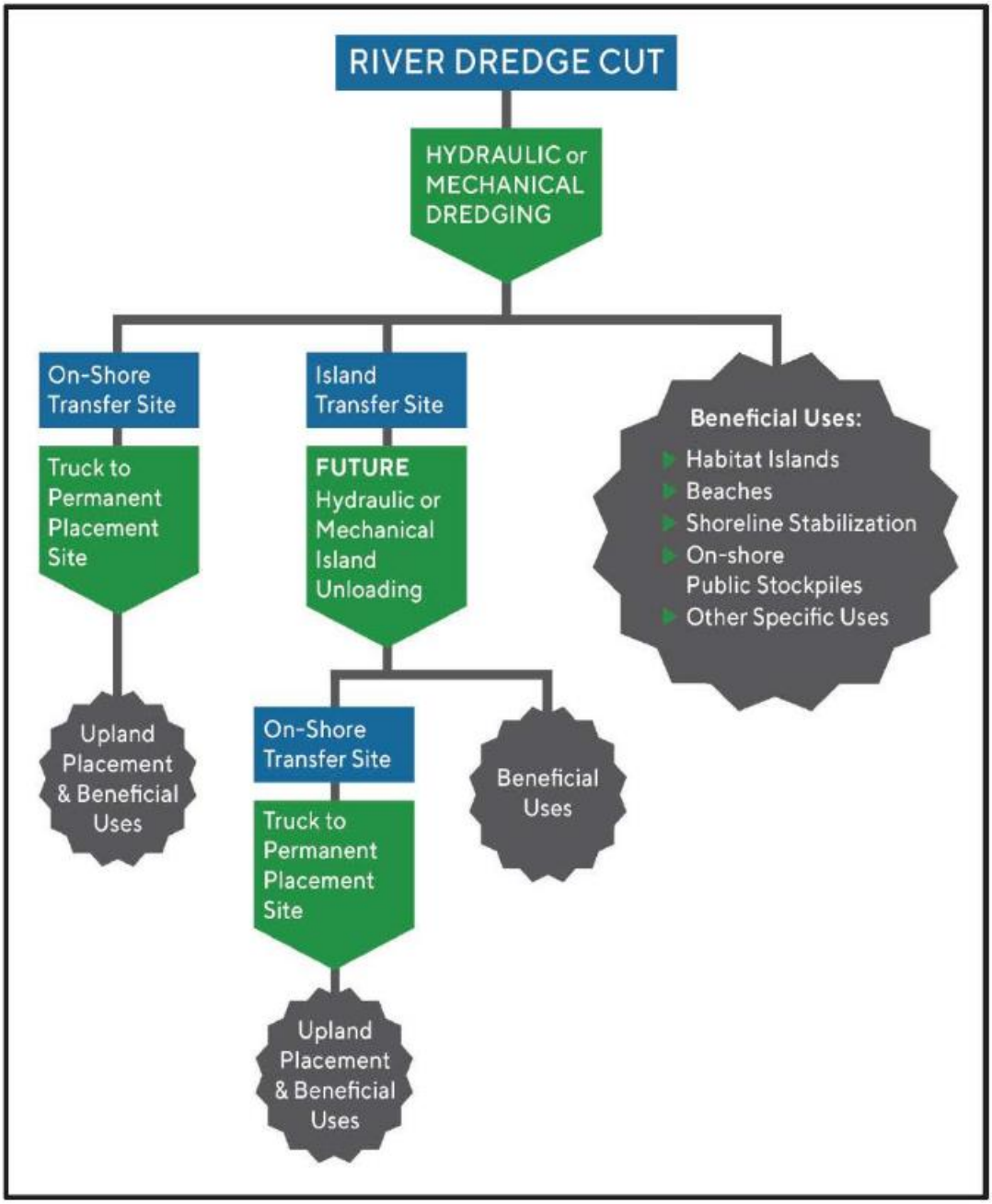


Exhibit 2, taken from the DMMP, is a flow chart showing the movement of dredged material from the river dredge cuts through the onshore or island transfer sites, to permanent placement or beneficial re-use sites.

Exhibit 2 – Movement and Uses of Dredged Material
(Figure 6 from the USACE 2022 DMMP)



The DMMP included several alternatives related to inland and onshore transfer sites, upland placement sites, transportation modes and routes, and other measures for dredged material management. Because the DMMP is a NEPA document, the environmental impacts of these alternatives were evaluated in the DMMP. One of the alternatives included in the Section 217(d) Agreement is with the City of Wabasha.

The Recommended Plan in the DMMP is an implementation plan that includes five (5) tiers, each using different combinations of island or onshore transfer sites, upland placement sites and transportation modes. The DMMP notes that the Recommended Plan will use the sites identified in the five tiers "in the most efficient way that is practicable at any given time" and that the tiers are ordered from the USACE's most preferred to least preferred. The Section 217(d) Agreement with the City of Wabasha is identified as the Tier 1 option, making it the most preferred option in the Recommended Plan.

Under the Section 217(d) Agreement, the USACE would dredge material from the Crats Island, Teepeota Point, and Grand Encampment dredge cuts and place that material on the island transfer sites. From that point, the City of Wabasha would be responsible for transferring the material from the island sites to the onshore transfer site, identified as the Carrels Site in the DMMP, where it would then be transferred to trucks for transportation to an upland placement site, identified as the Wabasha Sand and Gravel Facility in the DMMP. In taking on these responsibilities, the City of Wabasha will be reimbursed by the USACE through a user fee for its operation and maintenance costs, and a reasonable return on investment.

In explaining the rationale for including the Section 217(d) Agreement with the city in the Recommended Plan, the DMMP states, "The proposed potential Section 217(d) Agreement with the city of Wabasha would be the Corps' priority approach as long as it is determined by the Corps to be in accordance with the Federal standard." The DMMP also explains that to meet the Federal standard the Section 217(d) Agreement must represent the least cost alternative and must meet environmental standards. Related to environmental effects, it states that "The proposed facilities, the Carrels and Wabasha Sand and Gravel Pit facilities, are existing industrial sites that have been used for dredged material management before, and their use presents no significant environmental impacts…." It is noted that although the USACE DMMP determined that the use of the Carrels site would have no significant environmental effects, the purpose of this EIS is to make a separate and independent evaluation of the environmental impacts of the use of the Carrels site as an onshore transfer facility, which will involve the construction of a barge facility, as proposed by the Wabasha Port Authority.

If it is determined at some point that the Section 217d Agreement is no longer in accordance with the Federal standard, or if the two parties to the agreement (City or USACE) decide to terminate the agreement, the USACE would utilize one of the other tiered options for managing dredged material.

3.1.3. Existing Conditions

The Proposed Project site is the location of a former gravel pit. Based on historic aerial photographs, the site was active as late as 1949 and was abandoned prior to 1973. The site currently includes an access road with several cubic yards of debris, including old equipment, vehicles, barrels, and other construction waste.

Pending EIS approval, the city intends to purchase a portion of the existing parcels to facilitate construction of the barge facility. As part of the purchase agreement, the city anticipates coordinating with the current property owner to remove existing waste from the site and ensure a clean space for the proposed development.

Existing conditions will be further evaluated in **Chapter 4: SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS**.

Existing Conditions and Relationship to USACE

Should this site not be developed for the proposed barge facility, the Corps will continue to conduct dredging activities proactively to prevent Mississippi River navigation channel closures. Material dredged from the navigation channel will be temporarily placed on island transfer sites adjacent to the dredge locations. When island sites are nearly full, the Corps moves the dredged material to upland placement sites to restore island capacity. The Wabasha Gravel Pit is currently the only available site in Pool 4 for upland placement, and it is nearing capacity. The recently acquired Rolling Prairie site in Pool 5 could be used for upland placement, as it has ample capacity, but its distance would make it costly and difficult to efficiently access.

In the best case where placement sites are full, dredging could be temporarily deferred, and the navigation channel would remain functional for a while. This situation has the potential to occur for short periods (e.g., one dredging season at a minimum), but is extremely unlikely to persist based on known dredging requirements in this stretch of river.

Switching to a scenario of dredging only when necessary, would increase the likelihood of experiencing imminent or emergency dredging conditions as described above, as was experienced at Grand Encampment in 2014.

3.1.4. Limitations

- Does not grant the city control over the truck routes or final resting places of the USACE-dredged material.
- Higher potential for adverse impacts from truck traffic through Wabasha if USACE moves to the identified Tier 4 scenario due to lack of City control over truck hauling routes.
- Does not meet the project purpose and need, as the city would not have a location to provide efficient river access for material shipments.
- Reduces future economic development opportunities for the city.

3.2 Alternatives Considered

The Wabasha Port Authority and City of Wabasha conducted a thorough examination of various alternatives during the initial stages of exploring options for the Proposed Project, ensuring a comprehensive assessment of potential impacts and benefits.

3.2.1 Alternate Locations

This section evaluates alternate locations for the proposed barge facility project. The city used the following criteria to assess these locations to identify a preferred location:

- Within the city limits
- Site size and access to the Mississippi River main navigation channel
- Zoning and Land Use compatibility
- Safety considerations for residents and visitors
- Noise and visual impact on residential areas

- Proximity to highway transportation routes
- Infrastructure potential and impacts
- Recreation impacts
- Natural resources impacts
- Impacts to State-Listed Species
- Impacts to Sensitive Ecological Areas (*e.g.,* MBS sites and Native Plant Communities)

A summary of these details can be found in **Table 1** and **Exhibits 3.A** through **3.D**. Table 1 includes a ranking system for the preferred and alternative sites, illustrating that the selected site was chosen due to it having minimal adverse impacts on the area in comparison to the other sites. Additional assessment information is also available in **Chapter 4**.

Preferred Location: Carrels Property

Owner: Kohner Sand & Gravel Company

Size: Approximately 26.75 Acres. Project site is 8.2 acres. The proposed lot, to be purchased by the city, will meet all standards for a legal lot[6] .

Zoning: RC (Residential Conservancy) and R1 (Low Density Residential)

Land Use: Industrial

Process to allow Barge Use: Rezone to comply with the industrial land use

Shoreland Overlay Zone: S1 and S2

Proximity to Residential: There are minimal residential homes around the site or along the haul route. Adjacent property is primarily industrial or public cemetery use.

Haul Route: Through the site and northward on 5th Grant Boulevard to Highway 61. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: None. Carrels property is near the northern edge of the City of Wabasha and on 5th Grant Boulevard, which is a designated truck route.

Recreational Issues: None. The site is vacant.

Natural Resources

- Wetlands: 16.38 acres; Approximately 0.4 acres wetland impacts
- Stream Impacts: 1,880 linear feet of river
- Protected Species: Anticipate "May affect, not likely to adversely affect" determination

[6] City of Wabasha – Zoning Ordinance, Chapter 162.070

[6] City of Wabasha. Zoning Ordinance, Chapter 162.070 Industrial Standards

- Less Tree Clearing
- # T&E species impacted:
- 21 State-Listed Species including 2 Federally Listed Species May be Affected
- Location is partially within a Moderate MBS Site and adjacent to mapped Southern Floodplain Forest habitat

Summary:

- No residential impacts on surrounding property or haul route
- Short haul route to the 5th Grant Boulevard – a designated truck route
- Vacant property, privately owned
- Wetland impacts can be largely avoided with a minimized project footprint and best management practices

Alternate Location 1: Izaak Walton Park

Owner: City of Wabasha

Size: Approximately 5.5 Acres

Zoning: R2 (Medium Density Residential)

Land Use: Open Space, Institutional, and Medium Density Residential

Process to allow Barge Use: Rezone and Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: Maiden Avenue is the most likely haul route and would affect three residential homes until reaching 5th Grant Boulevard. Between Maiden Avenue and the last residential home on 5th Grant Boulevard, the haul route would affect 39 homes.

Haul Route and Saint Elizabeth's Hospital of Wabasha: The haul route from Maiden Road would likely turn northward on 5th Grant Boulevard to take the heavy vehicles away from Wabasha's main downtown area towards Highway 61 requiring that all trucks pass St. Elizabeth's Hospital's emergency entrance/exit route. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Maiden Road is a 30-foot-wide local road with no on-street parking and limited R-O-W. that is approximately 396 feet in length that would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the adjacent homes.

Recreational Issues: This site is currently used as Izaak Walton Park but is also part of the Mississippi Parkside Marina and Beach Park. It has parking, boat launches, restrooms, and green space for Izaak Walton Park is used for multiple annual events for recreation and community activities. The number of heavy industrial trucks in and out of this area would damage not only the recreational uses, but the central community open space that is part of the main recreational area for the City of Wabasha. Public use of the river would be impacted by this alternative.

Natural Resources

- Wetlands: Approximately 2.42 acres total; Anticipate 0.05 acres of impacts

- Stream Impacts: 1,200 linear feet along the Zumbro Slough with no barge access.
- Protected Species Impacts: No anticipated impacts
- Less Tree Clearing
- 18 State-Listed Species including 2 Federally-Listed Species May be Affected
- No impacts to Sensitive Ecological Receptors

Summary

- Property size is restrictive to fully support project goals
- Directly affects 39 homes
- Haul path through residential area and may impact the emergency entrance at hospital
- High infrastructure costs to update and maintain haul route
- Barge access limited
- Recreational use impacts
- Zoning, land use, and surrounding uses are not compatible with the project

Alternate Location 2: Wabasha Municipal Dock

Owner: City of Wabasha

Size: Approximately 7.03 Acres

Zoning: R2 (Medium Density Residential)

Land Use: Open Space and Institutional

Process to allow Barge Use: Rezone, Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: The sand haul route would affect **s**even blocks of residential neighborhood traveling eastward on Main Street West to Bridge Avenue turning southward to 4th Grant Boulevard, affecting approximately 33 homes/townhomes, and multiple smaller businesses relying on local residentially scaled traffic. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Main Street West is a 40-foot-wide local road with no on-street parking and limited ROW, while Bridge Avenue is a 30-foot-wide road with limited parallel parking. The haul route would likely continue on Bridge Avenue and turn north on Hiawatha Drive West to Highway 61. Main Street West and Bridge Avenue (approximately 2,300 feet) would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the seven blocks of homes (33) homes and small businesses.

In addition, Bridge Avenue from 4th Grant Boulevard to Hiawatha Drive is part of a potential City planning project that will convert the roadway to a more locally used road with views along the Zumbo Slough and access to residential apartments and park land. If this project moves forward, the truck hauling route would be diverted either southward into the city, affecting more residential homes and commercial properties or northward crossing St. Elizabeth's Hospital's emergency entrance/exit route.

Recreational Issues: This site is currently used as the Wabasha Municipal Dock and Beach Park. Both the docks and Beach Park are fully developed with boat access, parking, trails, two shelters, tot lot, picnic tables, and grills, including views of the river and slough as well as beach access and access to the campground access road for seasonal RV's. Residents and visitors use these sites year-round and heavily used from spring to summer hosting multiple annual events for recreational and community activities. Given the required number of heavy industrial trucks needed to move materials in and out of this area would impact recreational use, community open space, and put pedestrians near truck traffic. Public use of and access to the river would be impacted by this alternative.

Natural Resources

- Wetlands: Less wetland impacts, approximately 0.17 acres
- Stream Impacts: Less Stream impacts, approximately 1,600 linear feet
- Protected Species Impacts: Anticipate either "No effect" or "May affect, not likely to adversely affect" determination
- 18 State-Listed Species including 2 Federally-Listed Species May be Affected
- No impacts to Sensitive Ecological Receptors

Summary

- Property size is restrictive to fully support project goals
- Directly affects 33 homes
- Haul path through residential area and impacts at emergency entrance at St. Elizabeth's Hospital
- High infrastructure costs to update and maintain haul route
- Recreational use impacted
- Zoning, land use, and surrounding uses are not compatible with the project

Alternate Location 3: Mississippi Parkside Marina

Owner: City of Wabasha

Size: Approximately 16.88 acres

Zoning: RC (Residential Conservancy) and R2 (Medium Density Residential)

Land Use: Open Space and General Commercial

Process to allow Barge Use: Rezone and Land Use Plan Amendment

Shoreland Overlay Zone: S1 and S3

Impacts to Residential Neighborhoods Noise Impacts: Campbell Avenue is the most likely route due to less residential lots but is within 300' of St. Elizabeth's Hospital. This route would affect two blocks, ten homes along 3rd Street and Campbell Street, and an additional seven homes on 5th Grant Boulevard. If Gambia Avenue were used to reduce the impacts to the Hospital, the residential impacts would increase to 30 homes.

Safety Issue – proximity to Saint Elizabeth's Hospital of Wabasha: The haul route along Campbell Avenue turning west on 5th Grant Boulevard would pass both accesses to the Hospital including the designated emergency entrance. Purposefully planning a haul route that must cross the only two

entrances and exits including the emergency entrance/exit to the hospital, is not an acceptable alternative location for this project. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Campbell Road is a 30-foot-wide local road with no on-street parking and limited R-O-W. These roads (approximately 1,480 feet) would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the two blocks of homes.

Recreational Issues: This site is adjacent to two parks, Rotary Beach Park and City Campground, with more than 100 boat slips, campground sites, and established park facilities on over 10 acres of property. These sites are used for multiple annual events for recreation and community activities. The number of heavy industrial trucks in and out of this area would damage not only the recreational uses but the community open space. Public use of and access to the river would be impacted by this alternative.

Natural Resources

- Wetlands: Approximately 8.15 acres
- Stream Impacts: 3,400 linear feet of river access
- Protected Species: Anticipate either "No effect" or "May affect, not likely to adversely affect" determination
- 18 State-Listed Species including 2 Federally-Listed Species May be Affected
- A portion of the site is adjacent to a Moderate MBS Site

Summary

- Directly affects 30 residential homes during roadway construction and long-term haul route noise and safety
- Haul route adjacent to hospital entrances
- Zoning, land use, and surrounding uses are not compatible with the project.
- Prohibitive cost of roadway improvements along local road routes.

Alternate Location 4: Wabasha Marina

Owner: CERVIDAE LLC

Size: Approximately 15.84 Acres

Zoning: GC (General Commercial)

Land Use: General Commercial

Process to allow Barge Use: Rezone, Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: Nineteen (19) homes surrounding the Wabasha Marina parcel and an additional 65 homes along the most likely haul route. Total housing impact is 84 homes.

Haul Route: The most likely haul route from this site would be to improve Angelique Avenue travelling westward on 12th Avenue turning south on Pembroke Avenue (MN60) and meeting up with Highway 61. This route would be approximately 1.21 miles in length. See **Exhibit 3D. Southern Haul Routes**.

Infrastructure Issues: Angelique Avenue does not connect to the site and would require a substantial amount of fill to complete the connection between the site and River Drive. As neither Angelique Avenue nor 12th Street are truck routes with approximately 32 feet of constructed roadway, significant cost in infrastructure will be needed to improve the roadway for heavy truck traffic.

Recreational Issues: This site is currently used for a commercial boat dock and storage facility as well as maintaining 23 seasonal homes with on-site boat docks. The owner, Jennifer Millemon, is currently working on a conditional use permit submittal to extend the seasonal residential use with an additional 45 home sites for a total of 68 residential units. Public use of and access to the river would be impacted by this alternative.

Natural Resources

- Wetlands: No on-site wetlands
- Stream Impacts: Less Stream impacts, approximately 1,110 feet of river edge
- Protected Species: Anticipate "No effect" or "May affect, not likely to adversely affect" result
- Less Tree Clearing
- 20 State-Listed Species including 2 Federally-Listed Species May be Affected
- No impacts to Sensitive Ecological Receptors

Summary

- Directly affecting 19 homes surrounding the site
- Haul route affects 65 homes along 1.21 miles to highway access
- Anticipate impacts to recreational boat dock and residential areas
- Potential future expansion for residential use for 68 homes
- Privately owned property
- Limited roadway network increases cost to update and maintain adequate haul routes
- Zoning, land use, and surrounding uses are not compatible with the project

Alternate Location 5: South Fitzgerald (behind River Drive)

Owners: Fredrick M and Alice Fay Passe, Riverview Terrace Property Owners Inc., The United States of America, and Edward G and Jolene A. Greenheck

Zoning: RC (Residential Conservancy, RRGT (Rural Residential Growth Transitional)

Land Use: Water and Low-Density Residential

Process to allow Barge Use: Rezone and Land Use Plan amendment

Shoreland Overlay Zone: S1 and S2

Proximity to Residential: Seventeen (17) homes surround the South Fitzgerald parcel and an additional 95 homes along the most likely haul. See **Exhibit 3D. Southern Haul Routes**.

Haul Route: The most likely haul route from this site would be to improve Dugan Avenue travelling south along River Drive turning eastward on Angelique Avenue and connecting up to 12th Avenue turning south on Pembroke Avenue (MN60) and meeting up with Highway 61. This route would be approximately 1.31 miles in length.

Infrastructure Issues: Dugan Avenue is only constructed to the east alley on River Street, approximately 156'. The rest of the right-of-way to the South Fitzgerald site would have to be constructed to allow for heavy trucks. As neither Dugan Avenue, Angelique Avenue or 12th Street are truck routes with approximately 32 feet of constructed roadway, significant cost in infrastructure will be needed to improve the roadway for this haul route.

Future Uses: This site is owned by two private owners, the Homeowners Association of River Drive, and the Federal Government. Both the River Drive HOA and the private owners have approached the City of Wabasha with residential development questions. The city has reviewed several low-density residential options for a portion of the site but has not moved forward due to high construction costs to improve the site and the infrastructure surrounding the site. In addition, the homeowners along River Drive are very opposed to site development expressing concerns with their views, grading and drainage concerns, and destruction of wetlands and animal habitat.

Recreational Issues: None. The site is vacant.

Natural Resources

- Wetlands: Approximately 14 acres of wetlands, 0.17 acres of potential impacts
- Stream Impacts: Approximately .12 linear feet of river frontage
- Protected Species: Anticipate "No effect" or "May affect, not likely to adversely affect" result
- Less Tree Clearing
- 17 State-Listed Species including 1 Federally-Listed Species May be Affected
- No impacts to sensitive ecological receptors

Summary

- Adjacent to a low-density residential area. Directly affecting 17 homes
- Hauling route affecting 95 existing homes along a 1.31-mile section of homes
- Privately and federally owned property
- Limited roadway network to the site creates large construction cost for adequate haul routes
- Zoning, land use, and surrounding uses are not compatible with the project

Table 1: Alternate Sites Assessment

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Property Ownership	Kohner Sand & Gravel Company	City of Wabasha	City of Wabasha	City of Wabasha	CERVIDAE LLC.	Private owners, Riverview Terrace. HOA, & Federal Govt.
Ranking [+]	*Low - To be purchased*	*No Impact*	*No Impact*	*No Impact*	*High – not for sale*	*High – not for sale*
Property Size (Ac)	26.75	5.5	7.03	16.88	15.84	30.5
Size/Access	Adequate size/access	Not sufficient size/access	Not sufficient size/access	Sufficient size, limited access	Sufficient size, limited access	Sufficient size, limited access
Ranking [+]	*No Impact*	*High*	*High*	*Medium*	*Medium*	*Medium*
Zoning	RC & R1 – Res. Conservancy & Low-Density Residential	R2 -Medium Density Residential	R2 -Medium Density Residential	RC and R2 – Res. Conservancy & Medium Residential	GC – General Commercial	RC & RRGT – Res. Conservancy
Ranking [+]	*Low* *Vacant parcel rezoned*	*High* *Current and future zoning not consistent*	*High* *Current and future zoning not consistent*	*High* *Current and future zoning not consistent*	*Medium* *Current/future zoning not consistent with mixed use*	*High* *Current and future land use not consistent*
Shoreland Overlay Zone	S1 & S2	S3	S3	S1 & S3	S3	S1 & S2
Ranking [+]	*No Impact* *Future use designed to meet all standards*	*No Impact* *Future use could be designed per standards*	*No Impact* *Future use could be designed per standards*	*No Impact* *Future use could be designed per standards*	*No Impact* *Future use could be designed per standards*	*No Impact* *Future use could be designed per standards*

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Land Use	Industrial	Open Space, Institutional & Med. Density Residential	Open Space	Open Space & General Commercial	General Commercial	Low Density Residential
Ranking [+]	*Low* *Vacant, adequate distance from surrounding uses*	*High* *Not compatible use or surrounding land use*	*High* *Not compatible use or surrounding land use*	*High* *Not compatible use or surrounding land use*	*Medium* *Not compatible use or surrounding land use*	*High* *Not compatible use or surrounding land use*
Zoning Process for Project	Rezoned & CUP	Rezone, LUPA* & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP
Ranking [+]	*Medium* *Meets long range policies*	*High* *Does not meet long range policies*	*High* *Does not meet long range policies*	*High* *Does not meet long range policies*	*High* *Does not meet long range policies*	*High* *Does not meet long range policies*
Wetland Impacts (acres)	0.40	0.05	0.17	0.3	0	0.17
Ranking [+]	*Medium* *Wetland bank purchase for impact*	*Low* *Could be mitigated*	*Low* *Could be mitigated*	*Medium* *Could be mitigated*	*No Impacts*	*Low* *Could be mitigated*
Recreational Uses	Vacant	Site includes Izaak Walton Park and Mississippi Parkside Marina. Facilities include parking, boat launches, restrooms, green space, picnic areas, and the area holds city-wide events.	Site includes Rotary Beach Park. Facilities include boat docks, parking, trails, two shelters, tot lot, picnic areas, beach area, campground and the area holds city-wide events.	Adjacent to Rotary Beach Park and City Campground. Facilities include more than 100 boat slips, campground sites, and hosts city-wide events.	Commercial boat docks with over 100 slips, storage, & 23 seasonal residential homes with 45 future seasonal residential uses proposed for the site.	Vacant

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Ranking[+]	*No Impact*	*High* *Loss of park/trail*	*High* *Loss of park/marina*	*High* *Loss of park/marina*	*High* *Loss of marina/residential*	*No Impact*
Residential Impacts						
Surrounding Homes	0	3	6	10	19	17
Homes along Haul Route	0	36	27	7	65	78
Total Residential Impacts	0	39	33	17	85	95
Ranking[+]	*No Impact*	*Medium*	*Medium*	*Low*	*High*	*High*
Infrastructure Issues	None	Maiden Avenue is undersized, and the haul route would cross St. Elizabeth Hospital's emergency entrance.	Main St and Bridge Ave are not truck routes. Heavy trucks would be unsafe for pedestrian traffic.	Campbell Ave is undersized and not a truck route; haul route would cross St. Elizabeth Hospital's emergency entrance.	Angelique Ave, not constructed to the site and 12th St. not a truck route. Approx. 1.21 miles	Dugan Ave. not constructed, Angelique Ave and 12th St. not a truck route. Approx. 1.31 miles
Ranking[+]	*No Impact*	*High*	*High*	*High*	*High*	*High*
Shoreline/Stream Impacts (LF)	130	130	130	130	130	130
Ranking[+]	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Tree Clearing (Acres)	2.7	0.25	0.49	0.42	0	0
Ranking [+]	*High*	*Low*	*Medium*	*Medium*	*No Impact*	*No Impact*
Species of Concern (1-Mile Radius)						
Threatened Species*	7	7	7	7	7	6
Endangered Species*	3	3	3	3	5	5
Species of Special Concern*	11	8	8	10	8	6
Total Listed Species*	21	18	18	20	20	17
Ranking [+]	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*	*Medium*
Dredging Impacts to River (4 Feet average depth)						
Area (Acres)	10.2	7.39	0.49	7.65	4.42	13.02
Ranking [+]	*High*	*Medium*	*Low*	*Medium*	*Low*	*High*

*State-listed and Federally-listed species combined

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Volume (Cubic Yards)	37,000	48,194	48,389	48,389	31,580	79,284
Ranking [+]	*Low*	*Medium*	*Medium*	*Medium*	*Low*	*High*

+Points per Ranking: High = 3, Medium = 2, Low =1, No Impact = 0

Total Impacts Based on Section Ranking	18	30	30	30	27	31

Exhibit 3A. Alternate Site Locations in Wabasha

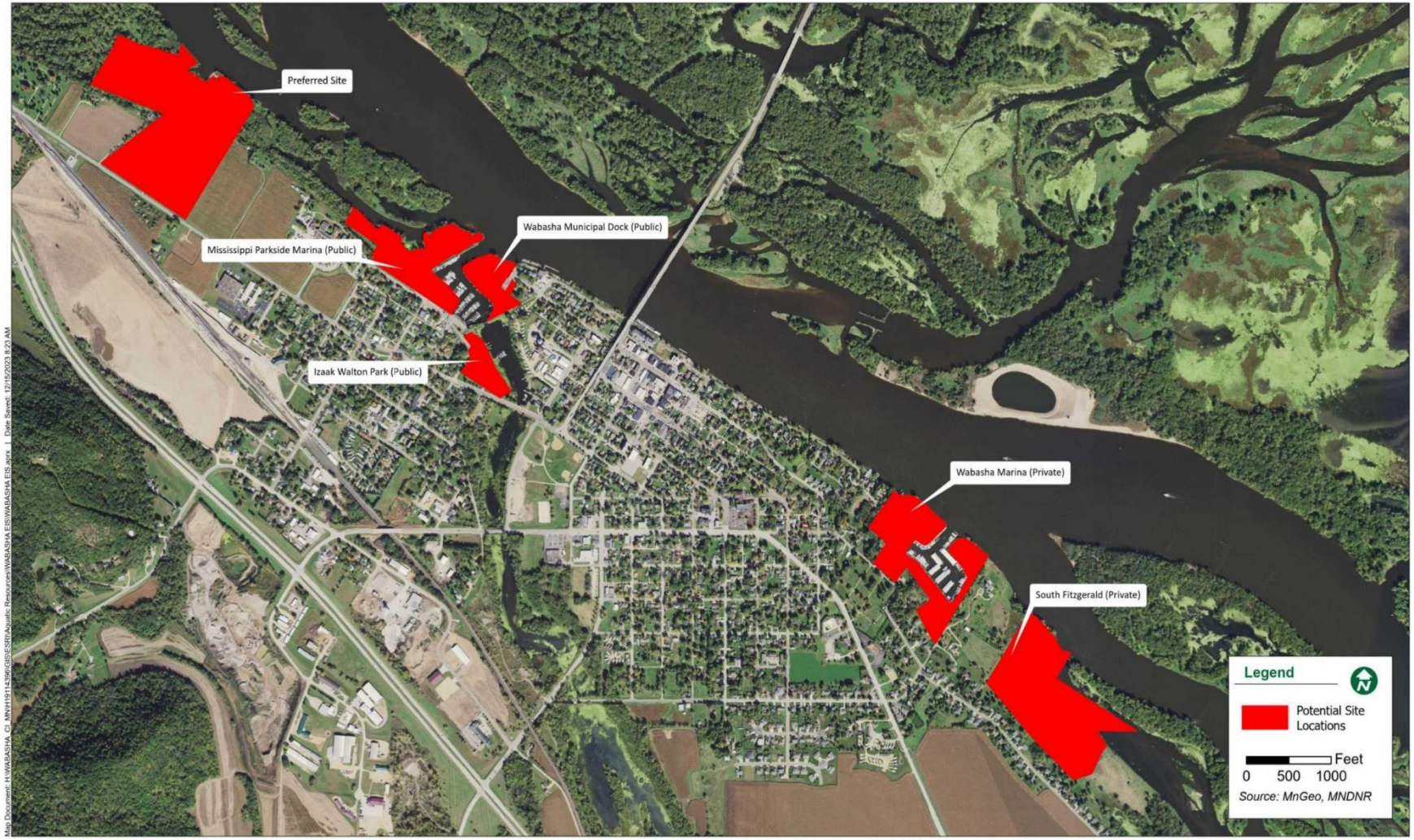


Exhibit 3B. Alternate Location 5: South Fitzgerald



Wabasha Barge Facility
City of Wabasha, MN

Exhibit 3C. Northern Alternate Location Haul Routes

Exhibit: Northern Haul Routes
April 2024

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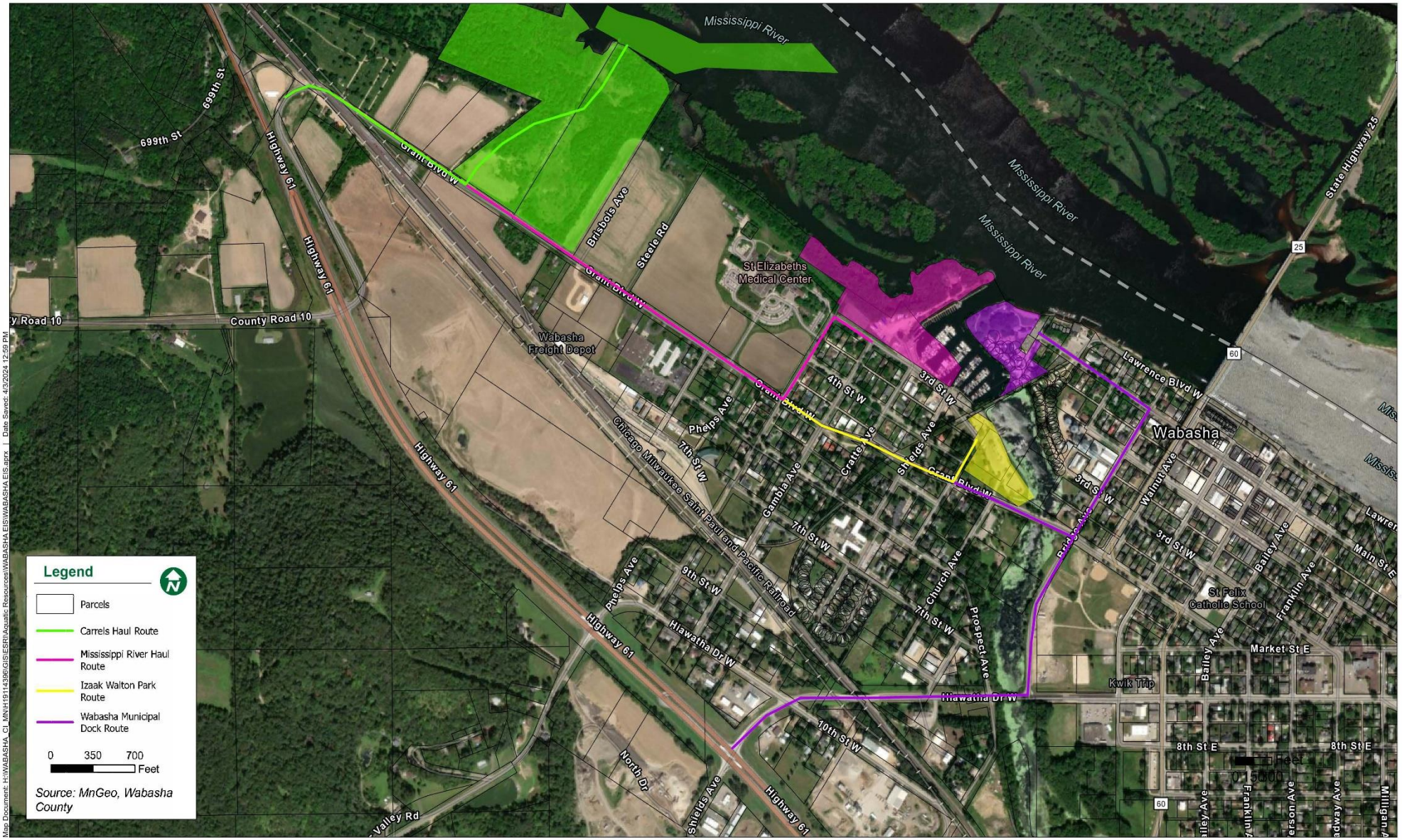

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Exhibit 3D. Southern Alternate Location Haul Routes

Wabasha Barge Facility
City of Wabasha, MN

Exhibit: Southern Haul Routes
April 2024

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3.2.2 Modified Design/Layout and Scale/Magnitude

The preliminary planning phases for the Proposed Project involved the exploration of various design and layout options. Adjustments, including the realignment of the access road and modifications to the dock infrastructure, were considered to optimize functionality and environmental compatibility.

The original project design envisioned the acquisition of the entire parcel, a larger dredging area, and an extensive dock structure to facilitate the handling of larger and/or multiple barges. Conceptual plans for this larger-scaled project can be found in **Exhibits 4A-4C.**

Onsite Alternative 1 – Alternate Material Storage (Exhibit 4A)

It was considered to build a holding area that could be used to store materials on-site prior to loading on trucks for off-site transport. This alternative may allow quicker offloading of materials from barges and decouple barge arrival from truck availability.

Compared to the Preferred Alternative, this alternative would require additional land acquisition and site improvements. Additional impacts would include increased permanent wetland impacts, habitat loss, and indirect air quality impacts due to increased tree removals. While wetland impacts and habitat loss are city priority areas, potential benefits for this alternative would include operational efficiency by separating barge and truck loading, and possibly reduce truck congestion during loading operations.

- *Impacts:*
    - Additional 0.94 acres of wetland impacts.
    - Additional 4 acres of tree clearing.

Onsite Alternative 2 – Alternate Dredging Area (Exhibit 4B)

Original project considerations included an expanded dredging area to increase side channel capacity for larger vessels and to allow greater maneuverability of barges entering and leaving the facility. Compared to the Preferred Alternative, this would increase the total dredging area and the potential need for greater maintenance dredging requirements. This would additionally increase impacts to aquatic habitat, refuge lands, and adjacent shoreline areas.

- *Impacts:*
    - Additional 2.4 acres of impacts to the Mississippi River.
    - Increased impacts adjacent to USFWS refuge property.
    - Increased shoreline erosion.

Onsite Alternative 3 – Alternate Site Layout (Exhibit 4C)

Early iterations for the proposed site layout and design included additional infrastructure, and expansion of the existing maintenance trail for truck access. Additional infrastructure considerations included additional buildings and utilities entering along the existing maintenance trail.

There is an existing dirt road at the site from the Mississippi River to 5th Grant Boulevard West. It was originally considered to improve this road and use it for truck transport. The current property owner has expressed their desire to maintain the southeast portion of the property for future development potential, thereby requesting the city reconsider where the access road and other infrastructure would be located. The previous access layout would reduce tree clearing by 0.9 acres but would result in bisecting the property and either delaying or eliminating future development potential.

- *Impacts:*

- Bisect current property parcel and reduce future development potential.
- Safety concern for the residence directly across 5th Grant Boulevard West from the site ingress/egress.

Onsite Alternative 4 – Use of Smaller Barges

The alternative of using smaller barges to minimize access channel dredging was reviewed. The options of using either 120-foot by 30-foot material barges (as the USACE and its contractors generally use to accommodate shallow water situations), as well as the preferred 195-foot by 35-foot deck material or open hopper barges were considered. The material capacity of the smaller barges is approximately 250 cubic yards, and the larger barge capacity is approximately 1,000 cubic yards. This would result in increased trips (double or more) to and from the temporary storage sites and would require the use of 6 barges instead of two.

- *Impacts:*
  - Increased barge traffic may lead to a higher risk of recreation impacts, collisions and other safety concerns.
  - Increased operational cost.
  - Increased fuel consumption.
  - Increase in carbon emissions due to increased trips.

Exhibit 4A: Alternate Material Storage Area

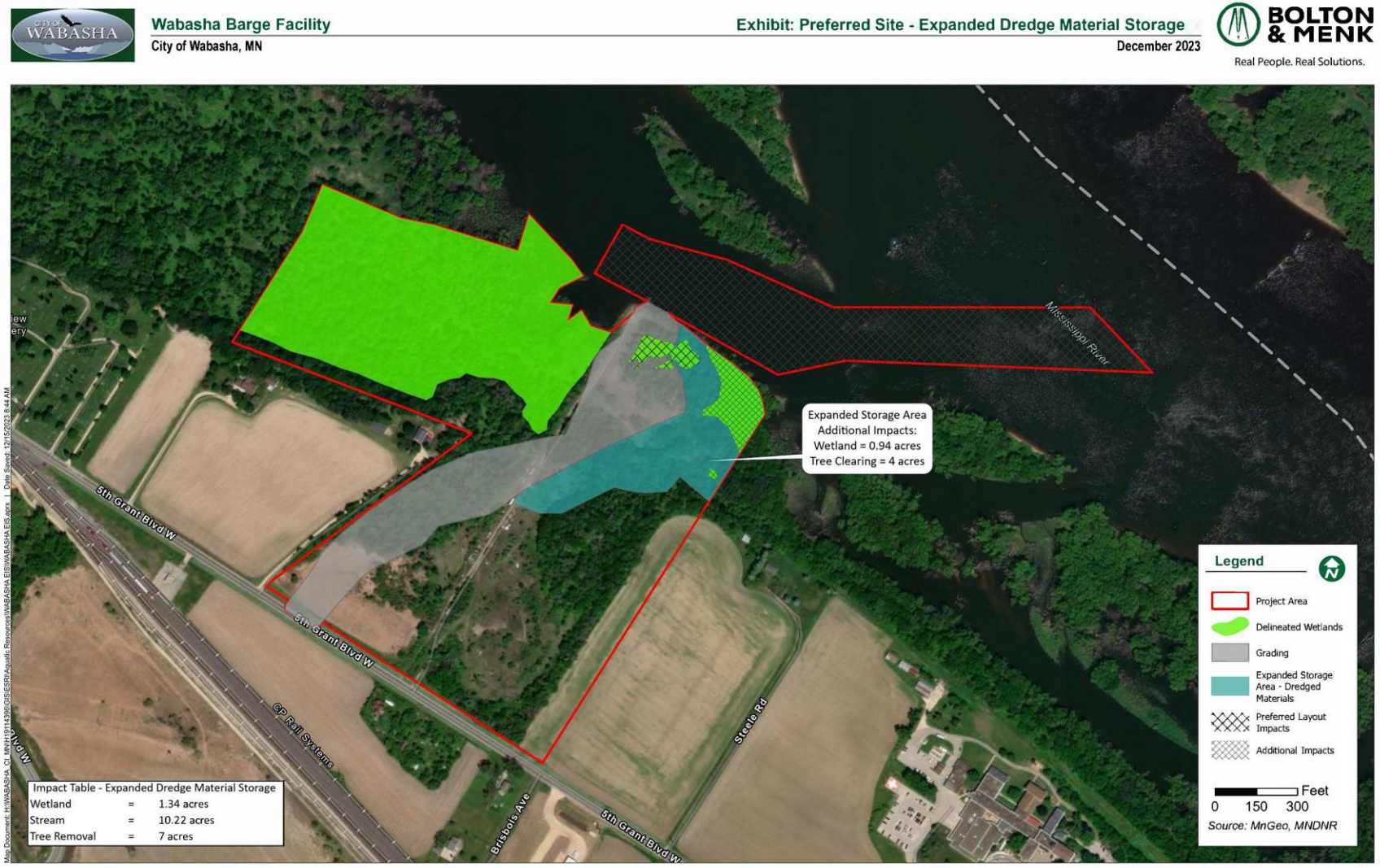
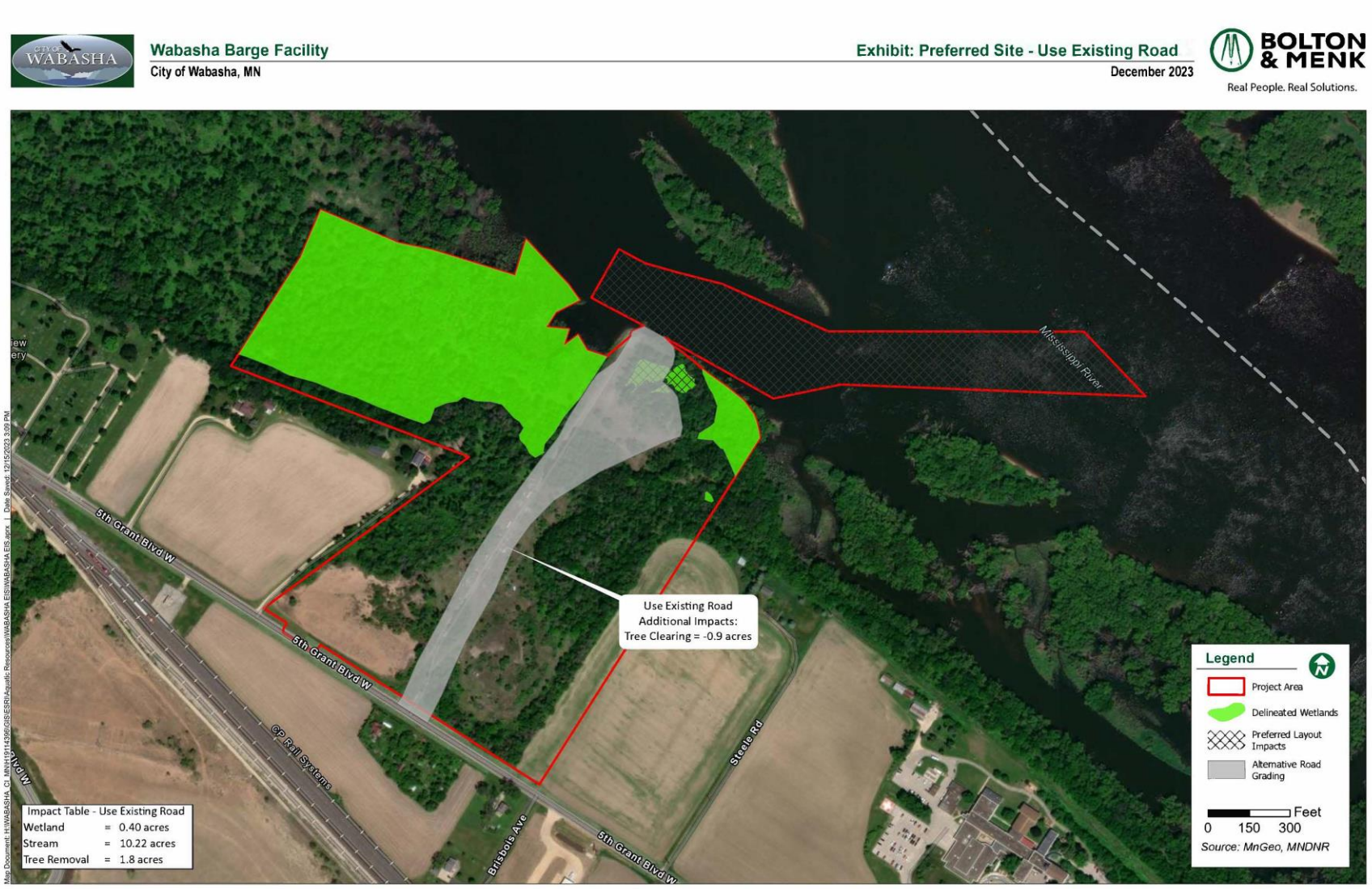


Exhibit 4B: Alternate Dredge Area



Exhibit 4C: Alternate Site Layout



3.2.3 Additional Considerations

Hydraulic pumping of sand material from temporary island sites was evaluated and eliminated based on the need for semi-permanent or permanent pumping and pipeline infrastructure requirements necessary to facilitate this process, additional area required at the proposed facility to decant the sand/water slurry, and annual costs that exceed the cost to move the material by mechanical methods as proposed.

Hydraulic pumping of sand requires conversion of the sand to a sand/water slurry consisting of 75% water and 25% sand. Converting the required 135,000 CY of sand that needs to be moved on an annual basis into a slurry would require 109 million gallons of water and a total volume of 136 million gallons of sand/water slurry. Pumping sand from the temporary island sites to the Carrels site would require pipelines ranging in diameter from 16-inches to 24-inches, with lengths ranging from 10,400-ft to 25,400-ft, depending on which island site is being unloaded. To avoid impacts to navigation, the pipelines would need to be submerged and anchored to the riverbed and would likely need to be removed and reinstalled on an annual basis. The estimated cost of the pumping operation is estimated to range from $3.8 to $9.0 million on an annual basis, depending on which island is being pumped in a given year, and an approximate cost of $63.3 million over a 10-year period. This cost is based on:

Island	Annual Volume (KCY)	Assumed Max Pipeline Length (ft)	Initial Mob.	Cost Per CY to get to Carrels facility	Demobilization Final	Total Cost Each Area Independently
Crats	135	10,500	$400,000	$23.94	$264,000	$3,895,900
Teepeeot a	135	19,500	$400,000	$50.70	$264,000	$7,508,500
Grand Enc	135	24,000	$400,000	$62.40	$264,000	$9,088,000

This is compared to an annual operations cost of $2.8 million and $28 million over 10 years for the Preferred Alternative.

After pumping to shore, the sand/water slurry would need to be decanted onshore prior to loading it onto trucks. To avoid erosion and sediment issues at the decanting site, the most feasible way to decant the slurry is through infiltration. As noted above, the volume of water to be infiltrated from the sand/slurry mix is 109 million gallons. Using a design infiltration rate of 0.45 in/hr, based on soil types found at the proposed facility site (hydrologic soil group B), and an expected annual operating period of 6 months (May-October), the required infiltration area would be approximately 9.3 acres. Accounting for the required access road, truck loading and turnaround area, and drainage and stormwater treatment facilities, the total footprint of the facility would be approximately 17 acres, which is double the footprint of the proposed facility at approximately 8.5 acres. The feasibility of this alternative assumes that local groundwater tables are at a level such that groundwater mounding cause by such a large volume of infiltration on an annual basis would not reduce the assumed design infiltration rate at the site, which may not be the case. It also assumes that such groundwater mounding would not affect any adjacent private drinking water wells, which also may not be the case.

Overall, this alternative was rejected due to the questionable feasibility of infiltration at the site combined with costs exceeding 225% of the Preferred Alternative.

3.3 Description of Preferred Alternative

The Preferred Alternative includes purchasing 8.2 acres of land on the proposed project site. Following the purchase agreement, the project construction activities will include dredging an access channel from the Mississippi River main channel, creating a barge docking facility and area for material off-loading, and hauling all materials off-site for use in construction-type activities or to storage sites. Work elements associated with the Preferred Alternative include:

- Dredging an access channel from the main Mississippi River navigation channel to the proposed dock area. This will be performed by either hydraulic or mechanical dredging techniques and include deepening the side channel to enable barge traffic to access the proposed fleeting area for loading and unloading material.
- Dredging an area to accommodate barge maneuvering and docking. This will be performed by either hydraulic or mechanical dredging techniques and include widening the area immediately adjacent to the proposed fleeting area for improved barge maneuverability.
- Initial dredge material offloaded at the site will be used to regrade the proposed area and to ensure the access road and temporary storage locations are removed from the 100-year floodplain.
- Construct the barge terminal pad and access road. This will include constructing a sheet pile dock face and upstream/downstream steel pipe pile clusters for barge mooring and maneuvering system. Additionally, the access road off of County Road 59 (5th Grant Boulevard West) will be improved for truck and vehicle traffic hauling material to and from the proposed barge mooring site.
- Construct footings for conveyors and hoppers for material handling and loadout. These will be located immediately adjacent to the barge terminal pad to enable loading and unloading material from moored barges.
- Install electric, sewer, and water utilities to the project site. Extend city utilities to the project site to ensure adequate operations for the Proposed Project.
- Install a loading scale and construct a scale house/field office building (proposed future action).

Final design and construction plans will be completed following environmental review and incorporation of any identified avoidance, minimization, or mitigation measures required.

EIS analyses herein are performed to assess the potential for the construction and operation of the Proposed Project (“Preferred Alternative”) to result in significant adverse impacts.

As discussed in Section 2.1, “Project Description,” dredging of the main navigation channel and all other activities performed by USACE under the Section 217(d) agreement related to the maintenance of the Mississippi River navigation channel are federal actions, considered separate from the Proposed Project.

At this time, neither the city nor the current landowner wants to include the entire two parcels in the property purchase agreement. This saves money for the city and maintains property access for the existing landowner. Any future development activities adjacent to the proposed project location would go through additional permit review scrutiny from the city and associated agencies.

4. SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

4.1 SEE Assessment

This section provides a comprehensive assessment of the potential social, economic, and environmental (SEE) impacts associated with the proposed Wabasha Barge Facility project and adheres to the content requirements outlined in Minnesota Rules 4410.2300.

A systematic evaluation process ensures informed decision-making and analyzes impacts for the following scenarios:

Existing Conditions: This establishes the environmental, social, and economic baseline for the project site and surrounding areas.

No-Build Alternative: This explores the continuation of current practices, evaluating the consequences of not constructing the barge facility.

Preferred Alternative: The environmental impacts associated with the Proposed Project, including construction, operation, and maintenance activities will be addressed for the Preferred Alternative.

Preferred Alternative Mitigation Measures: Based on the impacts addressed for the Preferred Alternative, this subsection will identify potential mitigation requirements and opportunities to reduce significant impacts.

Alternate Sites: Several alternative locations were evaluated to identify potential impacts to compare with the Preferred Alternative. This comparative analysis informs the decision on the most suitable location.

Alternate Design/Magnitude (if applicable): This review may not apply to all the SEE factors and will be addressed when the project design or magnitude causes analysis is warranted.

The EIS provides a succinct discussion of potentially significant adverse or beneficial effects for each identified alternative, considering the importance of the impact and its relevance to decision-making. Data and analyses are commensurate with this approach.

While this section identifies reasonable mitigation measures for the Preferred Alternative, Chapter 6 is dedicated to providing this information in table format and presented in a clear and concise manner.

4.2 Cover Types

The following cover types were identified relevant to the Preferred Alternative.

Table 2: Cover Types – Proposed Barge Facility Site

Cover Type	Before (acres)	After (acres)
Wetlands	0.4	0.0
Deep Water/Streams	0.0	0.0

Cover Type	Before (acres)	After (acres)
Wooded/Forest	2.7	0.0
Brush/Grassland	0.4	0.0
Cropland	0.0	0.0
Lawn/Landscaping	0.0	0.0
Impervious Surface	4.7	8.0
Stormwater Pond/Ditch	0.0	0.1
Other (Barge Docking Area)	0.0	0.1
TOTAL	**8.2**	**8.2**

Existing and proposed cover type acreage estimates for the 8.2-acre Proposed Barge Facility site are based on the National Land Cover Database (NLCD), aerial photo interpretation, wetland delineations, and the conceptual site layout. Changes to land cover will only occur within the 8.2-acre Proposed Barge Facility site, and the remaining portions of tax parcels R27.00004.00 and R27.00005.03 would maintain their existing condition. Acreages are estimates and subject to change based on further site planning and project development.

The existing gravel driveway, which is classified as "Developed" in the NLCD, was considered an impervious surface. The proposed condition assumed the aggregate surfaces associated shown on the proposed site plan along with the remaining portions of the existing gravel driveway are considered impervious for the "After" condition.

4.2.1 Green Infrastructure and Trees

4.2.1.1 Existing Conditions

The current 8.2-acre Proposed Barge Facility site includes approximately 2.7 acres of tree cover, 0.4 acres of wetlands, 0.4 acres of pervious brush/grassland areas, and 4.7 acres of impervious surfaces within the Proposed Project area.

4.2.1.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the Proposed Barge Facility site land cover as indicated in Table 2, "Cover Types – Proposed Barge Facility Site." However, if the Preferred Alternative is not used, the USACE will focus on their other tier project sites, one of which is Tier 4, the use of this site as a temporary off-load site creating the same level of tree loss as described in the preferred analysis.

4.2.1.3 Preferred Alternative Assessment

The city intends to purchase only the 8.2-acre portion of the Study Area that is necessary for the Proposed Barge Facility. The remaining areas would continue under private ownership. In order to construct the barge terminal, tree coverage within the proposed 8.2-acre barge facility site would be reduced from 2.7 acres to 0.0 acres. Additional brush/grassland areas would be removed, and soils compacted. Dredge material removed from the access channel will be incorporated as fill material to raise the proposed access road above the 100-year floodplain. Impervious surfaces would increase to

accommodate the proposed access road and other hard-structure surfaces to facilitate barge loading and off-loading operations, including truck traffic in and out of the Proposed Barge Facility site. 0.4 acres of wetlands would be impacted. A detailed discussion of wetland impacts, and associated mitigation measures is included in Section 4.13.2, "Wetlands."

4.2.1.4 Preferred Alternative Mitigation Measures

The City of Wabasha will meet all required permits and approvals and ensure the timing of tree removal does not interfere with bat roosting season. Stormwater runoff will be directed to an infiltration area on site to reduce impacts from additional impervious surface area. Additional trees can be planted in the surrounding site area to replace the removed trees and provide additional screening from the project to surrounding properties. No additional mitigation measures are included in project plans at this time.

4.2.1.5 Alternate Site Assessment

There are no tree cover impacts for the two southernmost sites as neither alternative site has any existing trees. The Wabasha Marina was completed graded and is partially developed. Any trees that were on the site were removed during the original development. The South Fitzgerald site has no trees on the site. The Izaak Walton Park, Wabasha Municipal Dock and Mississippi Parkside Marina sites are developed park sites and marinas where tree cover has been removed during the development of these areas. Therefore, additional tree removal would be limited in these three sites to develop the Proposed Project.

4.2.1.6 Alternate Design/Magnitude Assessment

Expanded material storage on the proposed site would increase impacts to vegetation and result in further tree removals within the Carrels Site. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 4 acres of tree clearing
Alternate Dredging Areas	No additional tree clearing
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	No additional tree clearing

4.3 Economic Environment

4.3.1 Existing Conditions

Historic aerial imagery indicates that gravel mining occurred on the Study Area, beginning in earnest in 1949 and continuing into the early 1970s. By 2010, gravel mining had ended, and trees have primarily reclaimed the filled gravel pits. The Study Area is currently comprised of vacant woodland, appears to have been used for the dumping or storage of scrap metal, construction material, and various vehicle parts, and does not contribute to the existing economic environment within the City of Wabasha.

4.3.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the vacant and undeveloped status of the project location and the City of Wabasha with regard to economic environment. The project site would not be used for any city or other improvements, or potential economic development opportunities and the city would lose the potential revenue streams from the agreement with the USACE.

4.3.3 Preferred Alternative Assessment

The current Wabasha Comprehensive Plan (2016-2035),[7] last amended July 6, 2021, lists the future land use of the project site as "Industrial." The Comprehensive Plan discusses Wabasha's unique location and opportunity for development of a commercial river port facility that would be used for commercial purposes including, but not limited to, the ongoing efforts by the Corps of Engineers in maintaining the Mississippi River 9-foot navigation channel. The implementation of the Proposed Project would support these goals outlined in the City of Wabasha's Comprehensive Plan and is anticipated to increase the community's economic vitality.

4.3.4 Preferred Alternative Mitigation Measures

The Proposed Project would not result in adverse impacts to the City of Wabasha's economic environment. Thus, no mitigation measures related to the economic environment are included in project plans at this time.

4.3.5 Alternate Site Assessment

Developing the Izaak Walton Park site for this project would eliminate the current recreational uses of the site as a park and city dock and would remove the existing city trail connection as the pedestrian bridge would need to be removed to widen the water channel for barge access. Converting the Wabasha Municipal Dock would eliminate the existing city park and campground area resulting in a total loss of the existing Mississippi Parkside Marina. Converting the Mississippi Parkside Marina for the Proposed Project would be a total taking of the existing marina business as well as the loss of the city dock at this location. The Izaak Walton Park, Wabasha Municipal Dock, and Mississippi Parkside Marina, hold year-round regional water-based events. Removing these recreational uses may significantly impact the economic vitality of the City of Wabasha. Developing the Wabasha Marina for the Proposed Project would eliminate the current commercial marina business, and 23 seasonal homes created an economic loss for the city's current tax base. Developing the South Fitzgerald site would not impact the existing vacant site.

4.4 Environmental Justice

According to the EPA's Environmental Justice Screening and Mapping Tool (EJScreen), approximately 38 percent of the population located within a ¼-mile radius of the Proposed Project is considered low-income, and approximately one percent of the population located within a ¼-mile radius of the Proposed Project is considered minority population/people of color. Additional demographic information is included in Appendix B. All identified adverse impacts that would result from the

[7] City of Wabasha. 2023. Wabasha Comprehensive Plan, 2016-2035. https://www.wabasha.org/wp-content/uploads/Final-Plan-2016.pdf, accessed July 2023.

implementation of the Proposed Project are capable of being mitigated. These measures are outlined in Section 5, "Mitigation Measures." No disproportionately high environmental justice impacts are anticipated to occur as a result of the Proposed Project, and a slight benefit is anticipated due to the economic development and job creation opportunities in the city.

4.5 Utilities

4.5.1 Existing Conditions

The Project Site is not currently served by the City of Wabasha's existing public utilities system.

According to the City of Wabasha's Comprehensive Plan (2016-2035), an existing 6-inch water main runs along 5th Grant Boulevard West, immediately south of the Project Area. Similarly, a mixed 6-inch and 10-inch sanitary sewer pipe also runs along 5th Grant Boulevard West, immediately south of the Project Area.

There are currently no electrical utilities running to or within the Project Site.

4.5.2 No-Build Alternative Assessment

In the No-Build Alternative, it is assumed that the physical condition of the Project Site generally would resemble existing conditions and remain vacant without utilities expanding inside the parcel boundaries.

4.5.3 Preferred Alternative Assessment

The implementation of the Proposed Project would require the extension of the City of Wabasha's existing sewer, water, and electrical utilities to the Project Site. Sanitary sewer extension may include the installation of a lift station on a portion of the Project Site.

According to the City of Wabasha's Comprehensive Plan (2016-2035), the city's existing public utilities system (water, wastewater, and stormwater) is well-positioned and of adequate size to support the required expansion into the growth areas. The Comprehensive Plan anticipates extending the city's existing water and wastewater service area to include the Project Site. There are no expected impacts to the city's water or wastewater systems due to the slight usage increases as part of the Proposed Project.

Electric utilities would be required and coordinated through Northern States Power Company, whose parent company is Xcel Energy. In 2022, Xcel reported it used 53% non-carbon sources for its energy mix and has a goal of 100% net-zero emissions by 2050.

Sewer and water utilities may be extended to the proposed project site to service a small field office and bathroom facility for employees. This determination will be reviewed and approved by the Wabasha Port Authority.

Since there have been no plans or proposals for development of adjacent land submitted to the city, the city is unable to determine whether the adjacent property will require sewer and water service at this time. Whether the adjacent property would require sewer or water service would not be a factor in the project design. The sewer and watermain sizes and the route proposed for extension would not change whether or not the adjacent property required service. The route is based on existing right-of-way and pipe sizes are the minimum size for sewer and watermain in this location. Upsizing of the mains beyond

what is planned is either not required or not possible based on existing pipe sizes and system requirements.

4.5.4 Preferred Alternative Mitigation Measures

The Proposed Project would not result in adverse impacts to the City of Wabasha's utilities system. No mitigation measures related to utilities are included in project plans at this time.

4.5.5 Alternate Site Assessment

Public water, sewer, and electrical services are available for the Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina alternative sites. However, extensions from the current public utilities through the sites would be necessary for the development of the Proposed Project. The Wabasha Marina and South Fitzgerald sites do not have existing water or sewer services available on site. A public extension from Rustic Lane and/or Main Street East would have to be completed to serve the Wabasha Marina. A public extension from Angelique Avenue or Dugan Avenue would have to be completed to serve the South Fitzgerald site.

4.6 Land Use

4.6.1 Property and Right of Way Needs

4.6.1.1 Existing Conditions

The existing Project Site is currently privately owned. The current Wabasha Comprehensive Plan (2016-2035) identifies the Project Site as an opportunity for future industrial development and land use.

4.6.1.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the project location with regard to property and right-of-way needs. The City of Wabasha would not purchase the Project Site, and the Project Site would maintain its existing vacant condition. Unless the USACE were to utilize this site as outlined in their Tier 4 alternative as a temporary site where an agreement with the private owner and construction of a temporary entrance road is required.

4.6.1.3 Preferred Alternative Assessment

Under the Preferred Alternative, the City of Wabasha would own the Project Site and contract out the port operations and transportation of materials.

As part of the Proposed Project, a new entrance road would be constructed along 5th Grant Boulevard West to allow trucks to access the new site. Trucks accessing the site would follow a specific truck route to and from the site, which will take them from the project site on 5th Grant Boulevard West, to Trunk Highway 61 (TH 61), and then onto Shields Avenue.

Because the City of Wabasha would own the Project Site under the Preferred Alternative, no additional property and right-of-way needs are anticipated during the construction and/or operation of the Proposed Project.

4.6.1.4 Preferred Alternative Mitigation Measures

Prior to project construction, the City of Wabasha will collaborate with the current landowner, who is identified as a willing seller, to determine fair market value for purchase of the Project Site. While this FEIS addresses the entirety of the two parcels, the city only intends to purchase the 8.2-acre portion that is necessary for the Proposed Barge Facility. The remaining areas would continue under private ownership.

4.6.1.5 Alternate Site Assessment

The City of Wabasha own the Izaak Walton Park site. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Maiden Avenue which is an undersized local roadway that would need to be improved to allow for the proposed heavy trucks needed to haul materials from the barge terminal site. In addition, the haul route would travel north bound on 5th Grant Boulevard West crossing the St. Elizabeth's Hospital emergency entrance.

The City of Wabasha owns the Wabasha Municipal Dock. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Main Street and turn south on Bridge Avenue then west on Hiawatha Drive. Both Main Street and Bridge Avenue would have to be improved to allow for the heavy truck traffic necessary for the barge terminal use.

The City of Wabasha owns the Mississippi Parkside Marina. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Campbell Avenue which is an undersized local road that would have to be improved to allow for the use of heavy trucks. In addition, the haul route would travel north bound on 5th Grant Boulevard West crossing the St. Elizabeth's Hospital emergency entrance. The Northern Alternatives haul routes can be seen in **Exhibit 3C** including the Izzak Walton Park, Wabasha Municipal Dock and the Mississippi Municipal Dock.

The Wabasha Marina site is owned by Cervidae LLC., who is not identified as a willing seller. The city would have to negotiate a fair market value and purchase the project site. The barge facility haul route would start at Angelique Avenue which currently is not constructed to the site and travel west along 12th Street E to Pembroke Ave. Angelique Avenue and 12th Street East would have to be improved to allow for the use of heavy trucks, which is approximately 1.21 miles of right-of-way improvements along 85 single family residential homes.

The South Fitzgerald site is owned by Edward and Jolene Greenheck, Riverview Terrace Property Owners Inc, and the United States of America who are not identified as willing sellers. The city would have to negotiate a fair market value and purchase the project sites. The barge facility haul route would start at Dugan Avenue which is not constructed at this time. Travel westward on River Drive South then south and west along Angelique Avenue and 12th Street East. All of these roadways would have to be improved to allow for the barge facility heavy truck traffic use, which is approximately 1.31 miles of right-of-way improvements along 95 single-family residential homes. The southern alternatives haul routes can be seen in **Exhibit 3D** including the Wabasha Marina and South Fitzgerald sites.

4.6.2 Land Use, Plans, Zoning, and Special Districts/Overlays

4.6.2.1 Existing Conditions

The Project Site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha, Wabasha County, Minnesota (Section 30, Township 111N, Range 010W). These parcels are presently privately owned. The city anticipates purchasing the requisite area to house the facility from a willing seller prior to construction activities.

The Project Site is bounded by the Mississippi River to the north and agricultural land to the east and west. 5th Grant Boulevard West (Wabasha County Road 59), which borders the Project Site to the south, provides connection to downtown Wabasha and U.S. Highway 61. The Upper Mississippi River National Wildlife and Fish Refuge ("Refuge") has island and adjacent property adjacent to the Proposed Project area.

The Project Site is comprised of vacant woodland and appears to have been used for the dumping or storage of scrap metal, construction material, and various vehicle parts. According to historic aerial imagery—which is available for limited years from 1939 to the present—gravel mining occurred on the Project Site, beginning in earnest in 1949 and continuing into the early 1970s. By 2010, gravel mining had ended, and successional trees have reclaimed the filled gravel pits.

In July 2020, Bolton & Menk, Inc., conducted a wetland delineation that identified 16.1 acres of Type 1 Seasonally Flooded Wetlands located within the northernmost portions of the Project Site.

South of the Project Site, across 5th Grant Boulevard West, is predominantly agricultural land. Some of the agricultural lots adjacent to the Project Site contain houses, however the nearest lots that are primarily of residential use are located approximately ¼ mile southeast of the Study Area. All of the parcels south of the project site from the northern city limit to Rocque Avenue between 5th Grant Boulevard West to U.S. Highway 61 are zoned Industrial.

The two parcels that comprise the Project Site are zoned R-1, "Low-Density Residential" and RC "Residential Conservancy." Both zoning districts are intended to allow for the use and development of residential structures, yards, and directly related complimentary uses at a lower density than traditionally developed in the originally platted cities. The parcels bordering the project site to the east and west are also zoned R-1. The parcels located south of the project site, across 5th Grant Boulevard West, are zoned I, "Industrial."

The Project Site is also located in the S-1 and S-2 Shoreland Overlay Zones. Shoreland Overlay Zoning Ordinances typically contain a variety of provisions that guide land development and activity in shorelands with the goal of protecting surface water quality, near-shore habitat, and shoreland aesthetics. S-1 and S-2 Shoreland Overlay Zones are intended to provide standards for shoreland areas within the city that are primarily undeveloped. The proposed development will comply with all the standards within the Shoreland Overlay Zone. The Project Site is located within the FEMA 100-Year floodplain. The Project Site is not located within a Drinking Water Management Supply Area (DWSMA)—however, the lots directly south of the project site, across 5th Grant Boulevard West, are located within a DWSMA.

4.6.2.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the project location and surrounding areas with regard to land use, plans, zoning, and special districts/overlays. Unless the USACE were to utilize this site as outlined in their Tier 4 alternative as a temporary off-load site. The USACE would not be required to rezone or process a conditional use permit for the major traffic generator of the use.

4.6.2.3 Preferred Alternative Assessment

The proposed development of a barge port facility under the Preferred Alternative is consistent with the current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021. The Comprehensive Plan designates the future land use of the project site as "Industrial" and discusses Wabasha's unique location and opportunity for development of a river port facility that would be used for commercial purposes.

Of the 26.8- acre Study Area, approximately 8.2 acres would be used and developed for the Proposed Project, leaving the remaining area in its current undeveloped state.

The preferred project site is zoned RC (Residential Conservancy) and R1 (Low Density Residential). A public hearing to rezone these parcels is scheduled for June 11, 2024, with a final review by City Council scheduled for July 2, 2024. Prior to the construction of the barge terminal, a Major Traffic Generator CUP (conditional use permit) will be necessary for the expected heavy truck traffic that will be generated by the use.

The preferred site has a Shoreland Overlay Zone of S-1 adjacent to the Mississippi River and S-2 throughout the rest of the project area. The proposed development will comply with all the standards within the Shoreland Overlay Zone.

The Preferred Alternative site is adjacent to Refuge lands and within the Floodway and 100-year floodplain. The Preferred Alternative would also involve dredging a portion of the Mississippi River for barge traffic to access this barge facility. A portion of that material, once dewatered, would be used as fill to elevate the Proposed Project's access road and facilities out of the 100-year floodplain.

Since the city's top priority is ensuring the safety of Wabasha residents, the preferred project site will allow for the truck transport of dredged material directly to County and MnDOT highway truck routes, avoiding significant truck traffic through residential areas of the city, and minimizing the safety concerns of Wabasha residents with zero impacts to surrounding residential uses and no residential uses along the truck route.

4.6.2.4 Preferred Alternative Mitigation Measures

Proposed fill – from side channel dredging and amended with other fill material as needed – would raise the project site to an elevation of approximately 678.6 feet to 680.5 feet, thereby removing the access road and other material transfer infrastructure from the 100-year floodplain. The dredged material will be evaluated prior to use as fill. Additionally, a "No-Rise" Certification is anticipated and will be submitted to FEMA with the project design to document no impact to flood elevations due to placement of fill within the Mississippi River floodplain (Appendix C). Wetland impacts will be mitigated and permitted through USACE and MNDNR application processes.

Upon completion and approval of the EIS, the city will initiate a traffic generator conditional use permit application to review the haul route and anticipated heavy truck traffic trips generated by the barge terminal use. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone.

To avoid potential indirect impacts to refuge properties from "nose-in" barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season, which reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40" prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property.

All direct and indirect impacts to other areas mentioned above will be specifically addressed later in this document. The City of Wabasha will meet all required permitting standards, zoning regulations, and ordinances related to industrial site development.

The proposed project lot will meet all standards found in Section 162.070 of the City of Wabasha's Zoning Code for an industrial lot.

4.6.2.5 Alternate Site Land Use and Zoning Assessment

The Izaak Walton Park site is approximately 5.5 acres with land use designations of Open Space, Institutional, and Medium Density Residential and is zoned R2 (Medium Density Residential). The site is used as a public park and boat docks. The surrounding land use is residential. The site is within the S-3 Shoreland Overlay Zone and completely within the 100-Year Floodplain. To construct the Proposed Project, the site would have to complete a land use plan amendment from Open Space, Institutional, and Medium Density Residential to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from R2 to Industrial, and a major traffic generator CUP. The Proposed Project is not compatible with the existing land uses and zoning surrounding the site.

The Wabasha Municipal Dock site is approximately 7.03 acres with a land use designation of Open Space and is zoned R2 (Medium Density Residential). The site is used as a public park and campground. The surrounding land use is low and medium density with full-time and seasonal residential. The site is within the S-3 Shoreland Overlay Zone and completely within the 100-Year Floodplain. To construct the Proposed Project, the site would have to complete a land use plan amendment from Open Space to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from R2 to Industrial, and a major traffic generator CUP. The Proposed Project is not compatible with the existing land uses and zoning surrounding the site.

The Mississippi Parkside Marina site is approximately 16.88 acres with land use designations of Open Space and General Commercial and is zoned RC (Residential Conservancy) and R2 (Medium Density Residential). The site is used as a city boat dock and campground. The surrounding land use is largely low density residential and St. Elizabeth's Hospital to the southwest. The site is within the S-1 and S-3 Shoreland Overlay Zone and is within the Floodway along the Mississippi River and portions of the properties are within the 100-Year Floodplain. To construct the proposed project, the site would have to complete a land use plan amendment from Open Space and Commercial to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from RC and R2 to Industrial, and a major traffic generator CUP. The Proposed Project is not compatible with the existing land uses and zoning surrounding the site.

The Wabasha Marina site is approximately 15.84 acres with a land use designation of General Commercial and is zoned GC (General Commercial). The site is used as a commercial boat dock and as seasonal residential. The surrounding land use is low density residential. The site is within the S-3 Shoreland Overlay Zone. To construct the Proposed Project, the site would have to complete a land use plan amendment from Commercial to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from GC to Industrial, and a major traffic generator CUP. The Proposed Project is not compatible with the existing land uses and zoning surrounding the site.

The Southern Fitzgerald site is approximately 30.5 acres with a land use designation of Low Density Residential and is zoned RC (Residential Conservancy) and RRGT (Rural Residential Growth Transitional). The site is vacant. The surrounding land use is the Mississippi River and low density residential. The site is within the S-1 and S-2 Shoreland Overlay Zone and withing the Floodway and 100-Year Floodplain. To construct the Proposed Project, the site would have to complete a land use plan amendment from Low Density Residential to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from RC and RRGT to Industrial, and a major traffic generator CUP. The Proposed Project is not compatible with the existing land uses and zoning surrounding the site.

4.6.2.6 Alternate Site Residential Impact and Safety Assessment

Given that safety is a priority for the city, the residential impacts for the surrounding properties from the barge terminal use and the haul routes for all alternative sites were carefully evaluated as the use will generate an estimated 100 truck trips in and out of the developed site per day. As can be reviewed in **Table 1 – Alternate Site Assessment** and the proposed Northern and Southern Haul Route **Exhibits 3C** and **3D**.

The residential impacts generated for the northern alternative sites of the Izaak Walton Park, Wabasha Municipal Dock or the Mississippi Parkside Marina would have substantial impacts for 17-39 homes either surrounding the project sites or along the haul routes. See the Northern Haul Routes **Exhibit 3C**. In addition, all of the northern sites would most likely direct the truck traffic away from downtown from the project sites along 5th Grand Boulevard West requiring that they cross the St. Elizabeth's Hospital emergency entrance.

The two southern alternative sites, Wabasha Marina and the South Fitzgerald site, would impact 85 and 95 residential homes respectively, either adjacent to the site or along the haul routes. See the Southern Haul Route **Exhibit 3D**.

4.6.3 Community and Critical Facilities

4.6.3.1 Existing Conditions

The Riverview Cemetery is located approximately 250 feet west of the Study Area, beyond the agricultural land that is adjacent to the Project Site. An active freight railroad line operated by Canadian Pacific Railway runs from the northeast to the southwest, between 5th Grant Boulevard West and U.S. Highway 61. A small rail yard is located approximately 400 feet southeast of the Project Site. The Gunderson St. Elizabeth's Hospital is located approximately 0.40 miles southeast of the Project Site.

4.6.3.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the Study Area and surrounding areas with regard to community facilities and critical facilities.

4.6.3.3 Preferred Alternative Assessment

The preferred site is a vacant parcel with no on-site community or critical facilities and will not directly impact any of the identified community or critical facilities surrounding the site. Indirect impacts may include increased truck traffic along 5th Grant Boulevard West, as well as minor, temporary noise effects during construction and loading/off-loading activities, although noise is anticipated to have minimal impact. The haul route for the site will direct all truck traffic north along 5th Grant Boulevard West away from St. Elizabeth's Hospital. For more information on traffic-related impacts, please refer to Section 4.20.1, "Traffic." For more information on noise-related impacts, please refer to Section 4.19, "Noise."

4.6.3.4 Preferred Alternative Mitigation Measures

The City of Wabasha will meet all required permitting standards, zoning regulations, and ordinances related to the development of a commercial port facility. Standard construction noise mitigation practices will be used to minimize any potential impacts to surrounding facilities.

4.6.3.5 Alternate Site Assessment

Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina contain numerous community facilities and are the primary sites for multiple local and regional water-based events year-round. To develop the proposed use on any of these sites would eliminate all on-site community facilities. In addition, the Wabasha Municipal Dock site is adjacent to the Northern States Power property located at 701 Main Street West. Development adjacent to this critical facility would have to be addressed.

The Wabasha Marina and South Fitzgerald sites do not contain public community or critical facilities. Though the Wabasha Marina does contain commercial community accessible facilities that would be eliminated if the project were to develop on site.

4.6.4 Parks, Open Space, and Recreational Facilities

4.6.4.1 Existing Conditions

According to the City of Wabasha's Comprehensive Plan (2016-2035) and the Parks and Trails Master Plan adopted on 11/2022 several trails and recreational facilities are located near the Proposed Project:

- The Nelson-Trevino Bottoms Natural Area is located across the Mississippi River, approximately 0.25 miles northeast of the Study Area.
- The City of Wabasha's Beach Park is located approximately 0.60 miles southeast of the Study Area.
- The Mississippi River Trail, a bike and pedestrian trail, is located within 0.5 miles of the Study Area.
- A City of Wabasha five-mile bike and pedestrian trail is located just east of the Study Area and travels through the Gunderson St. Elizabeth's Hospital parcel.
- Upper Mississippi River National Wildlife and Fish Refuge begins just up-river of the Study Area and stretches 261 river miles from Wabasha, Minnesota to Rock Island, Illinois.
- The Mississippi River Water Trail is located adjacent to the Study Area on the Mississippi River. This trail serves as a navigational guide for recreational travel on the river via boat or other watercraft, and highlights amenities and key destinations.
- The Great River Road, a National Scenic Byway, travels along the Mississippi River through ten States, and follows Highway 61 through the City of Wabasha.
- The National Eagle Center, a heavily-trafficked outdoor recreational and educational facility, is located approximately 1.5 miles from the Study Area.

In general, this area of the Upper Mississippi River has a substantial amount of fishing and boating activities. Small boats frequently use this area to access the side channel to the west of Drury Island, and there are also primitive camping sites on the interior of the island complex.

Additionally, the Study Area is located adjacent to the Upper Mississippi River National Wildlife and Fish Refuge. The Upper Mississippi National Wildlife and Fish Refuge is the longest national wildlife refuge in the lower 48 states, extending 261 miles from the Chippewa River in Wisconsin almost to Rock Island, Illinois. The Refuge is an Audubon designated Important Bird Area (ABA) and Ramsar designated Globally Important Bird Area. Lower Pool 4 of the Mississippi River is part of the Upper Mississippi National Wildlife and Fish Refuge which is managed by the USFWS. The USFWS also owns and manages adjacent land northwest of the Study Area.

4.6.4.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the Study Area and surrounding areas with regard to available parks, open space, and recreational facilities.

4.6.4.3 Preferred Alternative Assessment

For discussion of impacts related to the Upper Mississippi River National Wildlife and Fish Refuge, Audubon-designated Important Bird Area, Lower Pool 4 of the Mississippi River, and other nearby natural and biologically-significant areas, please refer to Section 4.15.1, "Resources, Habitats, and Vegetation."

The Proposed Project would not directly impact any of the identified trails or other land-based recreational features as the site is currently vacant. Indirect impacts may include increased truck traffic along 5th Grant Boulevard West, potentially decreasing the semi-rural ambiance of this roadway. During construction and loading/unloading activities, noise may be a factor for persons participating in non-motorized recreational activities, immediately adjacent to the project location. For aquatic recreational users, an increase in barge traffic to and from the Proposed Project area will require increased vigilance to reduce impacts between barges and other boat – motorized or non-motorized – traffic.

4.6.4.4 Preferred Alternative Mitigation Measures

For discussion of mitigation measures related to the Upper Mississippi River National Wildlife and Fish Refuge, Audubon-designated Important Bird Area, Lower Pool 4 of the Mississippi River, and other nearby natural and biologically-significant areas, please refer to Section 4.15.1, "Resources, Habitats, and Vegetation."

Appropriate road and waterway signage will identify this area as increased truck and barge traffic, respectively. Additionally, the contracted operator of the facility will be required to comply with City of Wabasha noise ordinances, and to confine operations to set days and times during the regular work week. This information will be clearly articulated to the contracted facility construction personnel and operators. During the lifespan of the Proposed Barge Facility, the city will routinely audit operations through an impact assessment to identify future additional mitigation requirements and recommendations.

4.6.4.5 Alternative Site Assessment

Of the five (5) alternatives, three sites; Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina are all active city-owned recreational areas with multiple recreational facilities.

Izaak Walton Park includes restrooms, 76 parking stalls with 4 handicap stalls, 15 picnic tables, a 120-people capacity picnic shelter, BBQ pit for large groups, drinking fountain, city docks for short and long-term rentals, city docs for non-motorized water access, and a 10' bike path connecting the public water access and the westside trails. The park includes the following activities: river activities, motorized and non-motorized boating, picnicking, large group events, fishing, and three public boat launch docks.

The Wabasha Municipal Dock (Rotary Beach Park) site includes a bathhouse and restrooms, 10' gazebo, walking paths, 20 parking stalls, picnic tables, two picnic shelters. The park site includes the following activities: swimming beach, non-motorized boating, natural play set, swing set, fishing, river and nature viewing, picnicking, community gathering for festivals, and a 10' bike path extending between 7th Street and Main Street within the vacated railroad ROW and a perimeter sidewalk.

The Mississippi Parkside Marina site includes a campground and RV sites, two boat launches, 60-70 boat docks, and parking for 60+ boats. The site includes the following activities: access to the water for two boat docks, fishing, camping, river and nature viewing, and community gathering for festivals.

The Wabasha Marina is a privately owned commercial marina with approximately 100 boat docks, one permanent home site, five (5) commercial boat storage buildings, and 23 seasonal homes with a plan for an additional 45 home sites in the near future.

The South Fitzgerald site is a vacant site with no recreational facilities.

Constructing the proposed barge terminal use on any of the developed alternative sites would eliminate all current uses for the site.

4.6.4.6 Alternate Design/Magnitude Assessment

If the smaller barges alternative is used, this would increase by two or three times the number of barge trips required for hauling material. This may impact recreational users of the river system both on the main and side channels.

4.7 Climate Trends and Impacts

4.7.1 Existing Conditions

Minnesota's climate is trending generally towards warmer and wetter conditions with more frequent intense precipitation events.[8] The location of the Proposed Project is within the Mississippi River – Winona Watershed. Data from the Minnesota Department of Natural Resources' Minnesota Climate Explorer[9] tool shows both historical and projected future climate trends for this watershed. Historical data from 1895 to 2021 shows variable average temperatures and precipitation totals from year to year, as shown in the graphs below, and gives an impression of the existing climate conditions within the region. The historic trends for temperature and precipitation are:

- Average daily mean temperature of 44.25 degrees Fahrenheit with an increase of 0.17 degrees F per decade.
- Average daily maximum temperature of 54.39 degrees Fahrenheit with an increase of 0.10 degrees F per decade.
- Average daily minimum temperature of 34.11 degrees Fahrenheit with an increase of 0.25 degrees F per decade.
- Average annual precipitation of 32.26 inches with an increase of 0.57 inches per decade.

Wabasha County is currently considered to have a moderate heat exposure score compared to other counties in Minnesota (Exhibit 5, "Heat Exposure in Minnesota - Counties").[10] Trends of warmer temperatures may increase the risk of heat waves and vulnerability.

[8] Minnesota Department of Natural Resources. 2023. Climate Trends. Electronic document, https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html, accessed February 2023.

[9] Minnesota Climate Explorer. 2022. Minnesota Department of Natural Resources. Electronic resource, https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical, accessed October 2022.

[10] Minnesota Department of Health's Climate & Health Program and U-Spatial. 2019. Heat Vulnerability in Minnesota. Electronic document, https://maps.umn.edu/climatehealthtool/heat_app/, accessed March 2023.

Exhibit 5.A: Average Temperature

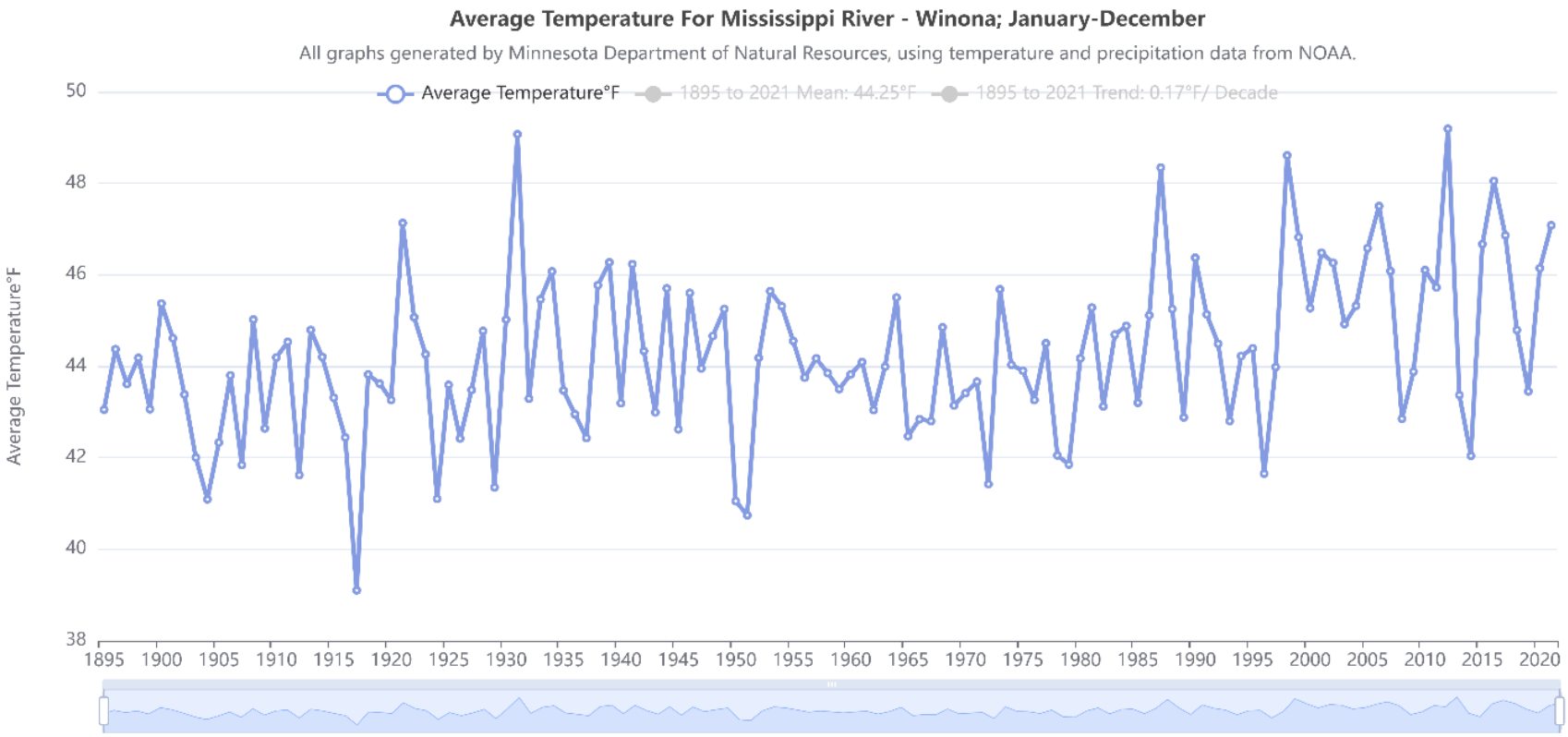


Exhibit 5.B: Maximum Temperature

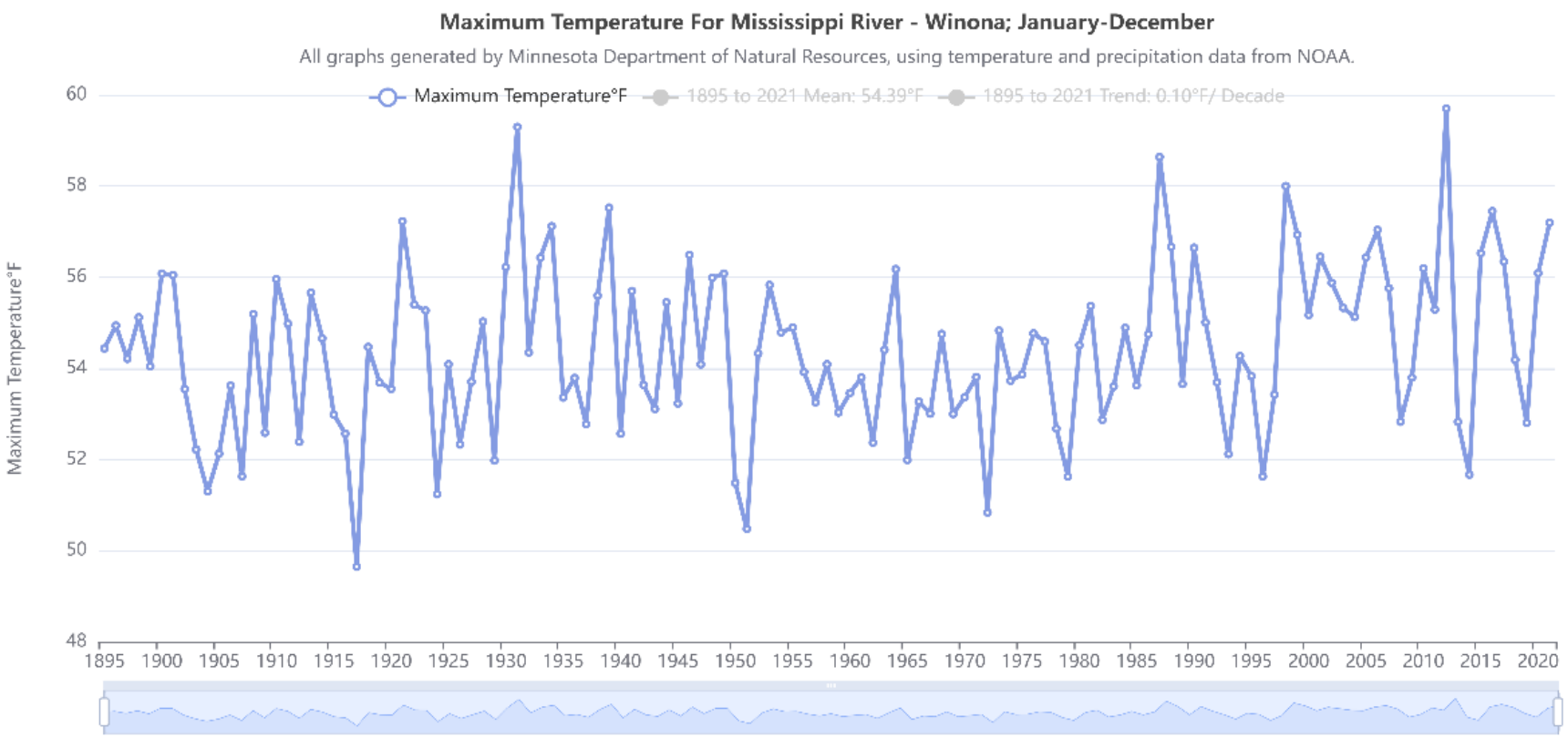


Exhibit 5.C: Minimum Temperature

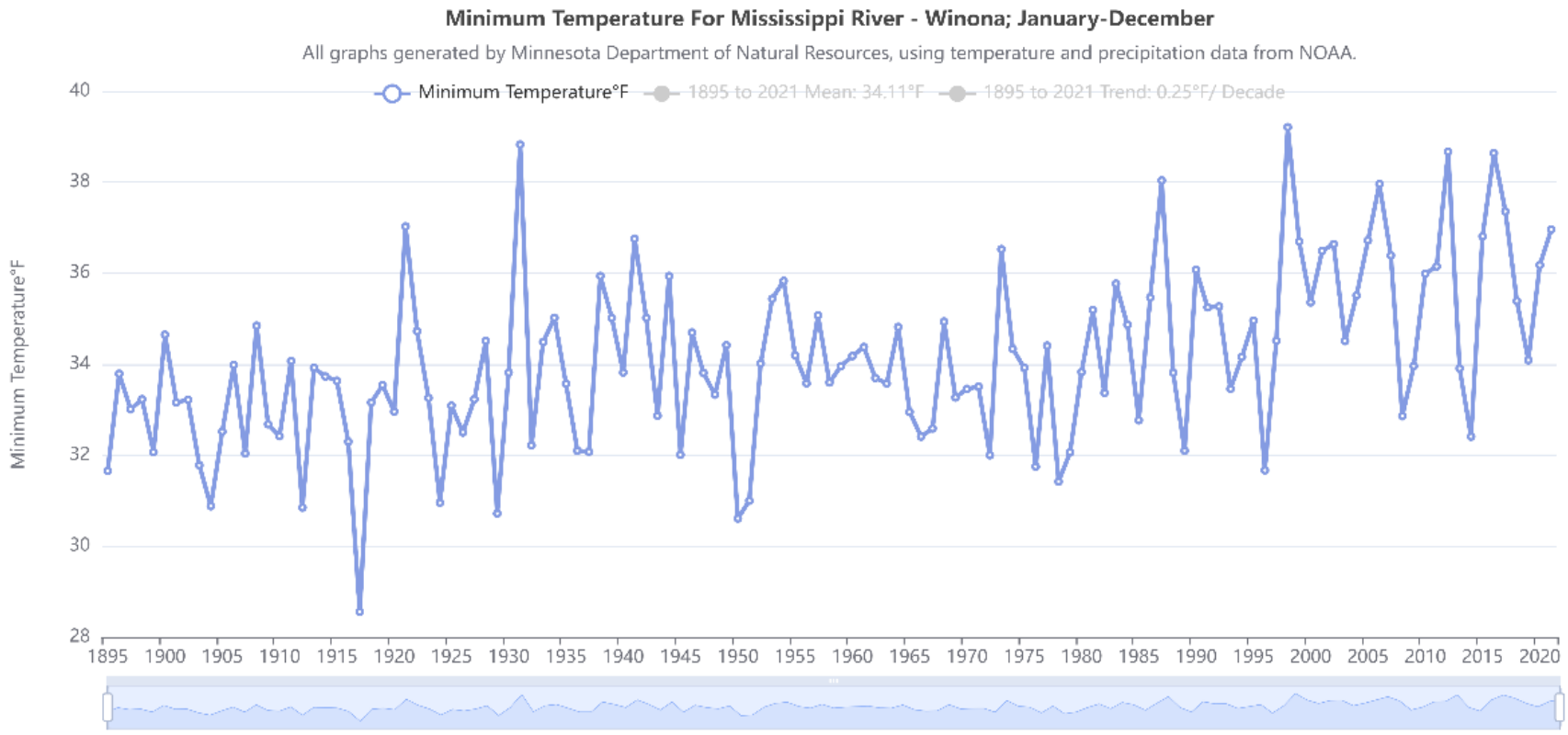


Exhibit 5.D: Precipitation

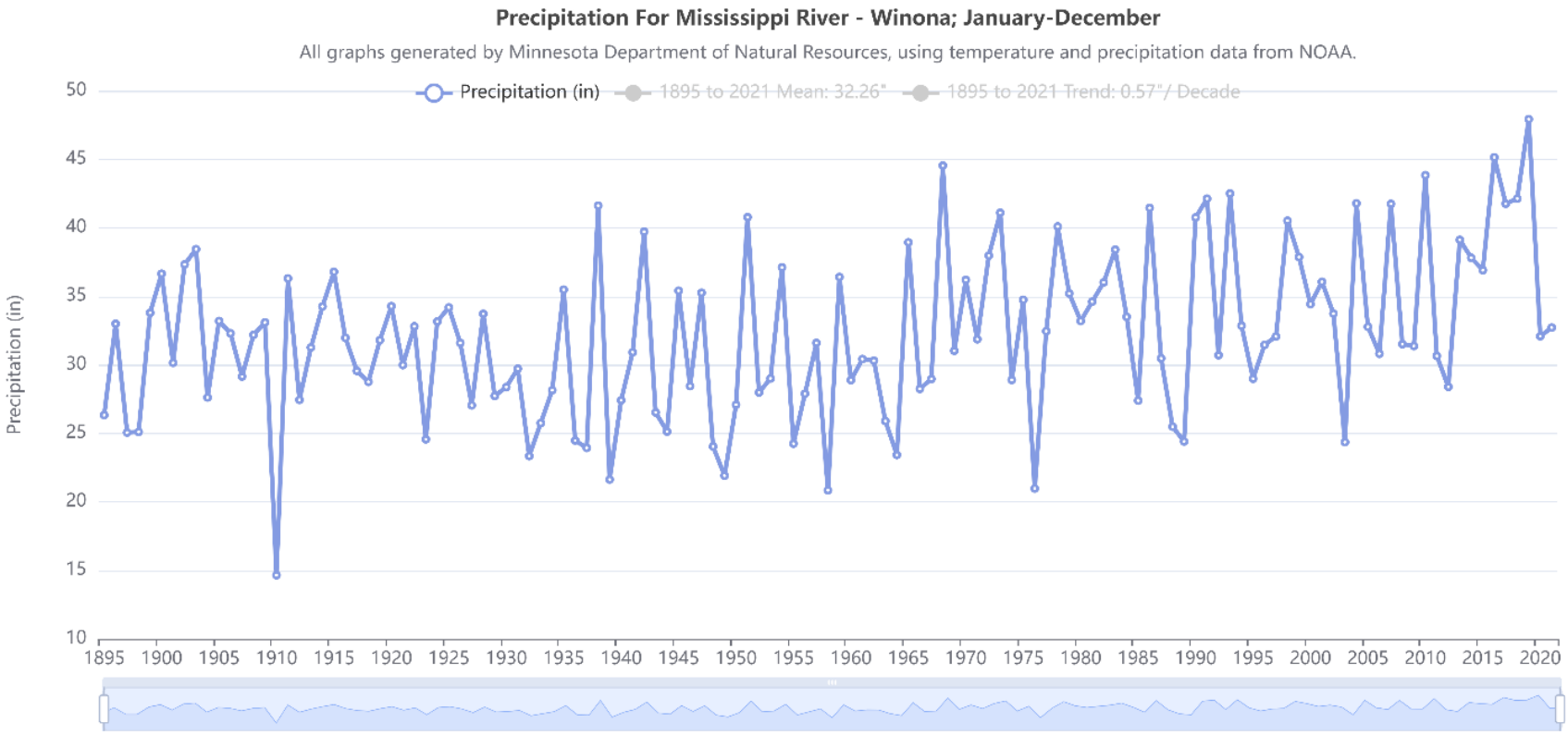
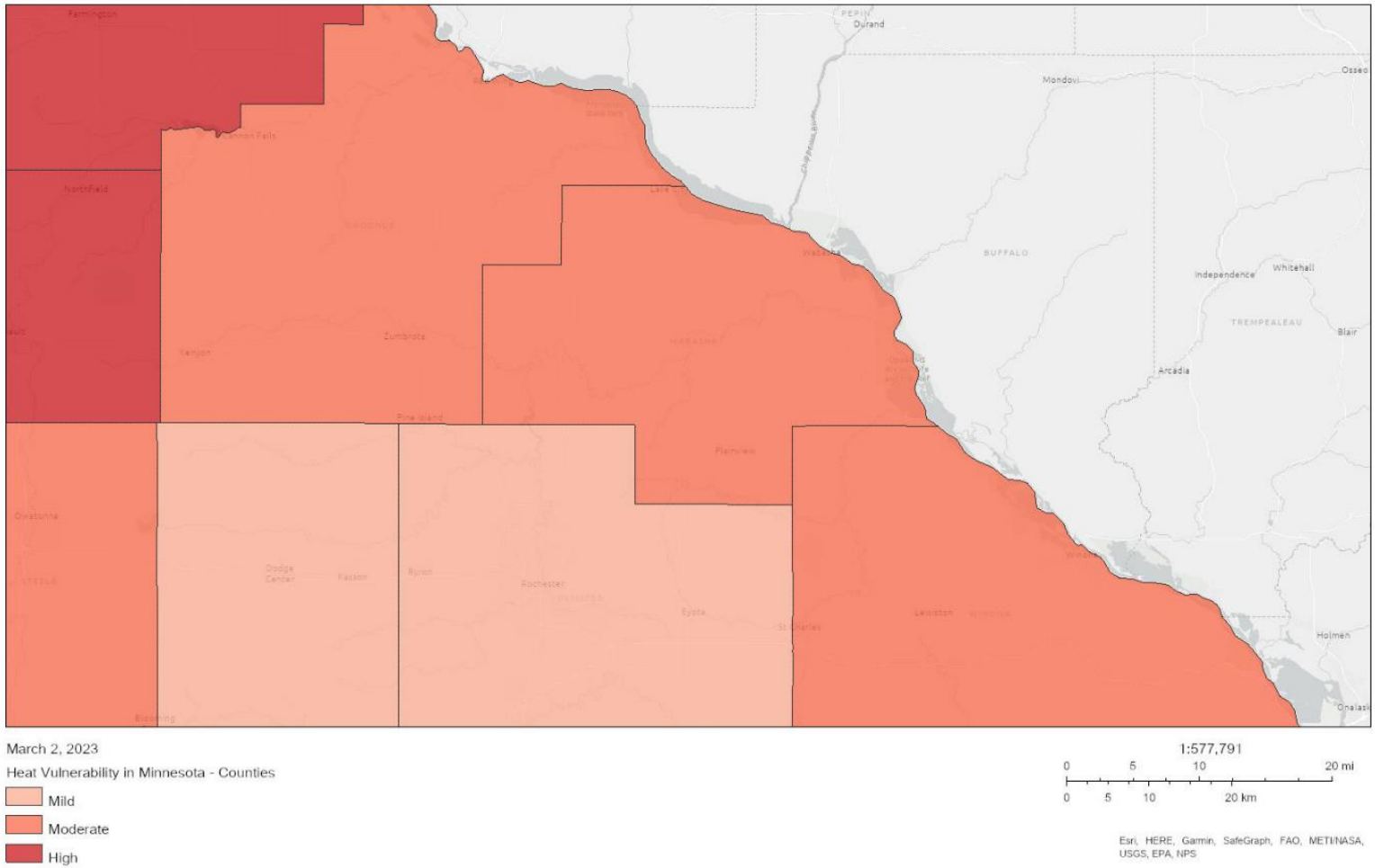


Exhibit 6: Heat Vulnerability in Minnesota – Counties



4.7.2 No-Build Alternative Assessment

Projected future data for the Mississippi River – Winona Watershed was evaluated using the Minnesota Climate Explorer. The mid-century (2040-2059) projections fit with the life of the Proposed Project and are summarized below. The data makes projections using RCP 4.5 (representative concentration pathway), which is an intermediate stabilization scenario. The information shown is the model mean of eight general circulation global climate models. Assuming no impact from the Proposed Project, the climate in the region is anticipated to follow the trends below:

- Projected average daily mean temperature: 48.85 degrees Fahrenheit
- Projected daily maximum temperature: 55.52 degrees Fahrenheit
- Projected daily minimum temperature: 42.43 degrees Fahrenheit
- Projected average annual precipitation: 33.00 inches

Comparing the projected values with the historical values, the average daily mean, maximum, and minimum temperatures, and the average annual precipitation are all expected to rise over the next few decades regardless of project impacts.

Increased annual average precipitation may also influence the risk of flooding as a result of climate changes. The project area is located within a 100-year floodplain, designated as Zone AE on the FEMA FIRM Map Set (**Exhibit 8**).[11] According to the Risk Factor tool, the City of Wabasha has a moderate risk of flooding over the next 30 years.[12] The chance of severe storm, or 100-year flood event are projected to increase from one percent in a given year to 26 percent over the next 30 years. This matches with projections for the State, in general, that indicate there will be a "continued loss of cold extremes and dramatic warming of coldest conditions," "continued increase in frequency and magnitude [of extreme rainfall]; unprecedented flash floods," and "more hot days with increases in severity, coverage, and duration of heat waves" by 2099.[13]

[11] Federal Emergency Management Agency (FEMA). 2000. FEMA Flood Map Service Center. Electronic resource, https://msc.fema.gov/portal/search?AddressQuery=wabasha%2C%20mn#, accessed March 2023.

[12] Risk Factor. 2023. "Flood Factor: Wabasha, Minnesota." Electronic resource, https://riskfactor.com/city/wabasha-mn/2767378_fsid/flood, accessed February 2023.

[13] Metropolitan Council. 2023. "Climate Vulnerability Assessment: Regional Risks and Opportunities." Electronic document, https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/CVA.aspx, accessed January 2023.

Exhibit 7A: Recent and Projected Average Temperature

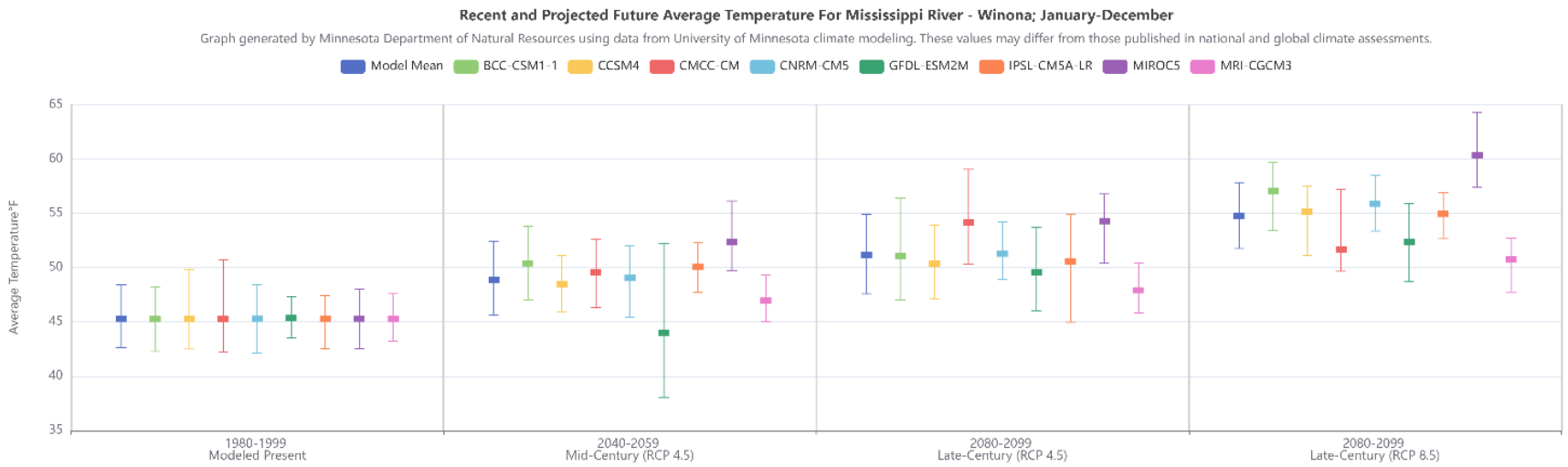


Exhibit 7B: Recent and Projected Precipitation

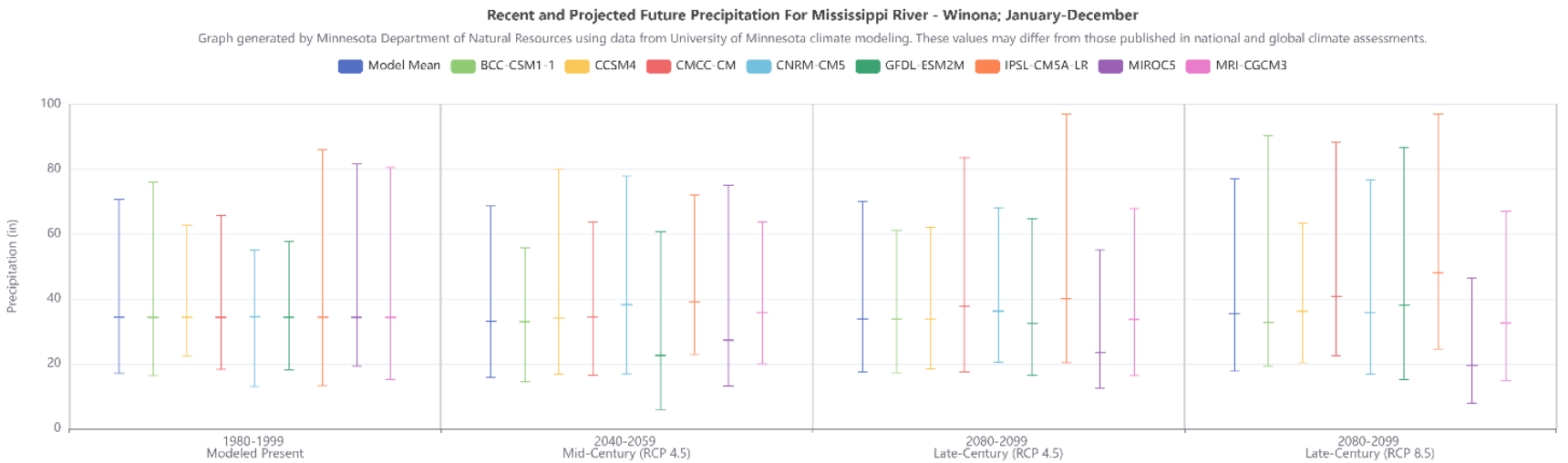


Exhibit 7C: Recent and Projected Maximum Temperature

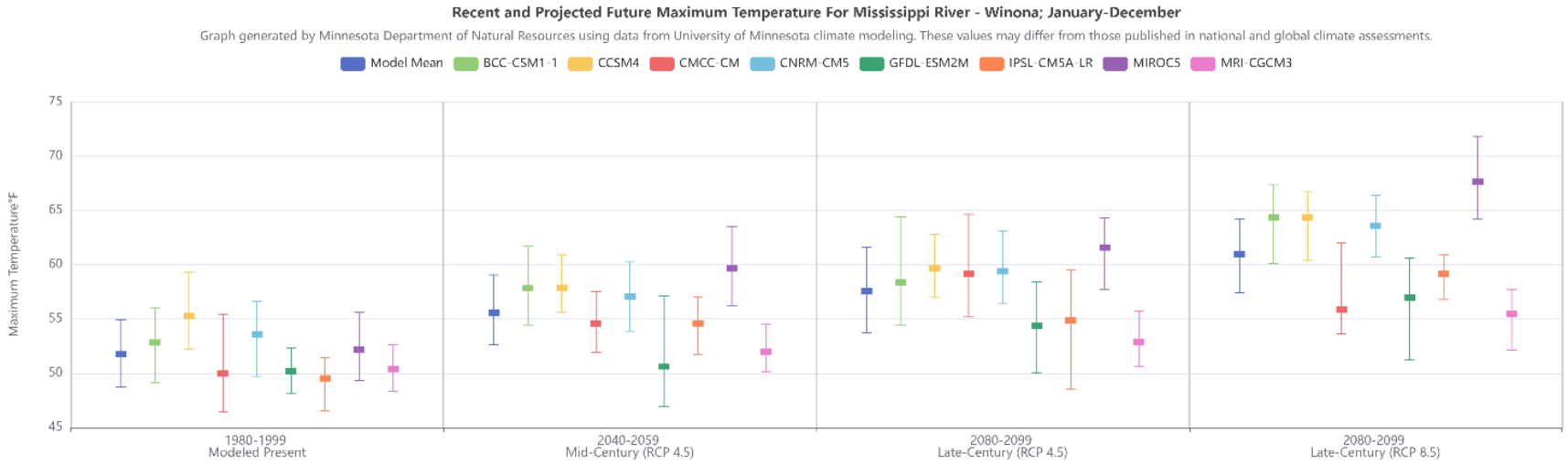


Exhibit 7D: Recent and Projected Minimum Temperature

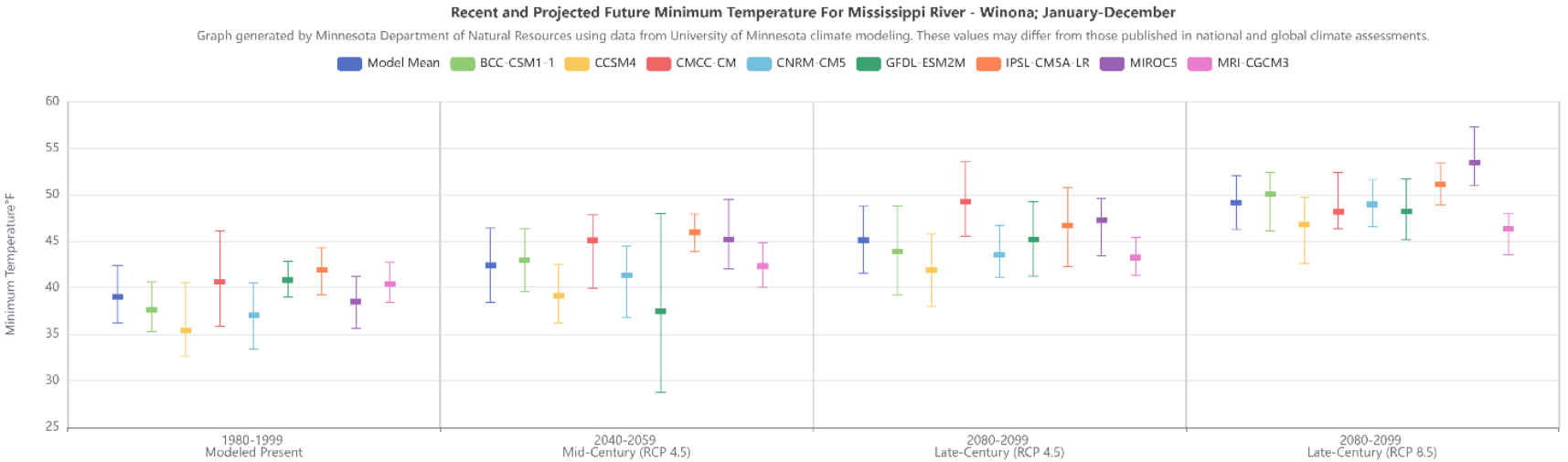
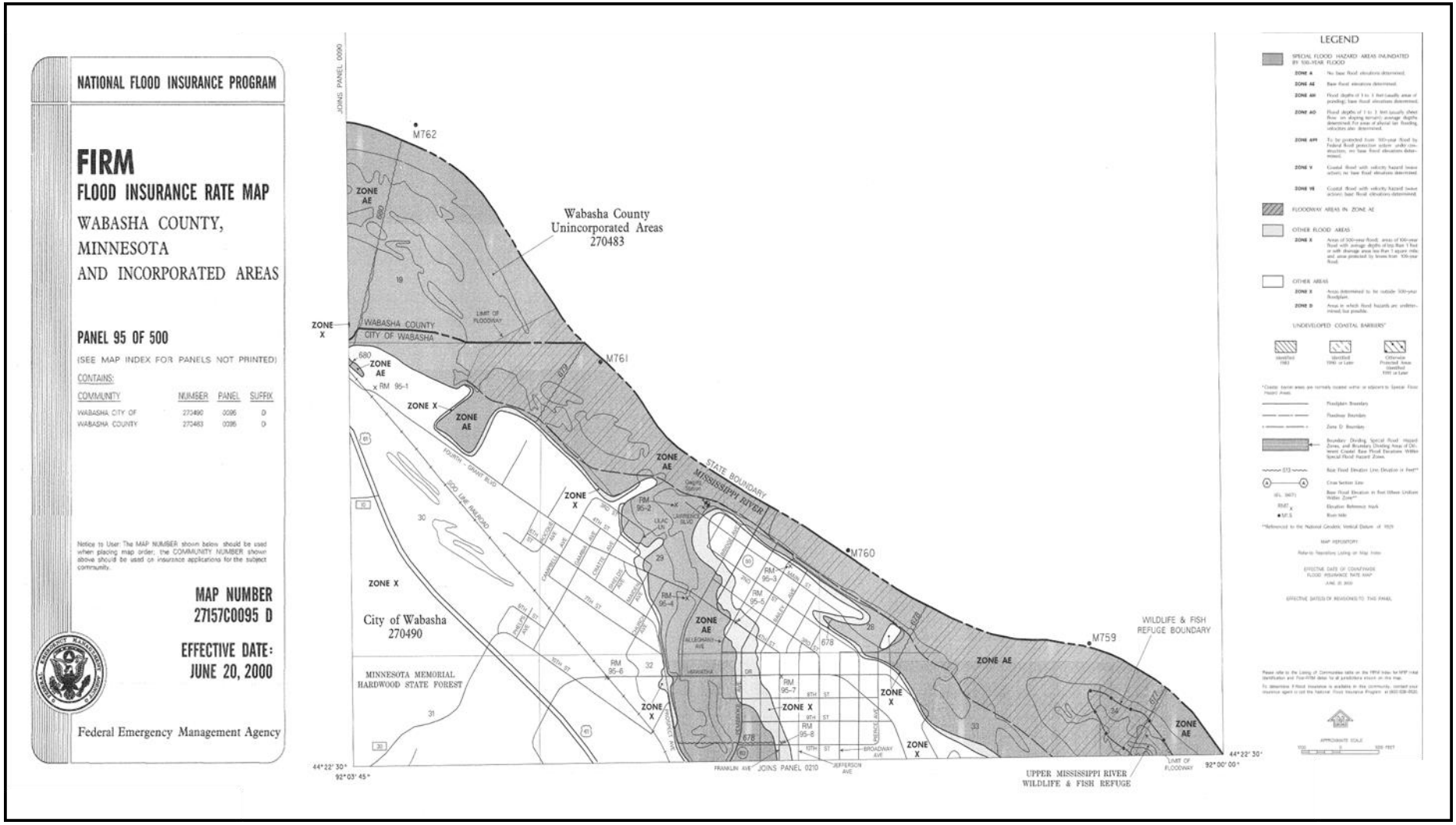


Exhibit 8: FEMA FIRM Map Showing Project Area



4.7.3 Preferred Alternative Assessment

Given the climate trends towards warmer and wetter conditions and increased potential for severe storm events, the following climate change risks have been identified in relation to the Proposed Project.

Table 3: Climate Trends and Impacts

Climate Trend	Project Information	Adaptations / Resilience
Current and future flood potential and stormwater management during increased rain events.	Clearing of trees and wetland areas and the addition of impervious surfaces may affect drainage within the floodplain.	Design plans for the project include considerations for stormwater maintenance. The City of Wabasha will continue to meet current permitting guidelines and restrictions related. Wetland considerations are further addressed in Section 4.13.2. Further stormwater management information is discussed in in Section 4.13.2.
Increasingly warmer temperatures.	No part of project design is anticipated to have any effect on increasing temperature.	N/A

4.7.4 Preferred Alterative Mitigation Measures

The City of Wabasha will meet all required permitting standards. No additional mitigation measures directly related to climate change are included in project plans at this time, although sustainable site design and best management practices are incorporated to address extreme weather events and other potential climate change impacts. Site and project design will be reviewed to ensure the Proposed Project is resilient to these potential impacts.

4.7.5 Alternate Site Assessment

No additional climate related assessments can be identified for the five (5) alternative sites at this time, although sustainable site design and best management practices would be required to address extreme weather events and other potential climate change impacts.

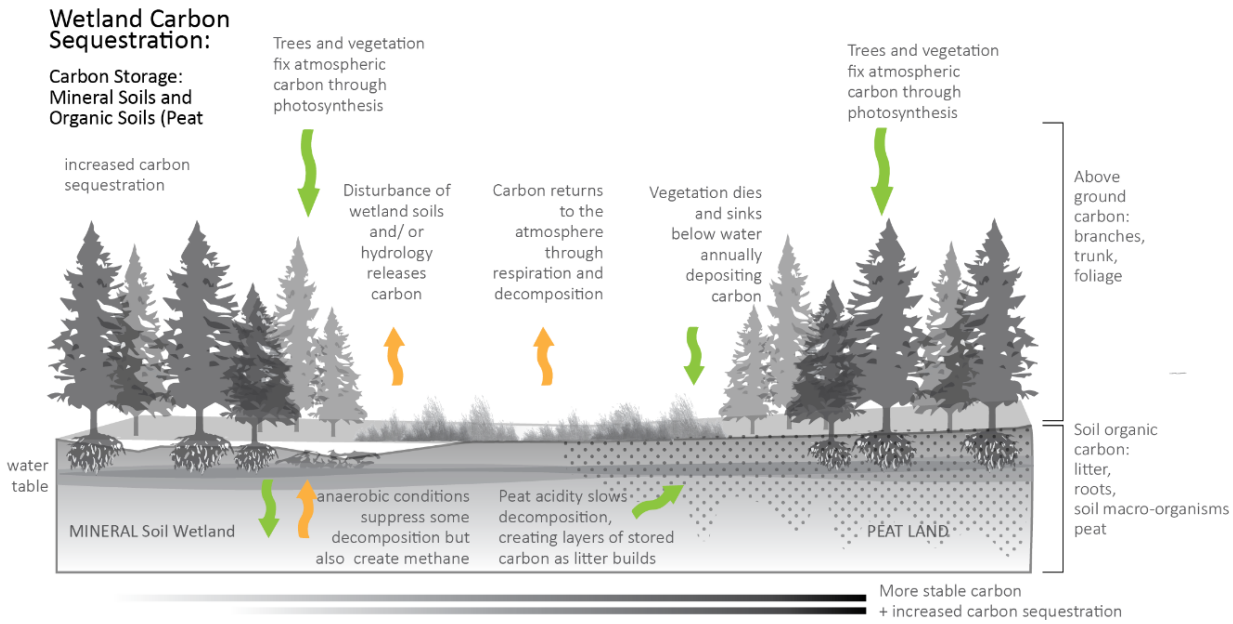
4.8 Greenhouse Gas

4.8.1 Existing Conditions

The Study Area is currently comprised of 16.1 acres of freshwater wetlands and 9.0 acres of wooded area. Wetlands are a source of emissions from various biogeochemical processes: “Under aerobic soil conditions, which are common in most upland ecosystems, organic matter decomposition releases CO_2, and atmospheric CH_4 can be oxidized in the surface soil layer. In contrast, the anaerobic soils that characterize wetlands can produce CH_4 (depending on the water table position) in addition to emitting CO_2. Accordingly, wetlands are an inherent source of CH_4, with globally estimated emissions of 55 to 150

teragrams (Tg) of CH_4 per year."[14] While data specific to the project location is unavailable, natural riparian wetlands in temperate America produce 0.758 $MTCO_2e$ in CH_4 annually with more methane being generated by wetlands that are permanently wet or more frequently inundated.[15] Conversely, wetlands remove CO_2 from the atmosphere and incorporate it into the vegetation and soil in a process known as carbon sequestration (Exhibit 11, "Carbon Sequestration Process"). One study of freshwater wetlands reported an average rate of carbon sequestration of 70.7 metric tons of CO_2 per acre.[16] Similarly, forested land serves as a carbon sink, reducing net emissions. According to data provided by the EPA, one acre of U.S. forest sequesters 0.84 metric tons of CO_2 per year.[17] Based on the acreage of wetlands and forest within the project area, this would result in an estimated -1,145.83 $MTCO_2e$ annually.

Exhibit 9: Carbon Sequestration Process[18]



[14] Stephen M. Ogle, Patrick Hunt, and Carl Trettin. 2014. "Chapter 4: Quantifying Greenhouse Gas Sources and Sinks in Managed Wetland Systems." In *Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory*. Technical Bulletin No. 1939. Office of the Chief Economist, U.S. Department of Agriculture, Washington, DC, p. 4-5.

[15] IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Hiraishi, T., Krug, T., Tanabe, K., Srivastava, N., Baasansuren, J., Fukuda, M. and Troxler, T.G. (eds). Published: IPCC, Switzerland, p. 5.25

[16] Melanie Sturm. 2019. Stewardship of Wetlands and Soils Has Climate Benefits. Natural Resources Defense Council. Electronic document, https://www.nrdc.org/experts/melanie-sturm/stewardship-wetlands-and-soils-has-climate-benefits, accessed February 2023.

[17] U.S. EPA. 2022. Greenhouse Gases Equivalencies Calculator - Calculations and References. Electronic document, https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, accessed February 2023.

[18] Image from Minnesota Board of Water and Soil Resources. 2023. Carbon Sequestration in Wetlands. Electronic document, https://bwsr.state.mn.us/carbon-sequestration-wetlands#:~:text=Wetlands%20are%20some%20of%20the,(N2O)%202., accessed February 2023.

4.8.2 No-Build Alternative Assessment

According to the USACE 2017 DMMP, the No-Build alternative would necessitate the transportation of dredged material entirely by trucks. This would require an estimated 459,000 annual haul miles. Assuming that these trucks are medium- to heavy-duty haul trucks that utilize diesel fuel, this would result in estimate annual emissions of 648.0 $MTCO_2e$.[19]

If these emissions are considered together with the carbon sequestration provided by the existing land use within the project area, this ultimately results in net annual emissions of -497.83 $MTCO_2e$ (Table 4, "Emissions Related to No-Build Alternative").

Table 4: Emissions Related to No-Build Alternative

Emissions Type	Emissions Source	Annual Emissions ($MTCO_2e$)
Existing Conditions	Land Cover	-1145.83
No-Build Scenario	Truck Hauling	648.0
		Total = -497.83

4.8.3 Preferred Alternative Assessment

Greenhouse gas emissions sources are anticipated to include,

- Equipment usage at the project site during construction,
- Equipment usage at the project site for ongoing operations,
- Barge and towboat traffic to and from the docking site,
- Truck and vehicle traffic to and from the project location.

These and other sources of greenhouse gases for the proposed alternative are identified in Table 5, "Emissions Related to the Proposed Project" and discussed below.

Table 5: Emissions Related to the Proposed Project

Emissions Type	Emissions Source	Annual Emissions ($MTCO_2e$)
Construction	Construction Equipment	9.09 (annualized)
Construction	Land Conversion	-1115.28
Operations	Transfer Equipment	23.5
Operations	Truck Hauling	132.5
Operations	Barge Hauling	13.2
		Total = -936.99

[19] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Construction

Construction of the Proposed Barge Facility is projected to require a single construction season in 2024. Construction activities will include the filling of 0.4 acres of wetlands, the reduction of 2.7 acres of forested land, the addition of 3.3 acres of impervious surface, and the dredging of approximately 37,000 CY of material to create the access channel to the Proposed Barge Facility.

Construction Equipment

Construction activities for this project are anticipated to include a wide variety of construction equipment of various equipment classes, sizes, and engine types. Typical construction equipment for the land conversion and facility construction activities includes, but is not limited to, excavators, material handlers, skid steers, cranes, bulldozers, pavers, compactors, jackhammers, and haul trucks. These types of vehicles primarily rely on diesel as a fuel source, which results in the emission of CO_2 and, to a lesser extent, CH_4 and N_2O. Dredging equipment may include hydraulic or mechanical types or equipment with different fuel requirements although both types typically utilize diesel fuel, as well.

Table 5 provides an estimate for the emissions generated by approximately 10 diesel-powered pieces of heavy equipment and 10 gasoline-powered passenger vehicles operating for the single construction season anticipated to complete the Proposed Project (approx. 120 working days)[20] as well as dredging equipment operating for an average of 411 total hours with an average fuel consumption of 16 gallons per hour.[21] The total emissions from these activities (272.6 $MTCO_2e$) are considered one-time emissions, however the industry standard for determining long-term impacts of construction-related GHG output is to annualize the total emissions over a project's lifetime, which is defined as a 30-year period. [22] Annualized, this would be 9.09 $MTCO_2e$.

Land Conversion

As discussed previously, wetlands and forests serve as carbon sinks and reduce net emissions. The reduction of land area for these two cover types will reduce the amount of carbon sequestration in the area from -1,145.83 to -1,115.28 $MTCO_2e$ per year based upon the resulting acreage. Ultimately, since the land conversion that would occur within the Proposed Barge Facility site is anticipated at only 15% of the total Study Area, the remaining wetland and forested areas should still provide an overall net reduction in emissions compared with those generated by the project (Table 5).

Operations

The barge terminal is projected to facilitate the transfer of at least a portion of the 270,000 CY of sand that is annually dredged from the Mississippi River. This material would be moved via river barges to the terminal, transferred using construction equipment such as excavators and backhoes to haul trucks, and transported to off-site facilities for use as reclamation material. Emissions related to dredging are not

[20] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

[21] WillardSays.com. 2012. *Dredge Production Cost Analysis Spreadsheet*. Electronic document, https://www.willardsays.com/operation-management-safety/dredge-cost-analysis/, accessed March 2023.

[22] Meridian Consultants, LLC. 2016. *Environmental Impact Report (EIR 15-01): Lompoc Motorsports Project, City of Lompoc*. Prepared for the City of Lompoc. Section 4.6 Greenhouse Gas Emissions: 4.6-16.

considered in this analysis as the amount of material being dredged is not anticipated to change from the No-Build alternative. The remaining operational activities (barge transport, transfer from barge to trucks, and truck transport) are sources of emissions that are evaluated in this document.

Barge Transport

Barge transport produces emissions via the combustion of diesel fuels used to power tow vessels. However, these emissions are generally considered relatively minor compared with other methods of transportation. For instance, data from the USACE indicates that barges are able to transport one ton of cargo 616 miles per gallon of fuel compared to the 478-mile capability of railcars and the 150-mile capability of haul trucks.[23] Furthermore, a single barge has the capacity to haul 1,750 short tons, the equivalent of 16 railcars or 70 trucks.[24]

Given the projected volume of dredged material to be managed by the Proposed Project, and the average fuel capacity of barge transport, it is anticipated that these activities would result in 2.8 $MTCO_2e$ in emissions annually. However, it is anticipated that the Proposed Barge Facility will also facilitate non-USACE related cargo transport. The Proposed Barge Facility will be located midway between existing ports in Red Wing and Winona. In 2018, the Red Wing port received 680 barge loads across 3 docks and the Winona port received 1,512 barge loads across 8 docks. As a midway point between these ports, the proposed barge terminal is anticipated to receive some of this traffic. However, due to space constraints, it is assumed that the proposed terminal will receive no more than 300 barge loads of non-USACE cargo annually. Transport of this amount of cargo will generate approx. 10.4 $MTCO_2e$ annually.[25] Combined with the emissions from the transport of dredged material, this makes a total of barge transport-generated emissions 13.2 $MTCO_2e$ per year.

Material Transfer

In order to transfer dredged material from barges to the trucks that will haul the material off-site, construction equipment such as excavators and backhoes are typically utilized. These types of equipment primarily rely on diesel fuel. Given an estimated operating time of approximately 160 hours a year, based upon the USACE DMMP which outlined an operating period of one month, these types of equipment are anticipated to require approx. 2,240 gallons of fuel each year.[26] Combustion of this fuel results in annual emissions of 23.5 $MTCO_2e$.[27]

[23] USACE. 2019. Fact Sheet 13: Comparing Navigation. Electronic document, https://www.mvp.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/588155/fact-sheet-13-comparing-navigation/, accessed February 2023.

[24] USACE 2019.

[25] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

[26] Central Power Systems & Services. 2021. Types of Gas for your Rental Construction Vehicle. Electronic document, https://cpower.com/2021/11/16/types-of-gas-for-your-rental-construction-vehicle/#:~:text=While%20each%20make%20and%20model,to%202.5%20gallons%20per%20hour, accessed February 2023.

[27] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Truck Transport

Once transferred into haul trucks, dredged material will be transported to the Wabasha Sand & Gravel Facility. The material may then be transferred to other secondary locations from this point for reclamation activities and other uses, but this is outside of the scope of this analysis. The distance between the Proposed Barge Facility and the Wabasha Sand & Gravel Facility is approximately 1.2 miles (2.4-mile round trip). Transport from the barge terminal to the Wabasha Sand & Gravel Facility will require an estimated 93,896 trucking miles annually. The resultant emissions from medium- to heavy-duty, diesel-powered trucks is 132.5 $MTCO_2e$.[28]

4.8.4 Preferred Alternative Mitigation Measures

In order to minimize any unnecessary emissions, best management practices such as anti-idling restrictions for fossil-fuel powered vehicles will be employed. Future evaluation of alternative fuel vehicles and other emerging technologies will be evaluated as those become cost-effective for construction and other operations. No additional mitigation measures are included in the project plans at this time.

4.8.5 Alternate Site Assessment

The three city-owned and one privately-owned recreational site, Izaak Walton Park, Wabasha Municipal Dock and Mississippi Parkside Marina, and the Wabasha Marina (private) have similar uses such as motorized and non-motorized boats along with open space and impervious areas such as vehicle parking, trails, and buildings. These four sites likely emit a similar level of greenhouse gas. Converting these sites from community, public and private facilities to the proposed barge terminal use, will likely produce a similar increase in greenhouse gas emission as outlined for the Preferred Alternative.

The vacant South Fitzgerald site is producing no greenhouse gas emissions but if the Proposed Project were developed on this site, a similar increase in emissions would likely occur as outlined for the preferred site.

4.8.6. Alternate Design/Magnitude Assessment

The use of smaller barges would require two to three times as many trips to haul the same amount of material as the larger proposed barge capacity. These additional trips would contribute to local GHG, and while may not be impactful on a regional scale, may impact and add to local emissions sources.

4.9 Geology, Soils, and Topography/Landforms

4.9.1 Geology

4.9.1.1 Existing Conditions

[28] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Bedrock Geology

According to the Geologic Atlas of Wabasha County, C-14, Plate 2, bedrock geology beneath the Study Area is predominantly the Eau Claire Formation which consists of sandstone, siltstone, and shale interbedded in thin to medium beds. The sandstone is very fine grained to fine grained. The sandstone and siltstone are light to yellowish gray, variably glauconitic, and commonly contain gray to black brachiopod shell fragments. The shale is greenish gray. Unit coarsens upward, with siltstone and shale replaced in abundance by sandstone. The uppermost 10–20 feet is mostly very fine grained sandstone and minor amounts of siltstone. The unit is 125–150 feet thick. A tongue in the uppermost part of the Eau Claire Formation crops out near Wabasha. [29]

Surficial Geology

The Geologic Atlas of Wabasha County, C-14, Plate 3, shows the surficial geology consists of floodplain alluvium, West Campus Formation, and Grey Cloud terrace. Floodplain alluvium is mainly fine sand and silt on floodplains; includes sand and gravel that infills modern river channels. Some depressions have been filled with thick silty to clayey sediment and includes minor lakeshore sediment along Lake Pepin. Contacts with other map units are commonly scarps. The West Campus formation is comprised of sand and gravelly sand; coarsens to cobbly gravel in places. The sediment is largely reworked from the Mississippi valley train; deposited during early, high stages of the Mississippi River and preserved in terraces above the modern floodplain. The West Campus formation is mapped at three major terrace levels in Wabasha County. The Grey Cloud terrace is 40–50 feet (12–15 m) above Lake Pepin and the present floodplain level. The terrace elevation is 700–710 feet (214–216 m) in Lake City and Wabasha. Most contacts with other map units are scarps.[30]

The pollution sensitivity of near-surface materials has a high rating across the majority of the Study Area. The sensitivity to pollution of near-surface materials is an estimate of the time it takes for water to infiltrate the land surface to a depth of 10 feet. Generally, areas of coarse-grained material have a higher sensitivity to pollution compared to areas of fine-grained material, except where special conditions (karst, bedrock at or near the surface, mining, and peatlands) occur. No special conditions are mapped or known within the project site.

While Wabasha County is located in a karst region, the Study Area consists of non-karst bedrock, with Cambrian sandstones and shales as the uppermost bedrock layers. Karst bedrock can be found in close proximity to the Study Area, both south and west (Figure 6, “Geologic Conditions/Groundwater”).

4.9.1.2 No-Build Alternative Assessment

There are no geologic impacts anticipated and existing site conditions will remain. Unless the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site. The USACE would have to regrade a portion of the site, raising the temporary dock out of the floodway creating a similar impact to the preferred permanent alternative.

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[29] Mossler, John H. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 2-Bedrock Geology. Retrieved from University of Minnesota Digital Conservancy. Available at: https://conservancy.umn.edu/handle/11299/58557.

[30] Hobbs, Howard C. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 3-Surficial Geology. Retrieved from University of Minnesota Digital Conservancy. https://conservancy.umn.edu/handle/11299/58557.

4.9.1.3 Preferred Alternative Assessment

Any potential impacts to geology will occur solely during construction; therefore, no operating or long-term impacts are anticipated as a result of the Proposed Project. Construction impacts are anticipated to include grading of the Proposed Barge Facility site and raising the site to an elevation of approximately 678.6 feet to 680.5 feet, thereby removing the access road and other material transfer infrastructure from the 100-year floodplain, which is at an elevation of 678.6 feet.

No significant geologic features or hazards (karst formations) were identified in the immediate Study Area and therefore impacts are not anticipated.

4.9.1.4 Preferred Alternative Mitigation Measures

Project construction will limit excavation to ensure avoidance of any sensitive geologic features. Should any of these features be identified or discovered during construction, these activities will be halted until further consultation with state agency personnel is complete.

With karst features located approximately 3,000 feet from the Study Area, and the increased sensitivity of coarse-grained materials such as the sand and gravel aquifers, excavation will be limited to less than 10 feet and will only occur during project construction. Grading activities will include the use of fill material.

4.9.1.5 Alternate Site Assessment

As is the case with the preferred site, impacts to geology would only occur during construction for the other five alternative sites. Construction impacts for all sites would include grading to raise the alternative sites out of the 100-Year floodplain and creating an access road to move barged materials off-site. No significant geologic features or hazards (karst formations) were identified for the alternate sites therefore no impacts are anticipated.

4.9.2 Soils and Topography

4.9.2.1 Existing Conditions

Soils

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Maps were reviewed within and around the Proposed Project footprint. The predominant soil types and soil component names within the Study Area are listed in Table 6, “Soil Types Within the Study Area”. Additional information regarding the soil hydrologic classification provides insights regarding potential runoff and erosion control measures that may be needed during construction.

Table 6: Soil Types within the Study Area[31]

Map Unit Symbol	Map Unit Key	Component Name	Soils Label	Hydric Rating	Estimated % of Study Area
N646A	1946882	Ceresco	N646A, Ceresco	No	18.8
N648A	1946885	Kalmarville	C648A, Kalmarville	Yes	13.9
MdA	2216395	Meridian	MdA, Meridian	No	2.4
DmA	2216322	Mt. Carroll	DmA, Mt. Carroll	No	3.8
ThA	2216437	Tell	ThA, Tell	No	1.9
Ts	2216441	Terrace escarpments, sandy	Terrace escarpments, sandy	No	3.9
GP	2216134	Udipsamments	GP, Udipsamments	No	49.7
W	2216215	Water	W, Water		5.6

Soils in Wabasha County are generally characterized in the soil survey as silty loam developed on alluvium and sedimentary bedrock. The river terrace and floodplain alluvium are composed of sand and gravel and is about 180 feet thick. This body of sand and gravel is underlain by lower permeability sedimentary bedrock.[32]

The Soil Survey Geographic Database (SSURGO) lists almost half of the Study Area soil as gravel pit and udipsamments. The udipsamments complex has a 0-25 percent slope, is excessively drained, and has sandy and gravelly outwash parent material. The next largest soil types within the Study Area are Ceresco and Kalmarville, respectively, which are *somewhat poorly drained* and *poorly drained*. The majority of the Study Area has minimal slopes, except for the portion listed as Ts – terrace escarpments, sandy. This soil type is listed as having steep slopes, with a slope range of 15-60 percent.

The NRCS classifies soils into hydrologic soil groups, A – D:

- Group A – Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands.
- Group B – Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately course texture.
- Group C – Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture.
- Group D – Soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays with high swelling potential, soils with a permanent high-water

[31] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture.

[32] City of Wabasha. 2018. Hydrogeologic Assessment of the Drinking Water Source and Wells for the City of Wabasha, Part I.

table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

- Group "/D" – Soils with a high-water table, but if drained conform to the first letter listed before "/D" (for example, A/D, B/D).

See Section 4.13.3. for a discussion of erosion/sedimentation control measures related to stormwater runoff.

Project activities during the construction phase that will impact soils include the dredging of river bottom sediment to create a navigable passage and construction of access road, weighing station, small operations structure, and barge fleeting area. Additionally, dredged sediment will be brought to an upland area of the site.

Operational activities of the Proposed Project will not further impact the soils and topography of the site beyond the temporary placement of transported goods on the site prior to being hauled off-site.

Dredged Material – Sediment and Substrate[33]

The Chippewa River is the major contributor of sand-sized sediment in Lower Pool 4. Sediment quality is generally good in Pool 4. Main channel sediments are primarily medium to coarse sands with only trace amounts (generally less than 3 percent by weight) of silts and clays. Sand, silt, and clay sediments are found within defined sloughs, while finer silt and clay materials are found in marshy backwater areas.

To broadly assess the concentrations and location of contaminants found in Lower Pool 4 sediments, USACE staff collected 28 sediment samples from Lower Pool 4 between 2013 and 2020 (see Figure 3 of the USACE Lower Pool 4 DMMP). To specifically assess the concentrations of contaminants within the Read's Landing access area, two borehole sediment samples were collected in June 2021 (see Figure 3 of the USACE Lower Pool 4 DMMP). Each sample was analyzed for polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbon (PAH), pesticides and heavy metals and compared to Minnesota Pollution Control Agency's (MPCA) sediment reference values (SRVs) and the sediment quality triad (SQTs), which refer to extent of degradation within the sediment caused by contamination. Of those 31 samples, two were collected in boat harbor at Alma, Wisconsin, three in shoreline access area (Alma Marina and Read's Landing), and 26 in the main navigation channel. Collection data can be found in Appendix F of the USACE Lower Pool 4 DMMP (reference in the footnote below).

In general, the MPCA SRVs limits are higher concentration thresholds than SQTs. Furthermore, level II SQTs are higher than level I SQTs. In terms of concentration levels from low to high, if a contaminant found in sediment is below the SQT level I threshold, it has very low levels of that contaminant and is likely safe for bottom-dwelling aquatic organisms. If the contaminant level is higher than the SQT level I threshold but below the level II threshold, it is likely moderately safe for bottom-dwelling aquatic organisms. If the contaminant level is above the SQT level II threshold, that contaminant is likely at a level that is harmful to those organisms. An exceedance of the SQT level II threshold will often still be well below the SRV threshold, as the SRV thresholds are set at levels to protect human health based on contact with the material in two upland settings. Contaminant thresholds for SRVs in the

[33] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

recreational/residential setting are lower than the commercial/industrial settings because it is assumed that in the former settings there would likely be more contact with the sediment, including contact by children.

To summarize, in order from lowest to highest levels of contamination, are SQT level I, SQT level II, SRVs for residential/recreation, and then SRVs for commercial/industrial.

Results of the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were uncontaminated. There were no SQT or SRV exceedances observed. Additionally, there are no restrictions for upland placement due to contaminant levels.

Topography/Landforms

Elevations on the site range between 668 to 708 feet above mean sea level.[34] Two-foot contour mapping shows the lowest elevations along the Mississippi River, with a steep bluff along the edge of the floodplain. A USGS topographic map of the proposed site is included in Figure 2.

4.9.2.2 No-Build Alternative Assessment

Future flood events are anticipated to increase due to climate change impacts, which may cause shoreline and overland soil erosion. These erosion events may cause increased sediment trapping in the backwater areas of the Mississippi River, reducing viable fishery and aquatic species' habitat. While extreme flood events may move some of this sediment downriver, silt deposition on the Study Area's floodplain area may lead to an increase of fine sediment on the landscape and potential deposition into wetland areas.

4.9.2.3 Preferred Alternative Assessment

The Proposed Project will include dredging an access channel from the main Mississippi River navigation channel as well as areas immediately adjacent to the shoreline where the proposed barge dock will be constructed. The current estimate is 37,000 CY of bottom sediment removed to facilitate barge access to the Proposed Barge Facility site. This sediment will be used as fill – and augmented as needed – on the Proposed Barge Facility site to raise access road and facility locations elevations outside of the 100-year floodplain. Future maintenance dredging is anticipated to be less than 2,000 CY per year.

The majority of the Study Area served as a former sand and gravel quarry with areas of highly disturbed soils. Grading during project construction will primarily be completed using fill material from access channel dredging or brought in from offsite. Minimal excavation will occur during construction activities, except in the vicinity of stormwater infiltration areas. Maximum excavation is anticipated not to exceed 10 feet and will be sloped to facilitate stormwater infiltration versus surface runoff following rain events.

4.9.2.4 Preferred Alternative Mitigation Measures

Dredging activities will be reviewed during the public waters work permit process and will include both the initial dredge activities and anticipated annual maintenance dredging.

[34] Elevations taken from MnTOPO. http://arcgis.dnr.state.mn.us/maps/mntopo/.

All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from MPCA and MNDNR for grading and erosion control. MNDNR and/or BWSR-approved seed mixes and wildlife-friendly erosion control mesh will be used to ensure soil stabilization. Additionally, a "No-Rise" review and certificate will be requested from FEMA to identify and facilitate any additional floodplain mitigation requirements. The project proposer and contracted companies shall comply with all permits and approvals and include mitigation and monitoring requirements as needed.

4.9.2.4 Alternate Site Assessment

The five alternate sites have similar soil and topography to the preferred site and are all located southward along the Mississippi River within city limits, less than 2.2 miles from the preferred site. Each of the alternative sites have varying channel development needs based on where the barge terminal could be located within the parcel. Dredging impacts for a proposed hopper barge channel to the Mississippi River have been estimated for five alternative sites using an average depth of four (4) feet. See **Table 1 – Alternate Site Assessment** for this estimated assessment.

The difference in estimated acres needed to dredge and the volume of dredged materials are primarily a function of the length of the channel needed to connect a barge terminal facility to the adjacent navigable channel of the Mississippi River and the current estimated depth of the river.

4.9.2.6 Alternate Design/Magnitude

The expanded magnitude and layout on the proposed Carrels Site would require additional grading and fill to prepare the site for additional material storage capacity. Additionally, if the dredging area were increased, that additional material would require dewatering onsite to make it suitable as fill material.

4.10 Floodplains

4.10.1 Existing Conditions

The Study Area is subject to frequent inundation of the Mississippi River. The bank of the river is approximately 1500 feet from the Mississippi River centerline and Minnesota-Wisconsin state border within the 2-mile-wide FEMA Zone AE floodplain. This site is currently shown on FEMA FIRM 27157C0095D and can be seen in Figure 7, "Surface Water." Preliminary hydraulic modeling data for the Mississippi River is available from the MNDNR at the site showing a 100-year flood elevation of 678.6 ft, approximately 8 ft above the existing riverbank. The site is part of an old quarry that falls from approximately elevation 700-feet down to the riverbank, creating a minor backwater bay along the valley wall. The existing river channel is over 35 feet deep in the 100-year flood condition and the side channel at the Study Area is approximately 18 feet deep in the 100-year flood condition, but shallower at normal river flows. The site is affected by backwater due to Lock and Dam 4 (Pool 4) at Alma, WI. This causes sediment to build up within the channel at this location. Additionally, the Chippewa River confluence is approximately two miles upstream of the project area, which carries a substantial sediment load and creates a wide delta within the Nelson-Trevino Bottoms State Natural Area.

4.10.2 No-Build Alternative Assessment

The no-build alternative would not change the flood flow regime within the Mississippi River. However, future flood events are anticipated to increase due to climate change impacts. Increased erosivity of future flood events may similarly result in increased sediment load and deposition within Lock and Dam Pool 4 and the project site's backwater areas, reducing viable fishery and aquatic species' habitat while depositing silt on the site's wetland areas. The backwater effects of the downstream dam at Alma would continue to slow down low flows and cause increasing sedimentation within the reservoir. Combined with high sediment loads from the Chippewa River, the channel would increasingly fill with sediment and potentially increase flood elevations and inundate wetland and floodplain forest communities.

4.10.3 Preferred Alternative Assessment

The site will be regraded, and fill will be added within the floodplain for the Preferred Alternative construction. Stockpiled dredge material will be placed on the terminal docking site above the 100-year flood elevation. Impacts to flood elevations are described in the attached report "Preliminary No Rise Certification: Wabasha Barge Facility" (Appendix C). The report details no appreciable impact to flood elevations or velocity due to the proposed barge facility design, and a standard No Rise certification will be provided.

4.10.4 Preferred Alternative Mitigation Measures

Bank armoring along the barge dock area is proposed to reduce erosion potential during high flows. Permanent structural components are proposed along the river side of the barge facility to prevent bank erosion and sediment transport downstream. Dredging activities within the side channel to maintain the barge access lane are anticipated to decrease flood risk by increasing conveyance and flood volume storage within the floodplain.

4.10.5 Alternate Site Assessment

As all five alternative sites are within the 100-year floodplain, fill would be required to raise the proposed barge facility and access roadway out of the floodplain and a No Rise certification obtained for all alternative sites.

4.10.6 Alternate Design/Magnitude Assessment

The expanded material storage area at the proposed Carrels Site would require additional fill to build this outside of the 100-year floodplain, thereby requiring additional evaluation for the "No Rise" certification process.

4.11 Aquifers

4.11.1 Existing Conditions

Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The aquifers within these provinces occur in two general geologic settings: bedrock, and unconsolidated sediments deposited by glaciers, streams, and lakes. The project site is located in the East-Central Province and within the Quaternary water-table and buried unconfined aquifer. The East-Central Province has surficial

and buried sand and gravel aquifers that are common. The East-Central Province's aquifers are underlain by thick and extensive sandstone and carbonate (Paleozoic) and (Precambrian) sandstone aquifers.[35]

Groundwater data for the Study Area was obtained from the MNDNR. No springs are currently identified onsite by the MNDNR Spring Inventory. Depth to groundwater within the site is generally 0-20 feet.[36] The project site is not within an existing Drinking Water Service Management Area (DWSMA) or a wellhead protection area (see Figure 6, "Geologic Conditions/Groundwater") but there are DWSMA and Wellhead protection areas within 300 feet. There is an existing unverified well onsite, Well ID: 536092.

4.11.2 No-Build Alternative Assessment

There are no anticipated changes or impacts to the aquifer. The property owner may review options and opportunities to see the unverified well.

4.11.3 Preferred Alternative Assessment

Although the Study Area is not located within the DWSMA, the sand and gravel nature of this region has the potential to transport potential contaminants to the aquifer. While not anticipated, new potential contaminants have the potential to infiltrate and reach the aquifer through the unverified well. Above-ground storage tanks, while not confirmed, may be incorporated as part of the Proposed Project.

4.11.4 Preferred Alternative Mitigation Measures

Following completion of project design plans, an Industrial Stormwater permit may be required through the MPCA (SIC Code 4491). The unverified well will be located and managed as needed, either by sealing or identifying its potential for future use. The project site will be in compliance with all MPCA permit requirements. Additionally, coordination with the Minnesota Department of Health (MDH) will help determine the feasibility of confirming and either using or sealing the unverified well currently listed on the site. Pending the incorporation of an above-ground storage tank and its proposed contents, additional requirements will be met through both the MPCA and the MDH, which may include a spill response plan and other requirements. '

4.11.5 Alternate Site Assessment

As no springs identified by the MNDNR Spring Inventory and no mapped DWSMA or Wellhead protection areas are located within the five alternative sites, no environmental consequences are anticipated.

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[35] Adams, Roberta. 2016. Pollution sensitivity of near-surface materials: St. Paul, Minnesota Department of Natural Resources, Minnesota Hydrogeology Atlas Series HG-02, report and plate. Available at: https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/mha_ps-ns.html.

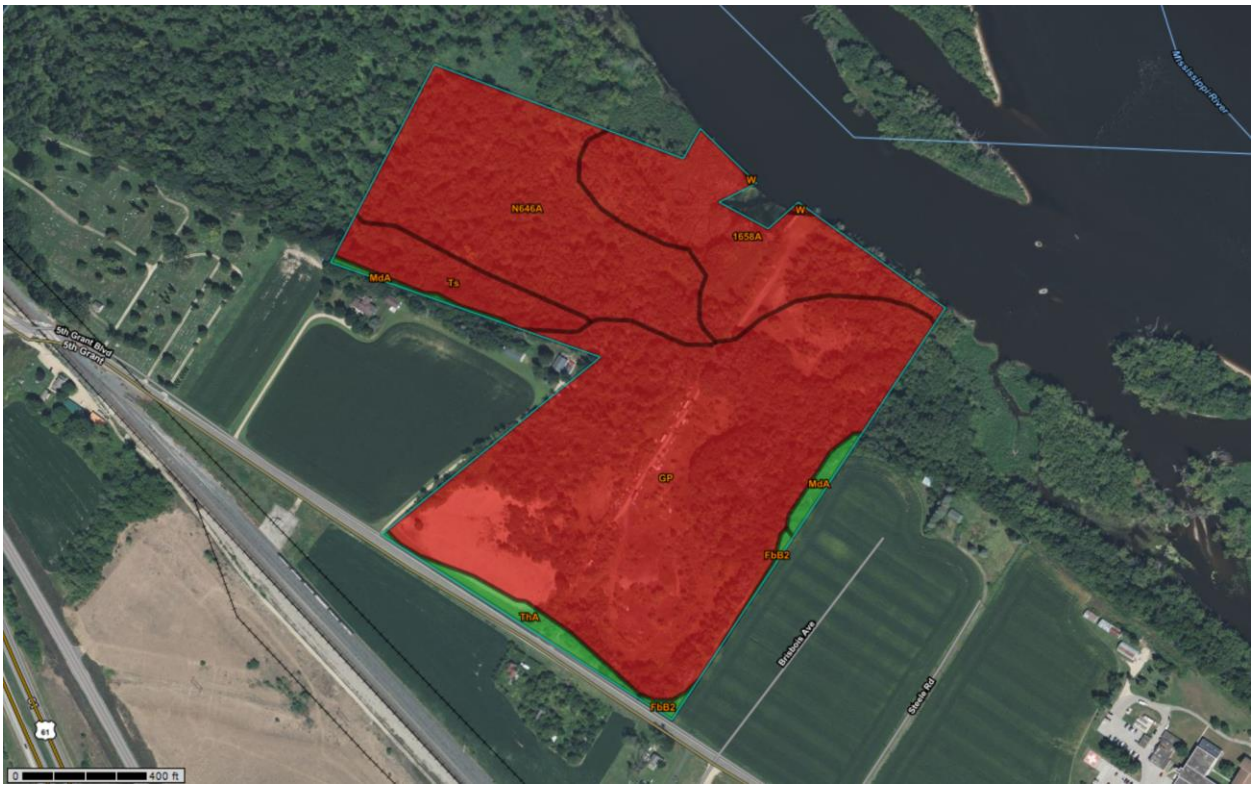
[36] Peterson, Todd A. 2005. C-14 Geologic Atlas of Wabasha County, Minnesota. Part B, Plate 8 – Hydrogeology of the Unconsolidated and Bedrock Aquifers. Retrieved from MNDNR. https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wabacga.html.

4.12 Farmlands

4.12.1 Existing Conditions

Based on information assessed from the Natural Resources Conservation Service Web Soil Survey (WSS), less than 3% of the project area is considered Prime Farmland and this area is confined to the eastern-most edge of the property and a small area right along the roadway (Exhibit 12).

Exhibit 10*:* Prime Farmland Areas[37]



Summary by Map Unit — Wabasha County, Minnesota (MN157)

Summary by Map Unit — Wabasha County, Minnesota (MN157)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1658A	Algansee-Kalmarville complex, river valleys, 0 to 3 percent slopes, frequently flooded	Not prime farmland	7.2	14.7%
FbB2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	All areas are prime farmland	0.2	0.5%
GP	Pits, gravel-Udipsamments complex	Not prime farmland	26.3	53.7%
MdA	Meridian sandy loam, 0 to 2 percent slopes	All areas are prime farmland	0.6	1.2%
N646A	Ceresco-Spillville complex, 0 to 3 percent slopes, frequently flooded	Not prime farmland	11.3	23.0%
ThA	Tell silt loam, 0 to 2 percent slopes	All areas are prime farmland	0.9	1.8%
Ts	Plainfield sand, river valley, 15 to 60 percent slopes	Not prime farmland	2.4	4.9%
W	Water	Not prime farmland	0.0	0.1%
Totals for Area of Interest			**48.9**	**100.0%**

[37] Web Soil Survey, Natural Resources Conservation Service, U.S. Department of Agriculture. Data assessed January 17, 2023. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

4.12.2 No-Build Alternative Assessment

No changes are anticipated to the Study Area in the no-build condition. Therefore, farmland will be neither created nor developed. The areas identified are not currently under cultivation and not anticipated to be cultivated anytime in the near future.

4.12.3 Preferred Alternative Assessment

Since there are no cultivated areas on the current Study Area, no impacts to farmland are anticipated. There may be minimal impacts to "Prime Farmland" soils in the southwest corner of the project area to facilitate construction of an access road to the barge facility.

4.12.4 Preferred Alternative Mitigation Measures

Since there are no identified farmland areas within the Study Area, no mitigation measures are required at this time. Best management practices will ensure soil transport is minimal during construction activities.

4.12.5 Alternate Site Assessment

Of the five alternate sites, there are farmland areas associated only with the South Fitzgerald property. Much of this site is identified as Burkhardt loam or Waukegan silt loam, which are identified as "Farmland of Statewide Importance" and "All Areas are Prime Farmland," respectively.

4.13 Water Resources

4.13.1 Surface Water

4.13.1.1 Existing Conditions

The project site is within the Buffalo-Whitewater watershed (HUC8: 07040003) and immediately adjacent to the Mississippi River. Impaired and public waters are described in Table 7, "Impaired and Public Waters Within One Mile of Wabasha Barge Facility." The Mississippi River is currently impaired for Mercury and PCBs in fish tissue.

Table 7: Impaired and Public Waters Within One Mile of Wabasha Barge Facility

AUID	Name	Impaired Use	Additional Impairments	Distance to Project Area
07-0400-03-627	Mississippi River – U.S. Lock & Dam #4 Pool	Aquatic Life / Consumption	Mercury in fish tissue PCB in fish tissue	Within/adjacent
NA	Brewery Creek	NA	NA	~0.25 mile

Brewery Creek is a steep, small stream within a 3.95 square mile highly-forested watershed that discharges into the Mississippi River just north of the Study Area halfway between the north end of Wabasha and Read's Landing. The Study Area does not directly influence the quality of Brewery Creek.

The Mississippi River receives drainage directly from the Study Area and has a 56,940 sq mi watershed at the project location. The direct drainage area from the Study Area represents less than 0.0003% of the total contributing area to the Mississippi River at the site location. As noted, the Mississippi River is currently impaired for Mercury and PCBs in fish tissue. Just upstream of the site is Lake Pepin, a natural lake formed by the backup of water behind sedimentary deposit of the Chippewa River's delta and Lock and Dam 4 downstream at Alma, Wis. The lake is currently impaired due to excess sediment and nutrients which has resulted in multiple Total Maximum Daily Load (TMDL) studies. Lake Pepin is considered part of Pool 4, and its impairments have potential to propagate to the lower pool at the project site if sediment and nutrient loading from the larger watershed are not addressed.

USACE manages estimated dredged material quantities of approximately 270,000 CY of material per year within Lower Pool 4. Stockpiled material is often temporarily placed on elevated sediment deposits on the Chippewa River delta.

4.13.1.2 No-Build Alternative Assessment

The Study Area would remain in a mix of natural and historically disturbed vegetated condition in the no-build alternative. This would not change the impairment status of the Mississippi River or other surface waters. Sediment loads from the upstream Lake Pepin, Chippewa River and larger contributing watershed would continue to threaten fish and aquatic life and threaten to fill Pool 4 over time. Dredging activities currently enacted by the USACE would need to find an alternate offloading facility for removal of sediment from the surface waters and floodplain areas. By not constructing the Preferred Alternative, which expedites the movement of dredged material away from the river, sediment is placed in flood-prone areas for longer periods of time which increases the likelihood that large storm events can sweep dredged material back into the river channel.

4.13.1.3 Preferred Alternative Assessment

The construction of the Preferred Alternative includes tree clearing and ground disturbance, leading to increased likelihood for sediment to be transported to downstream surface waters. With cumulative watershed impacts, turbidity may be added to the list of items contributing to the Mississippi River impairment considerations. Furthermore, the site operator's equipment will require fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). The use of these chemicals increases the likelihood of a spill on site that may flow to surface waters.

The in-stream impacts to the Mississippi River are anticipated from dredging for the side channel access that is anticipated along the path shown on Exhibit 1 of Appendix D. [Dredging within the main navigation channel is not the subject of this evaluation.] The dredging associated with the Wabasha Barge Facility includes creating a barge access channel for docking. Dredging associated with these activities will impact 10.2-acres of the Mississippi River, removing approximately 37,000 CY of material (Appendix D, Exhibit 2, "Proposed Wetland Impact Map"). The USFWS owns and manages adjacent land northwest and the island to the north of the proposed project area. Dredging will not occur within refuge owned land.

4.13.1.4 Preferred Alternative Mitigation Measures

The impacts to the Mississippi River will include dredging approximately 37,000 CY of material to create a side access channel for barge traffic. There are no known or anticipated contaminants in the

immediate vicinity of the Study Area. Dredging will require permitting through the Corps and MNDNR, and all necessary permit and approval requirements will be followed, in accordance with requisite standards.

The Mississippi River is listed as a Public Waters by MNDNR. Approximately 10.2 acres of the Mississippi River will be impacted by dredging. Impacts to the Mississippi River will require a work in Public Waters permit through MNDNR and Section 10 permit through the Corps.

Impacts associated with the dredging in the Mississippi River will require a mitigation plan. Mitigation strategies will be determined through ongoing consultation with the Corps and MNDNR. New stream mitigation procedures were released in 2023 by the Corps for the St. Paul District[38]. Those procedures would be used to determine mitigation measures for the site. That framework uses the Stream Quantification Tool to determine the amount of credits needed to offset functional loss resulting from dredging and other in-stream impacts.

The EPA-approved impairments for the Mississippi River are considered non-construction related and all project activities will comply with the NPDES construction stormwater permit. Bank armoring along the proposed transfer site is proposed to reduce erosion potential during high flows and reduce the likelihood of additional impairment to the Mississippi River and adjacent wetland areas. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the NPDES Permit to reduce or eliminate the potential for increased turbidity or other surface water impacts. Stormwater infiltration practices will filter runoff from the project site to offset sediment loading and treat runoff prior to discharging to surface waters. An Industrial Stormwater permit may be necessary, and all site construction activities and operations will comply with these additional permit requirements.

4.13.1.5 Alternate Site Assessment

The dredging impacts for the five alternative sites have been estimated both in terms of area and volume and can be found in **Table 1 – Alternate Site Assessment**. The Mississippi River shoreline depths vary within the approximate 2.2-mile stretch encompassing the alternative sites as does the length of the proposed constructed channel to allow for barge access to each of the alternative sites. Dredging would be required for all the alternative sites. Therefore, there are anticipated environmental impacts for each site what would require mitigation measures, permitting and best management practices.

4.13.2 Wetlands

4.13.2.1 Existing Conditions

On June 18, 2020, and June 25, 2020, a field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the Study Area. The boundaries of the wetlands Study Area, which do not include the edge of the Mississippi River, are shown on Exhibit 1 of

[38] United States Army Corps of Engineers. 2023. St. Paul District Stream Mitigation Procedures, Version 1.0. April 2023. Electronic Resource, https://www.mvp.usace.army.mil/Portals/57/docs/regulatory/Special%20Notices/ANNOUNCEMENT%20OF%20RELEASE%20OF%20STREAM%20MITIGATION%20PROCEDURES.pdf?ver=Uemo4ThgFWeQ9t0OF7316Q%3D%3D, Accessed on December 5, 2023.

Appendix D. The field investigation found a total of four Type 1 (Seasonally Flood Basin/Floodplain Forest) wetlands (Wetland 1 through Wetland 4). Wetland boundaries shown on Exhibit 1 of Appendix D were approved by the Minnesota Wetland Conservation Act (WCA) Notice of Decision dated September 4, 2020 (Appendix D).

The Study Area was historically used as a gravel pit, at least since the 1930s. Natural features, especially in upland areas of the site, have been degraded from a long history of site use. Site observations indicate that reclamation of the site never took place, and it remains largely disturbed. Large stockpiles, abandoned equipment, and debris litter the upland portion of the site in its current state. Based on a review of historical aerial photographs of the Project Site, Wetland 1, Wetland 4, and a small portion of Wetland 3 appear to be incidental in nature. The incidental wetlands were likely a result of depressions remaining from gravel mining operations. Invasive species were observed to dominate at least one strata of vegetation within Wetland 1, 2, and 4.

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the United States, which includes on-site wetlands and the Mississippi River. Section 10 of the Rivers and Harbors Act regulates alteration of navigable waters of the United States. It is anticipated that an Individual Permit through the US Army Corps of Engineers (USACE) will be required to satisfy Clean Water Act Sections 404 and Section 10 of the Rivers and Harbors Act. Section 401 of the Clean Water Act requires a water quality certification for any activity that requires a federal permit for discharge into Waters of the United States. The Minnesota Pollution Control Agency (MPCA) certifies Section 401 water quality and has authority over Waters of the State, including incidental wetlands, isolated wetlands, streams, and other surface waters that are federally or WCA non-jurisdictional.

The CWA and WCA require that impacts to aquatic resources be avoided if practicable alternatives exist. An alternatives analysis to satisfy these regulations will be completed within the required State and Federal permitting documents.

The “No-Build Alternative” and a discussion of mitigation measures are described in the sections below.

4.13.2.2 No-Build Alternative Assessment

Under the No-Build alternative, impacts to wetlands from the Wabasha Barge Terminal Project would be avoided. Under a No-Build Alternative, emergency actions such as placement of fill material within the main channel border of the Mississippi River could take place. Aquatic habitats and threatened and endangered species could be impacted by this action under emergency conditions. The No-Build Alternative would not achieve project objectives. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar impact to the wetlands as the preferred permanent alternative.

4.13.2.3 Preferred Alternative Assessment

The Preferred Alternative includes construction of the Proposed Barge Facility with wetland impacts that have been minimized to the greatest extent practicable while still achieving the project goals. The Preferred Alternative layout, approved wetlands, and aquatic resource impacts are shown on Appendix D, Exhibits 1 through 3.

The Proposed Project is within a site identified by the MBS as having Moderate Biodiversity Significance (Appendix A, Figure 9). Wetland 3 contributes to this designation and is considered a high-value wetland and therefore avoidance of impacts to Wetland 3 was considered a high priority. Wetland 3 is the most natural and undisturbed portion of the site and provides the most potential habitat for protected species. Wetland 3 will not be directly impacted by the Preferred Alternative and the "Moderate Biodiversity" designation is anticipated to remain intact.

The Preferred Alternative would permanently impact one wetland (Wetland 1). Proposed impacts to Wetland 1 are due to filling a portion of the wetland for grading and construction of the barge facility. Wetland 1 is adjacent to the proposed barge/dock and off-loading area, which contains the material hauler, hopper, scale, and conveyor system. A portion of that wetland will not be filled, however, as a conservative estimate the entire wetland is considered permanently impacted. Permanent proposed impacts to Wetland 1 are 0.40 acres.

4.13.2.4 Preferred Alternative Mitigation Measures

Impacts to delineated wetlands and the Mississippi River are proposed as part of the Wabasha Barge Facility project. The Proposed Project will impact a total of up to 0.40 acres of wetland within Bank Service Area (BSA) 7 and the Mississippi River Watershed.

Mitigation efforts will be completed in accordance with local, State, and Federal regulations. Mitigation requirements will be met prior to construction activities impacting wetlands or streams at the site. The city will work closely with local (LGU), state (MNBWSR, MNDNR, and MPCA), and federal (USACE) agency staff to identify requirements and ensure all potential concerns are addressed. Permit applications and plan sets will be submitted to the appropriate agencies for review.

The preferred method of mitigation will be to purchase credits from a mitigation bank within the same BSA and major watershed as the site. It is anticipated that mitigation for the wetland impacts will occur at a minimum of a 2:1 ratio (i.e., 0.80 acres of wetland replacement for the 0.40 acres of impact) through a purchase of wetland credits within BSA 7.

4.13.2.5 Alternate Site Assessment

The wetland impacts for the five alternative sites have been estimated and can be found in **Table 1 – Alternate Site Assessment**. As all of the alternative sites are located along the Mississippi River and are within the 100-Year Floodplain, all of the sites are anticipated to have similar wetland impacts as each site would have to be raised above the floodplain to facilitate the proposed use.

Therefore, there are anticipated environmental impacts for each site what would require mitigation measures, permitting and best management practices.

4.13.2.6 Alternate Design/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to wetlands within the Carrels Site. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts

Alternative Assessed	Anticipated Impacts
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	No change to wetland impacts
Use of Smaller Barges	No change to wetland impacts

4.13.3 Stormwater

4.13.3.1 Existing Conditions

The Wabasha Barge Terminal project area was historically used as a gravel pit. Natural features, especially in upland areas of the site, have been degraded from a long history of site use but remain heavily wooded with multiple wetlands on site at the toe of the bluff. Site observations indicate that reclamation of the site never took place and portions of the site remain disturbed. Existing conditions stormwater runoff flows through wooded and wetland areas down a steep bluff before joining the Mississippi River. Existing conditions hydrology is described in depth in the attached document "USACE Dredge Material Management Plan – Preliminary Drainage Memo" (Appendix E).

The Project Site and surrounding surface waters are not located within a defined watershed district or watershed management organization area and thus do not have specific and more stringent pollutant removal requirements for stormwater runoff.

4.13.3.2 No-Build Alternative Assessment

The site would continue to experience natural filtering of stormwater through the forest regions, shallow wetlands, and shallow subsurface flow. There would be no anticipated change in flow rates, volumes, or timing of storm flows. Disturbed areas due to prior gravel pit operations would continue to transport more runoff, sediment, and nutrients to the Mississippi River than in naturally occurring conditions. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would increase the impervious surface of the site and have a similar impact to the stormwater as the preferred permanent alternative.

4.13.3.3 Preferred Alternative Assessment

The preferred design adds 3.3 acres of impervious surface to the site by providing an access road and barge docking station with associated infrastructure, increasing discharge rates, runoff volumes, sediment loading and increasing the flashiness of flows within the grading footprint, which discharges directly to the Mississippi River. The preferred Site Plan minimizes the impervious footprint while providing adequate access and maneuverability for dredged material transport operations.

Tree clearing and ground disturbance will occur during construction, leading to increased likelihood for sediment to be transported to downstream surface waters. There will be no winter operations so no salt will be needed to maintain the roadway.

4.13.3.4 Preferred Alternative Mitigation Measures

Ditches will be constructed around the perimeter of the active operations area to collect, store, and treat runoff prior to discharging to the Mississippi River. Areas not part of the facility operations will remain in natural or historically disturbed condition. An infiltration basin is proposed to mitigate impacts to stormwater runoff caused by the proposed alternative, catching stormwater from previously disturbed areas that are currently not receiving treatment.

The design of the infiltration basin is described in the document "USACE Dredge Material Management Plan – Preliminary Drainage Memo" (Appendix E). The water quality volume would infiltrate and receive treatment prior to entering the Mississippi River via shallow subsurface flow. Offsite discharge rates are not increased after mitigation and the majority of stormwater flow throughout the year is treated prior to discharge. Sediment is captured via infiltration pretreatment in the form of rock check dams, mitigating potential sediment load increases due to impervious surface construction.

During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the MPCA NPDES Permit. The EPA-approved impairments for the Mississippi River are considered non-construction related and do not require any additional best management practices or plan review for compliance with the NPDES Construction Stormwater Permit.

4.13.3.5 Alternate Site Assessment

The Izaak Walton Park site could use a portion of the existing parking lot as part of the barge terminal facility reducing the impervious surface needed for construction. However, additional impervious surface areas would be needed at the dock area and along the truck load/unload areas increasing the need for stormwater facilities.

The Wabasha Municipal Dock site is a developed open space and park site with limited impervious surfaces in shelters and trails. Development of the site would substantially increase the impervious surface and stormwater needs.

The Mississippi Parkside Marina site could use a portion of the boat vehicle parking area as part of the proposed barge use to reduce the impervious area of the site. However, additional impervious surface areas would be needed at the dock area and along the truck load/unload areas increasing the need for stormwater facilities.

The Wabasha Marina has been partially developed with portions of the site covered with gravel for access and parking. Portions of this area would be improved and used for the necessary truck traffic and barge terminal use. However, additional improvements would likely increase the impervious surface for the site increasing the need for stormwater facilities.

South Fitzgerald is a vacant undeveloped site. The proposed use would increase the impervious surface of the site for the dock, load/unload areas as well as the access route on site requiring that all improvements be managed with necessary stormwater facilities.

For all the alternative sites, ground disturbance and tree removal, where present, would occur during construction, leading to increased likelihood for sediment to be transported to downstream surface waters.

4.13.3.6 Alternate Design/Magnitude Assessment

The alternates that expand material storage areas or change the layout of the proposed site may increase stormwater runoff and would require additional stormwater management to ensure consistent or improved water quality and water quantity at the project site. Should any additional changes occur on the project area during final design, a stormwater management plan and/or stormwater pollution prevention plan would assess and capture the site mitigation requirements.

4.13.4 Groundwater

4.13.4.1 Existing Conditions

The Project Site is located within the East-Central Minnesota Groundwater Province and within the Quaternary water-table and buried unconfined aquiver. No springs are identified onsite by the MNDNR Spring Inventory. Depth to groundwater within the site is generally 0-20 feet.[39] The Project Site is not located within an existing DWSMA or a wellhead protection area (see Figure 6, "Geologic Conditions/Groundwater") but there are DWSMA and Wellhead protection areas located nearby. There is an existing unverified well onsite, Well ID: 536092 (**Exhibit 11**, "Minnesota Well Index").

4.13.4.2 No-Build Alternative Assessment

No impacts are anticipated to the groundwater aquifer in the No-Build alternative.

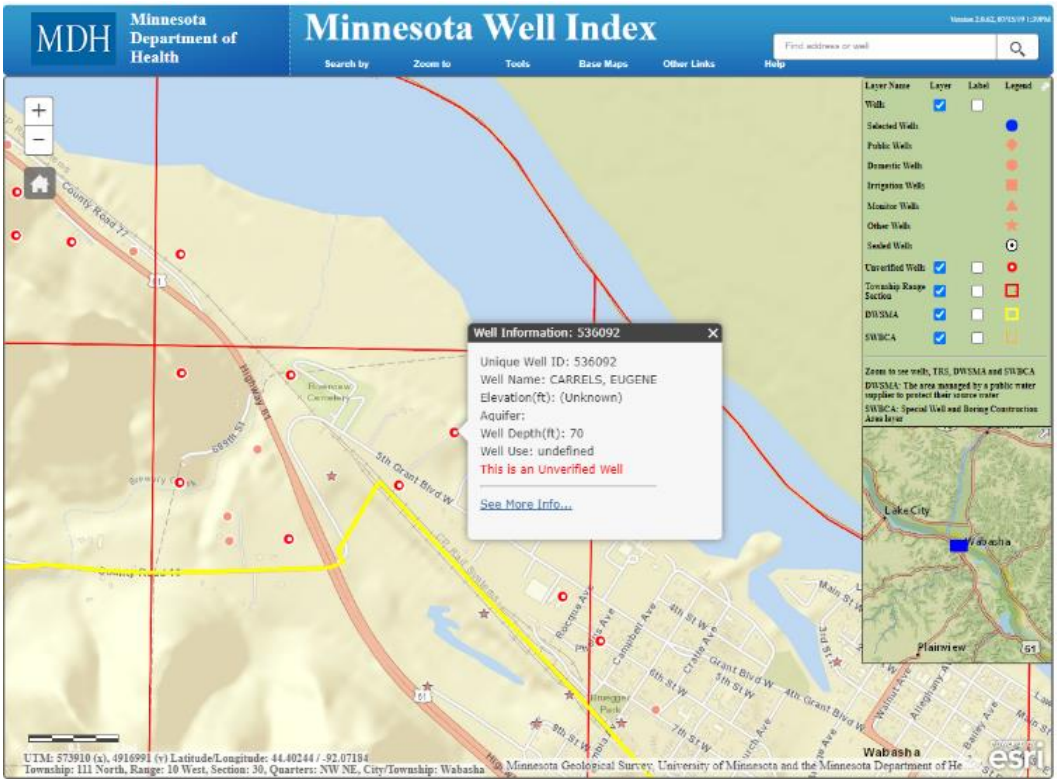
4.13.4.3 Preferred Alternative Assessment

Although the Project Site is located outside of a DWSMA, the sand and gravel nature of this region has the potential to transport potential contaminants to the aquifer. While the region is within a potential karst area, there are no known karst features or springs that could directly link to groundwater resources.

The treatment of stormwater runoff via and infiltration swale and basin increase local flux of water to groundwater within the lower floodplain bench but is not anticipated to increase nutrient levels or affect groundwater reserves. The footprint of the basin is not expected to increase the water table, which will be most responsive to fluctuation in the Minnesota River levels. When the site gets connected to public utilities – water/wastewater – there are no anticipated impacts, and the current system is sufficient to manage the increases.

Exhibit 11: Minnesota Well Index

[39] Peterson, Todd A. 2005. C-14 Geologic Atlas of Wabasha County, Minnesota. Part B, Plate 8 – Hydrogeology of the Unconsolidated and Bedrock Aquifers. Retrieved from MNDNR. https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wabacga.html.



4.13.4.4 Preferred Alternative Mitigation Measures

Follow all required guidelines and permit requirements, including best management practices. Should karst or other unique geologic conditions be identified during project construction, activities will halt, and the contractor will immediately coordinate the MNDNR for next steps.

Coordination with MDH will help locate the unverified well and manage it appropriately by either sealing the well or otherwise evaluating for future use at the project site.

4.13.4.5 Alternate Site Assessment

No impacts are anticipated to the groundwater aquifer for the alternate sites.

4.13.5 Wastewater

4.13.5.1 Existing Conditions

There are no wastewater utilities currently connected to the Study Area.

4.13.5.2 No-Build Alternative Assessment

There are no anticipated wastewater connections with the No-Build alternative and existing site conditions will remain in place.

4.13.5.3 Preferred Alternative Assessment

Wastewater connectivity may occur with future construction of a small operations facility. There are no anticipated impacts to the current wastewater system, and it is of sufficient capacity to manage any identified additions.

4.13.5.4 Preferred Alternative Mitigation Measures

All required permits and regulatory requirements will be followed prior to connecting wastewater utility infrastructure.

4.13.5.5 Alternate Site Assessment

Wastewater connectivity could occur with future construction on all alternative sites. There are no anticipated impacts to the current wastewater system, and it is of sufficient capacity to manage any of the identified additions.

4.13.6 Water Appropriation

4.13.6.1 Existing Conditions

There are no water utilities currently connected to the Study Area.

4.13.6.2 No-Build Alternative Assessment

There are no anticipated water connections with the No-Build alternative and existing site conditions will remain in place.

4.13.6.3 Preferred Alternative Assessment

Water connectivity may occur with future construction of a small operations facility, but no additional appropriations are anticipated as part of this utility connection. There are no anticipated mitigation requirements for when water utilities are expanded to the project site. The current system is of sufficient capacity to manage any anticipated additions.

4.13.6.4 Preferred Alternative Mitigation Measures

All required permits and regulatory requirements will be followed prior to connecting water utility infrastructure.

4.13.6.5 Alternate Site Assessment

There are no water utilities currently connected to any of the alternative sites. A water connection would have to be extended during construction.

4.14 Contamination/Hazardous Materials/Wastes

4.14.1 Existing Conditions

Potentially Contaminated Sites

According to the MPCA's "What's In My Neighborhood" interactive mapping database, there are seven existing potential environmental hazards within ½-mile of the Study Area. Table 8, "MPCA "What's In My Neighborhood Sits within ½ Mile" and Figure 11, "Potentially Contaminated Sites" identifies those uses within a half-mile radius from the proposed site.

Table 8: MPCA "What's In My Neighborhood" Sites within ½ Mile

Site Number	Site Name	Distance of Proposed Site	Activity
No Number Available	KPR US Cardinal Health	0.35 miles	• Hazardous Waste – Minimal Quantity Generator (Active) (MNR000080846) • Industrial Stormwater (Active) (MNRNE338S) • Air Quality (Inactive) (15700031) • Industrial Stormwater (Inactive) (A00016400)
No Number Available	Timm Lawn Care	0.45 miles	• Aboveground Tanks (Active) (TS0124982)
No Number Available	Gunderson St. Elizabeth Medical Center	0.35 miles	• Air Quality (Active) (15700032) • Hazardous Waste – Very Small Quantity Generator (Active) (MND076513209)

Dredged Materials Testing

To broadly assess the concentrations and location of contaminants found in Lower Pool 4 sediments, USACE staff collected 28 sediment samples from Lower Pool 4 between 2013 and 2020 (see Figure 3 of the USACE Lower Pool 4 DMMP). To specifically assess the concentrations of contaminants within the Read's Landing access cut at the head of the pipeline, two borehole sediment samples were collected in June 2021 (see Figure 3 of the USACE Lower Pool 4 DMMP). Each sample was analyzed for polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbon (PAH), pesticides and heavy metals and compared to Minnesota Pollution Control Agency's (MPCA) sediment reference values (SRVs) and the sediment quality triad (SQTs), which refer to extent of degradation within the sediment caused by contamination. Of those 31 samples, two were collected in a boat harbor at Alma, Wisconsin, three in shoreline access area (Alma Marina and Read's Landing), and 26 in the main navigation channel. Collection data can be found in Appendix F of the USACE Lower Pool 4 DMMP.[40]

In general, the MPCA SRVs limits are higher concentration thresholds than SQTs. Furthermore, level II SQTs are higher than level I SQTs. In terms of concentration levels from low to high, if a contaminant found in sediment is below the SQT level I threshold, it has very low levels of that contaminant and is likely safe for bottom-dwelling aquatic organisms. If the contaminant level is higher than the SQT level I threshold but below the level II threshold, it is likely moderately safe for those organisms. If the contaminant level is above the SQT level II threshold, that contaminant is likely at a level that is harmful to bottom-dwelling aquatic organisms. An exceedance of the SQT level II threshold will often still be well below the SRV threshold, as the SRV thresholds are set at levels to protect human health based on

[40] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

contact with the material in two upland settings. Contaminant thresholds for SRVs in the recreational/residential setting are lower than the commercial/industrial settings because it is assumed that in the former settings there would likely be more contact with the sediment, including contact by children.

To summarize, in order from lowest to highest levels of contamination, are SQT level I, SQT level II, SRVs for residential/recreation, and then SRVs for commercial/industrial.

Results of the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were uncontaminated. There were no SQT or SRV exceedances observed. Additionally, there are no restrictions for upland placement due to contaminant levels.

4.14.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to potentially contaminated sites, hazardous materials, and wastes.

4.14.3 Preferred Alternative Assessment

A Phase I Environmental Site Assessment was completed in January 2020, and determined that there is no potential risk for contamination due to recognized environmental conditions and previous land uses on the project site. The potential for impacts to the Study Area is considered as a low potential for encountering contaminated materials during project operations.

4.14.4 Preferred Alternative Mitigation Measures

Any potentially contaminated materials encountered during construction and operations will be managed and treated in accordance with applicable Federal, State, and local regulations. A Phase II Environmental Site Assessment was not recommended for the Project Site.

All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from the MPCA, MNDNR, and Wabasha County for grading and erosion control. DNR and/or BWSR-approved seed mixes and wildlife friendly erosion control mesh will be used to ensure soil stabilization.

4.14.3 Alternate Site Assessment

According to the MPCA's "What's In My Neighborhood" interactive mapping database, the following hazardous sites are in close proximity to the alternative sites.

There are two hazardous waste sites between 700 and 800 feet of the Izaak Walton Park and the Mississippi Parkside Marina alternative sites located on the 800 and 900 blocks of 5th Grant Boulevard West. See MPCA ID: MNR000060103 and 148254238. These potential risks would have to be further investigated.

There is an underground storage tank adjacent to the Wabasha Municipal Park at the Wabasha Resort/ Ryans On The River within 100 feet of the park north of Main Street West. There is also a Hazardous Waste and very small quantity generator located just south of the Wabasha Resort on Main Street West within 100 feet of the park. See MPCA ID: TS0013777 and MNR000058784. The City of Wabasha also has a small park shop building located at 220 Bridge Street, approximately 750 feet from the park site,

which is listed as a Petroleum Remediation, Leak Site. See MPCA ID: LS0006674. These potential risks would have to be further investigated.

The Wabasha Marina has a "Hazardous Waste; Industrial Stormwater; Petroleum Remediation, Leak Site; Underground Tanks" use on site. See MPCA ID: LS0016423; MNR000005603; MNR0536YM; MNR053957; TS0123516. These potential risks would have to be further investigated.

There are no listed hazardous sites near the South Fitzgerald Alternate Site.

4.15 Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources

4.15.1 Resources, Habitats, and Vegetation

4.15.1.1 Existing Conditions

The Study Area is located at UMR Mile 760 within the Lower Pool 4 of the Upper Mississippi River. This section of the river is part of the "pooled portion" of the river, which exists upstream of St. Louis, controlled by a series of locks and dams. Construction of the dams in the 1930s significantly altered the ecology of the Upper Mississippi by creating a series of slackwater navigation pools. Pool 4, which is 44.2 miles long, extends from Lock and Dam 3 at Red Wing, Minnesota to Lock and Dam 4 at Alma, Wisconsin, and includes Lake Pepin. Lower Pool 4 provides a variety of aquatic habitats for fish and mussels within main channels, side channels, secondary channels, and backwater areas. Seasonally flooded backwaters also provide habitat for a variety of species including racoon, muskrat, beaver, mink, river otter, white-tailed deer, reptile species, amphibian species, and numerous waterfowl/migratory bird species.

The Upper Mississippi River National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife and plants and a breeding place for migratory birds. The Upper Mississippi National Wildlife and Fish Refuge is the longest national wildlife refuge in the lower 48 states, extending 261 miles from the Chippewa River in Wisconsin almost to Rock Island, Illinois. The refuge is an important migration site for waterfowl (*e.g.,* ducks, swans, etc.) and the bald eagle, as well as an important nesting site for water birds (*e.g.,* herons, bitterns, etc.) and the bald eagle.[41] Approximately 50 percent of canvasback ducks occurring in the continental US use the refuge during fall migration. It is an Audubon designed Important Bird Area (ABA) and Ramsar designated Globally Important Bird Area. Lower Pool 4 of the Mississippi River is part of the Upper Mississippi National Wildlife and Fish Refuge which is managed by the USFWS. The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project. As the riverbed is a navigable water, the State of Minnesota "owns" it subject to Federal jurisdiction related to navigation.

According to MNDNR's Ecological Classification System, the Project Site is within the Eastern Broadleaf Forest Province, Paleozoic Section, Blufflands Subsection. Steep bluffs and deep stream valleys up to 600

[41] Audubon. 2023. Upper Mississippi River NWR IBA. Electronic document: https://www.audubon.org/important-bird-areas/upper-mississippi-river-nwr-iba, accessed on February 16, 2023.

feet deep are characteristic of the Blufflands. The Mississippi River is identified in the Minnesota Comprehensive Wildlife Conservation Strategy[42] as a key habitat for the Bufflands Subsection. "The Blufflands provide a critical migratory corridor for forest songbirds, raptors, and waterfowl. It is the most important subsection for reptiles and one of the most important subsections for mollusks."[42] More USGS Species of Greatest Conservation Need (SGCN) are known or predicted to occur within the Blufflands Subsection than any other subsection in Minnesota. There are a total of 156 species on the SGCN list in the Blufflands subsection, 82 of those species are also listed as Federal or State endangered, threatened, or of special concern.

The Minnesota Biological Survey (MBS) ranks survey sites at the conclusion of work in a region. The ranking is based on presence of rare species populations, size and condition of native plant communities, and the context of the site within the greater landscape. A Natural Heritage Review letter dated July 8, 2022 (Appendix G; MNDNR Correspondence # MCE 2022-00127) indicates the Proposed Project is within a site identified by the MBS as having Moderate Biodiversity Significance. "Sites ranked as moderate can contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery." Three State-listed plant species of special concern have been documented at the MBS site, including: green dragon (*Arisaema dracontium*), Gray's sedge (*Carex grayi*), and cattail sedge (*C. typhina*) (MNDNR Correspondence # MCE 2022-00127).

MNDNR has designated Pool 4 of the Mississippi River as a Lake of Outstanding Biological Significance. The criteria for biological significance are based on occurrence and analysis of communities of aquatic plants, fish, birds, and/or amphibians. A lake may meet criteria for only one of the four communities for it to be given a designation. The criteria for the designation of a Lake of Outstanding Biological Significance include:

- High aquatic plant richness, high floristic quality, and a population of an endangered or threatened plant species.
- Important wild rice lakes.
- Exceptional fishery for selected game fish or an outstanding nongame fish community.

One or more of the following: endangered or threatened colonial waterbird nesting area, presence of several endangered, threatened, or special concern lake bird species, or six or more lake bird Species of Greatest Conservation Need.

Aquatic plant diversity within the river is generally low due to the steep banks, flow regime, and depth of the Mississippi River within the project area. Aquatic plants in the vicinity of the site are limited to a narrow fringe adjacent to the river and wetlands that are connected to the river system, such as Wetland 3. Wetland 3 is a seasonally inundated floodplain forest, however, a portion of the wetland near the river is more frequently flooded and is dominated by shrubs such as sandbar willow (*Salix exigua*) and herbaceous vegetation. This area was not directly assessed for vegetation as a vegetation survey was not requested by DNR (Appendix G; MNDNR Correspondence # MCE 2022-00127). Aquatic vegetation that may occur in the mixed emergent marsh portion of Wetland 3 include broad-leaved

[42] Minnesota Department of Natural Resources. 2006. Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife, Comprehensive Wildlife Conservation Strategy. Electronic document, https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/profiles/blufflands.pdf, Accessed on February 20, 2023.

cattail (*Typha latifolia*), river bulrush (*Bolboschoenus fluviatilis*), broad-leaved arrowhead (*Sagittaria latifolia*), and giant bur-reed (*Sparganium eurycarpum*)[43].

The Minnesota County Biological Survey Map Series No. 13 (1997) shows Floodplain Forest – Silver Maple Subtype, as occurring in the vicinity of the project area[44]. This ecosystem is dominated by silver maple (*Acer saccharinum*) with additional canopy provided by river birch (*Betula nigra*) and green ash (*Fraxinus pennsylvanica*). Floodplain Forest ecosystem is present on the western portion of the site. The wetland delineation described in the paragraph below confirmed that the floodplain forest is dominated by silver maple. Wetland 3 is a portion of a larger floodplain forest that continues on the adjacent property to the west owned and operated by USFWS. Southern Floodplain Forest is a rare community found along medium and large rivers across southern Minnesota. It provides habitat for approximately 180 bird species, almost twice that of adjacent upland habitats[44]. The area of floodplain forests is decreasing over time and becoming increasingly monotypic, primarily due to increased flooding, invasive herbaceous vegetation, and introduction of the emerald ash borer[44].

Existing vegetation and conditions at the Project Site based on the wetland delineation completed in June 2020 are described below. Wetland 3, located on the northwest side of the site, is a seasonally flooded forested wetland dominated by silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and black willow (*Salix nigra*). Herbaceous vegetation observed in wetland 3 include jewelweed (*Impatiens capensis*), creeping jenny (*Lysimachia nummularia*), Canadian clearweed (*Pilea pumila*), and white vervain (*Verbena urticifolia*). Dominant species observed in Wetland 1 were American elm, boxelder, and European buckthorn. Wetlands 1 and 2 contained substantial amounts of European buckthorn (*Rhamnus cathartica*), between 25 percent and 55 percent of total shrub cover. Wetlands 1 and 2 appear to have been incidentally created by historical gravel mining operations at the site rather than naturally occurring floodplain forests.

Species observed within upland areas or transition zones of the Project Site in June 2020 include: green ash, American elm, eastern cottonwood (*Populus deltoides*), and northern pin oak (*Quercus ellipsoidalis*) in the canopy layer; American elm, common pricklyash (*Zanthoxylum Americanum*), buckthorn, Bell's honeysuckle (*Lonicera x bella*), Siberian elm (*Ulmus pumila*), and green ash in the shrub/sapling layer; and Pennsylvania sedge (*Carex pensylvanica*), grass-leaved goldenrod (*Euthamia graminifolia*), creeping jenny, jewelweed, Canadian wood nettle (*Laportea canadensis*), white vervain, Black-fruited clearweed (*Pilea fontana*), switchgrass (*Panicum virgatum*), Virginia creeper (*Parthenocissus quinquefolia*), Kentucky blue grass (*Poa pratensis*), poison ivy (*Toxicodentron radicans*), common blue violet (*Viola sororia*), hop trefoil (*Trifolium campestre*), and American vetch (*Vicia americana*) in the herbaceous layer.

Much of the upland portion of the Project Site has been substantially disturbed by historic mining activities. Site observations indicate that reclamation of the site never took place and remains largely

[43] Minnesota County Biological Survey. MCBS Map Series No. 13 (1997). Wabasha County, Minnesota. Electronic document, https://files.dnr.state.mn.us/eco/mcbs/maps/wabasha.pdf, Accessed on December 5, 2023.

[44] United States Geological Survey. 2022. Ecological Status and Trends of the Upper Mississippi and Illinois Rivers. Electronic document, https://pubs.usgs.gov/of/2022/1039/ofr20221039.pdf, Accessed on December 4, 2023.

disturbed. To this day, large stockpiles, abandoned equipment, and debris litter the upland portion of the Project Site.

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4.15.1.2 No-Build Alternative Assessment

No additional impacts would occur at the Project Site as a result of the no-build alternative. The project objectives would not be achieved. However, if the USACE were to utilize this site as outlined in their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar environmental impact as the preferred permanent alternative.

4.15.1.3 Preferred Alternative Assessment

The Proposed Project is expected to directly impact previously disturbed upland portions of the preferred Project Site, Wetland 1, and the Mississippi River. Approximately 2.7 acres of trees will be cleared for site grading. Wetland 3 (Floodplain Forest) is the most natural and undisturbed portion of the Project Site. It is expected that rare and/or protected vegetation occurring at the site would likely occur within Wetland 3. Wetland 3 will not be directly impacted.

Direct impacts to the upland portion of the Project Site will have a minor impact on overall habitat as the uplands are generally already impacted. Increased traffic from hauling trucks can pose a hazard to wildlife attempting to cross the Project Site. Increased noise at the Project Site may cause wildlife sensitive to noise to relocate or avoid the Site.

Wetland 1 would be directly impacted by adding fill associated with the barge facility. This would be a permanent impact of 0.40 acres of Type 1 – Seasonally Flooded Wetland. Impacts to Wetland 1 are unlikely to cause loss of rare or protected species as this wetland represents a smaller and lower quality wetland habitat than Wetlands 2 or 3. Wetland 1 is also likely to be incidental in nature, caused by historic mining operations at the site. Animal species would no longer be able to use this wetland and would likely relocate to Wetland 2 or Wetland 3.

Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Invasive species (primarily European buckthorn) have been observed on site within Wetland 1 and Wetland 2. Other invasive species observed at the site include hop trefoil (*Trifolium campestre*), Canada thistle (*Cirsium arvense*), and reed canary grass (*Phalaris arundinacea*).

The existing road and river access will be improved, therefore, no additional areas along the river will need to be altered. Impacts would be related to sound disturbance and increased human activity which may affect animal behavior within the habitat.

Impacts to vegetation within the MBS site of Moderate Biodiversity Significance are expected to be minimal and limited to construction of the barge facility infrastructure in uplands and Wetland 1.

No project activities will occur on fee-title land owned by the USFWS. Since the Mississippi River substrate in this area is under a navigable water, the State of Minnesota “owns” the river bed and the resources in that area.

Pool 4 of the Mississippi River is designated as a Lake of Outstanding Biological Significance. This project will not significantly impact valuable or protected plant species, wild rice communities, the use of the

lake as an exceptional fishery, or the bird community. Specific impacts to protected species are discussed in Section 4.15.2.

A small amount of aquatic vegetation at the fringe of the Mississippi River may be affected however there are no expected impacts to protected aquatic plant species.

Floodplain forests at the site will not be impacted.

4.15.1.4 Preferred Alternative Mitigation Measures

Preventing the spread of invasive species during construction and operation of the barge terminal facility will occur as part of BMPs measures that will be put in place to control and appropriately manage vegetation and invasive species. Disturbed areas on the site will primarily be replaced with gravel surfaces (access road, loading and stockpile areas). Reseeding and landscaping materials will be native seed mixes which are free of invasive plants or plant parts.

Impacts to wetlands will be mitigated as outlined in Section 4.13.2.

Tree removals will be limited to winter timelines to reduce potential impact to bat and bird species.

Ecologically Significant Areas:
Based on direction from MNDNR (Correspondence # MCE 2022-00127) the following Best Management Practices (BMPs) will be implemented to minimize impacts to the MBS Site of Moderate Diversity, including the minimization of impacts to state-listed plant species of special concern. All equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species.

BMPs to mitigate impacts to resources, habitats, and vegetation:

- Vehicular disturbance will be minimized at the site. Vehicles are only to be allowed on the proposed access road.
- Necessary equipment and supplies will be stored/stockpiled in designated areas.
- Dredge material will only be placed in designated upland areas.
- Construction will be conducted during the winter months when the ground is frozen.
- Equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species.
- To the extent possible, operations will occur within already-disturbed areas.
- Disturbed areas will be revegetated with native species suitable to the local habitat as soon as possible post-construction.
- Weed-free seed mixes, topsoils, and mulches will be used for revegetation.
- To prevent the release of plastic fibers to the aquatic resources, the use of erosion control blankets will be limited to bio-netting or natural netting that do not contain plastic components. Hydro-mulch products will also be limited to plastic-free types.

Continued coordination with MNDNR will ensure any impacts to the Mississippi River substrate are accounted and mitigated for during permitting processes.

4.15.1.5 Alternate Site Assessment

Construction of the proposed barge project on the Izaak Walton Park site is expected to directly impact 0.05 acres of wetlands and potentially impact 18 threatened, endangered or species of special concern along with the removal of approximately 0.25 acres of trees for site grading.

Construction of the proposed barge project on the Wabasha Municipal Dock site is expected to directly impact 0.17 acres of wetlands and potentially impact 18 threatened, endangered or species of special concern along with the removal of approximately 0.49 acres of trees for site grading.

Construction of the proposed barge project on the Mississippi Parkside Marina site is expected to directly impact 0.3 acres of wetlands and potentially impact 20 threatened, endangered or species of special concern along with the removal of approximately 0.42 acres of trees for site grading.

Construction of the proposed barge project on the Wabasha Marina site will potentially impact 20 threatened, endangered or species of special concern. No wetlands or trees are located on the parcel.

Construction of the proposed barge project on the South Fitzgerald site is expected to directly impact 0.17 acres of wetlands and potentially impact 17 threatened, endangered or species of special concern. There are no trees on the site.

See **Table 1 – Alternate Site Assessment** and **Appendix Q** for alternate site data located above.

4.15.1.6 Alternate Design/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to vegetation and habitat within and adjacent to the Carrels Site. The expanded dredge area may disrupt aquatic vegetation and shoreline species. Additionally, if expanded material storage areas were implemented, this would cause additional impacts to wetlands and result in further tree removals. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts Additional 4 acres of tree clearing
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	Increased number of trips may disrupt aquatic vegetation growth

4.15.2 Rare, Threatened, and Endangered Species and Ecosystems

4.15.2.1 Existing Conditions

State-Listed Species

Minnesota's Endangered Species Statute and the associated Rules (Minnesota Rules, Chapter 6134 and Parts 6212.1800 to 6212.2300) impose a variety of restrictions, a permit program, and several

exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules.

A query of the Natural Heritage Information System (NHIS) database was completed to assess the potential presence of state-listed threatened, endangered, and species of special concern within a one-mile radius of the project area. The review identified several occurrences of invertebrate animals, vascular plants, and vertebrate animals, including the following:

Invertebrates

- Black Sandshell Mussel (*Ligumia recta*) – Special Concern
- Butterfly Mussel (*Ellipsaria lineolate*) – Threatened
- Monkeyface Mussel (*Theliderma metanevra*) – Threatened
- Mucket Mussel (*Actinonaias ligamentina*) – Threatened
- Purple Wartyback Mussel (*Cyclonaias tuberculata*) – Endangered
- Round Pigtoe Mussel (*Pleurobema sintoxia*) – Special Concern
- Sheepnose Mussel (*Plethobasus cyphyus*) – Endangered
- Spectaclecase Mussel (*Cumberlandia mondonta*) – Endangered
- Spike Mussel (*Euryna dilatate*) – Threatened
- Wartyback Mussel (*Quadrula nodulata*) – Threatened

Plants

- Cattail Sedge (*Carex typhina*) – Special Concern
- Gray's Sedge (*Carex grayi*) – Special Concern
- Green Dragon (*Arisaema dracontium*) – Special Concern
- Muskingum Sedge (*Carex muskingumensis*) – Special Concern

Fish

- American Eel (*Anguilla rostrata*) – Special Concern
- Blue Sucker (*Cycleptus elongatus*) – Special Concern
- Mississippi Silvery Minnow (*Hybognathus nuchalis*) – Special Concern
- Paddlefish (*Polyodon spathula*) – Threatened
- Pirate Perch (*Aphredoderus sayanus*) – Special Concern

Birds

- Peregrine Falcon (*Falco peregrinus*) – Special Concern

Snakes

- Timber Rattlesnake (*Crotalus horridus*) – Threatened

Federally-Listed Species

Under the Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544), all federal agencies shall, in consultation with the Secretary of the Interior, use their authority to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat determined under the ESA to be critical. The ESA provides a program for conserving threatened and endangered plants and animals, and the habitats in which they are found. It is designed to protect critically imperiled species from extinction. The ESA is administered by the United States Fish and Wildlife Service (USFWS). An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become "endangered" in the foreseeable future without further protection.

A regulatory review for federally-listed species surrounding the project area was conducted using the USFWS's Information for Planning and Consultation (IPaC) tool. The following species were identified by IPaC as potentially occurring at the site:

- Northern Long-eared Bat (*Myotis septentrionalis*) – Endangered (effective 3/31/23)
- Tricolored Bat (*Perimyotis subflavus*) – Proposed Endangered
- Whooping Crane (*Grus americana*) – Experimental Population, Non-Essential
- Higgins Eye Pearlymussel (*Lampsilis higginsii*) – Endangered
- Sheepnose Mussel (*Plethobasus cyphyus*) - Endangered
- Spectaclecase Mussel (*Cumberlandia monodonta*) - Endangered
- Monarch Butterfly (*Danaus plexippus*) - Candidate

A Section 7 Consultation was initiated through the USFWS's IPaC system in November 2023. Based on answers to the Service's Minnesota-Wisconsin and NLEB determination keys, a determination of "May Affect – Not Likely to Adversely Affect" was made for the following species:

- Northern Long-eared Bat
- Tricolored Bat
- Higgins Eye (pearlymussel)
- Sheepnose Mussel
- Spectaclecase (mussel)

A determination of "No Effect" was made for the following species:

- Monarch Butterfly
- Whooping Crane

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior USFWS. The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) of

1940, amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs.

Species (Common Name)	Species (Scientific Name)	Breeding Season
Bald Eagle	*Haliaeetus leucocephalus*	December 1 to August 31
Black-billed Cuckoo	*Coccyzus erythropthalmus*	May 15 to October 10
Bobolink	*Dolichonyx oryzivorus*	May 20 to July 31
Canada Warbler	*Cardellina canadensis*	May 20 to August 10
Chimney Swift	*Chaetura pelagica*	March 15 to August 25
Eastern Whip-poor-will	*Antrostomus vociferus*	May 1 to August 20
Golden Eagle	*Aquila chrysaetos*	Breeds Elsewhere
Golden-winged Warbler	*Vermivora chrysoptera*	May 1 to July 20
Lesser Yellowlegs	*Tringa flavipes*	Breeds Elsewhere
Pectoral Sandpiper	*Calidris melanotos*	Breeds Elsewhere
Red-headed Woodpecker	*Melanerpes erythrocephalus*	May 10 to September 10
Rusty Blackbird	*Euphagus carolinus*	Breeds Elsewhere
Short-billed Dowitcher	*Limnodromus griseus*	Breeds Elsewhere
Wood Thrush	*Hylocichla mustelina*	May 10 to August 31

Species Descriptions and Discussions

Mussels

Lower Pool 4 of the Mississippi River hosts large assemblages of aquatic invertebrates and mussels. Invertebrate diversity can be attributed to the variety of habitats found in the area. Specialized invertebrates that rely on running water can be found in a range of water velocities near the project area. Several mussel surveys have been completed within Lower Pool 4, many of which were associated with channel maintenance and dredging activities. As many as 43 species of mussels have historically been observed in Pool 4.[45] In 2002, 2015, and 2021, the Corps of Engineers completed mussel skimmer dredge transects along the stretch of the river located immediately adjacent to the proposed Barge Terminal Facility. According to the Corps mussel survey data, only two live mussels of two common species (Threehorn Wartyback and Threeridge) were found in 2002. No live mussels were found in this stretch of the Mississippi River during the 2015 or 2021 surveys.

The MNDNR and USFWS required a mussel survey for this project. Level II and Level III surveys were conducted June 6th through June 8th, 2023, under Minnesota DNR Special Permit No. 32812 and USFWS Recovery Permit ES59798B-2. No federally listed mussel species were detected during the

[45] Kelner. 2021. Upper Mississippi River mussel species list. US Army Corps of Engineers, St. Paul District.

surveys. One state-listed threatened species, the Mucket, was detected as a rare occurrence. Two species of special concern, the black sandshell and the round pigtoe, were detected live and considered relatively common through the Study Area. The Final Report – Mussel Survey of the Mississippi River for a Proposed Barge Terminal in Wabasha, MN is included as Appendix F.

The mucket, once a widely distributed species within the Mississippi and Hudson Bay drainages, is not common only in the St. Croix River and some of its tributaries and occurs at low densities in the Mississippi, Zumbro, and Otter Creek rivers according to the MNDNR Rare Species Guide. The mussel prefers medium to large rivers with coarse sand and gravel. Threats to this species includes dams, small population sizes, sedimentation, pollution, channelization, and non-native species, particularly invasive zebra mussels (*Dreissena polumorpha*).

Background review of federally listed mussel species:

The Wisconsin Department of Natural Resources (WIDNR) conducted a survey of unionid mussels throughout the Upper Mississippi River from 1977 through 1979. During that survey, 115 specimens were collected in the Lower Pool 4, of which 13 species were documented, the most abundant being Threeridge, Pigtoe, and Pimpleback.[46] No Higgins eye mussels were observed, Sheepnose and spectaclecase mussels were not listed, and one purple wartyback mussel was observed in Lower Pool 4.

Ten state-listed species of mussel have been observed within a mile of project area including the endangered purple wartyback, sheepnose, and spectaclecase mussels.[47] The spectaclecase mussel is also Federally-listed as endangered as well as the Higgins eye mussel.[48]

Spectaclecase mussels are a large species of mussel, growing up to 9 inches in length. Spectaclecase mussels are found partially or fully buried in sediments of large rivers, preferably in firm mud and sheltered areas. They are known to be extant within 20 streams in 11 states, including the Mississippi River in Minnesota. Within Pool 4, at river mile 760 to 760.5, two individuals were documented in 2009.[49] Threats to this species includes dams, small population sizes, sedimentation, pollution, channelization, and non-native species, particularly invasive zebra mussels (*Dreissena polumorpha*).

Sheepnose mussels are extremely rare and only found in large rivers. These mussels were historically considered abundant in the Mississippi River below Lake Pepin. Threats to the sheepnose mussel include dams, channelization, dredging, and infestation of zebra mussels.

Higgins eye mussel is only found in the Upper Mississippi River, north of Lock and Dam 9 and three tributaries of the Mississippi. USFWS defined ten Essential Habitat Areas (EHAs) for this species as areas

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[46] Wisconsin Department of Natural Resources. 1981. A Survey of Unionid Mussels in the Upper Mississippi River (Pools 3-11). Technical Bulletin No. 124. Madison, WI. Electronic document, https://search.library.wisc.edu/digital/AFF3IUKQUQYSEJ8M, accessed on February 20, 2023.

[47] Minnesota Department of Natural Resources. 2023. Natural Heritage Information System. Electronic Resource, https://www.dnr.state.mn.us/nhnrp/nhis.html, accessed on February 17, 2023.

[48] United States Fish and Wildlife Service. 2023. Information Planning and Consultation (IPaC). United States Fish & Wildlife Service. Electronic resource, https://ipac.ecosphere.fws.gov/. Accessed on February 16, 2023.

[49] United States Fish and Wildlife Service. 2019. Spectaclecase (Cumberlandia monodonta) 5-Year Review: Summary and Evaluation. August 12, 2019. Electronic document, https://ecos.fws.gov/docs/five_year_review/doc6103.pdf, accessed on February 22, 2023.

of utmost importance to the conservation of the species.[50] The list of EHAs does not include any areas within Pool 4. This species depends on deep, free flowing rivers and clean water. Causes of decline include introduction of invasive species, habitat loss, altered water flow patterns, and dredging and waterway traffic silting over mussel beds. Colonization of exotic and invasive zebra mussels are currently considered the largest threat to this species. Zebra mussels attach to shells of mussels preventing them from normal movement (traveling, burrowing, and closing an opening shells).[8]

In Minnesota, the purple wartyback mussel is currently only known to be extant within the Mississippi River and portions of the St. Croix River.[51] It is considered extremely rare within the Mississippi River. The preferred habitat for this species is gravel substrates in moderate currents of large rivers. Suitable host fish for the glochidia of purple wartyback mussels include channel catfish, yellow bullhead, flathead catfish, and black bullhead. Threats to the purple wartyback and other protected mussel species are similar to the threats for spectaclecase and higgins eye mussels: dams, sedimentation, pollution, channelization, and non-native species (particularly zebra mussels).

Plants

Four state-listed plant species of special concern have been documented as occurring within the MBS site that overlaps the project aea, including: green dragon (*Arisaema dracontium*), Gray's sedge (*Carex grayi*), *Muskingum sedge* (*Carex muskingumensis*), and cattail sedge (*Carex typhina*) (MNDNR Correspondence # MCE 2022-00127). It is not known if these plants occur within the project area. A survey was not required in the Natural Heritage Review letter and therefore was not completed. If they were to occur in the project area, they would likely occur within Wetland 3.

Green dragon is a facultative-wet species found in active floodplain forests in the eastern United States. The following tree species are often observed occurring with this species: *Populus deltoides*, *Acer saccharinum, Fraxinus pennsylvanica*, *Ulmus americana, Ulmus rubra, Juglans nigra, and Tilia americana.* Ground vegetation occurring in the same habitat may include *Laportea canadensis and Arisaema triphyllum.*[52]

Each of the listed sedge species are perennial wetland species with a clump forming habit. Cattail and Muskingum sedges are wetland obligates. In Minnesota, the habitat for these sedges is restricted to mature floodplain forests along the Mississippi and Saint Croix Rivers. Cattail and Muskingum sedges typically occur in forests dominated by *Populus deltoides* and *Acer saccharinum* with very few shrubs.[53] Gray's sedge is a shade tolerant facultative-wet species. It is found in mature alluvial forests of the

[50] United States Fish and Wildlife Service. 2004. Higgins Eye Pearlymussel (Lampsilis higginsii) Recovery Plan: First Revisions. May 2004. Electronic document, https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1031&context=endangeredspeciesbull, accessed on February 22, 2023.

[51] Minnesota Department of Natural Resources. 2018a. Rare Species Guide: Cyclonaias tuberculata. Rev. by Bernard Sietman. Electronic document, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV09010

Accessed on February 22, 2023.

[52] Minnesota Department of Natural Resources. 2023. Rare Species Guide: Arisaema dracontium. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMARA04020, accessed on February 17, 2023.

[53] Minnesota Department of Natural Resources. 2023. Rare Species Guide: Carex typhina. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP03E40, accessed on February 17, 2023.

eastern United States, particularly along the Mississippi River.[54] Co-occurring canopy tree species for Gray's sedge include *Populus deltoides*, *Acer saccharinum*, *Salix nigra*, *Fraxinus pennsylvanica*, *Ulmus americanus*, *Betula nigra*, *Quercus bicolor*, and *Celtis occidentalus*.[12]

Fish

Pool 4 features a wide variety of aquatic habitats including fast flowing main channels, variable width and depth side channels, secondary channels, and backwater areas. Tailwater habitat is absent in this pool. The diversity of habitat types allows for a wide range of aquatic species. The Upper Mississippi River Restoration (UMRR) program has a Long Term Resource Monitoring (LTRM) station in Lake City that is operated by MNDNR. The Lake City field station performs LTRM of Pool 4 including monitoring water quality, vegetation, macroinvertebrates, and fish. For the period of record (1993 to present), 85 fish species are listed as having been observed in Pool 4.[55]

In 2017, the United States Geological Survey (USGS) released the Species of Greatest Conservation Need national database. This list identifies the species which are most in need of conservation within a given state or territory. Sixteen species from the SGCN database for Minnesota are also recorded as observations in UMRR's LTRM data for Pool 4. Those species include:

- Lake sturgeon *(Acipenser fulvescens)*
- Skipjack herring *(Alosa chrysochloris)*
- Western sand darter *(Ammocrypta clara)*
- American eel *(Anguilla rostrata)*
- Pirate perch *(Aphredoderus sayanus)*
- Crystal darter *(Crystallaria asprella)*
- Blue sucker *(Cycleptus elongatus)*
- Black buffalo *(Ictiobus niger)*
- American brook lamprey *(Lethenteron appendix)*
- River redhorse *(Moxostoma carinatum)*
- Black redhorse *(Moxostoma duquesnei)*
- Hornyhead chub *(Nocomis biguttatus)*
- Weed shiner *(Notropis texanus)*
- Pugnose minnow *(Opsopoeodus emiliae)*
- Paddlefish *(Polyodon spathula)*
- Shovelnose sturgeon *(Scaphirhynchus platorynchus)*

Nine of those species have been observed in Lower Pool 4 within the last 10 years (UMRR 2015):

- Western sand darter *(Ammocrypta clara)*
- American eel *(Anguilla rostrata)*
- Pirate perch *(Aphredoderus sayanus)*
- Blue sucker *(Cycleptus elongatus)*
- River redhorse *(Moxostoma carinatum)*
- Black redhorse *(Moxostoma duquesnei)*
- Weed shiner *(Notropis texanus)*
- Pugnose minnow *(Opsopoeodus emiliae)*

[54] Minnesota Department of Natural Resources. 2023c. Rare Species Guide: Carex grayi. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP035H0, accessed on February 17, 2023.

[55] Upper Mississippi River Restoration program. 2015. Graphical Fisheries Database Browser – Stratified Random Sampling. United States Geological Survey, Upper Midwest Environmental Sciences Center. Electronic resource, https://www.umesc.usgs.gov/data_library/fisheries/graphical/fish_front.html, accessed on February 16, 2023.

- American brook lamprey *(Lethenteron appendix)*

Paddlefish (*Polyodon spathula*), a state-listed threatened fish, as well as several other state-listed fish have been documented in Pool 4 of the Mississippi River. Paddlefish populations have decreased in recent decades and are now primarily found in the slower and deeper sections of the Mississippi and St. Croix Rivers.[56] Research completed by UMRCC list paddlefish as an occasional species (occasionally collected, not generally distributed, but local concentrations may occur) in Pool 4.[57] Paddlefish use a wide variety of habitat types within the UMR, including tailwaters (absent from Pool 4), backwaters, main channel borders, and main channels. They may also be found near structures where scour holes, eddies, or current breaks occur.[58] Paddlefish have not been observed in Lower Pool 4 within the last 10 years.[59]

Other state-listed fish species including blue sucker (*Cycleptus elongatus),* Mississippi silvery minnow *(Hybognathus nuchalis),* and pirate perch (*Aphredoderus sayanus)* are listed as species of Special Concern. Research by Steuck et al in 2010 indicates that *blue sucker* is uncommon in Pool 4 and *Mississippi silvery minnow* has been historically documented in Pool 4.

Birds

The Upper Mississippi National Wildlife Refuge (UMNWR – shown in Figure 10, "Outdoor Recreation") is an Audubon Important Bird Area (IBA). Audubon estimates that approximately 40 percent of the nation's waterfowl and shorebirds use the river valley during spring and fall migrations. Three-hundred and five species of birds have been observed in the Upper Mississippi NWR.[60]

In a letter dated July 20, 2022 (Appendix J), the USFWS indicated that there are approximately 60 bald eagle nests in Lower Pool 4 and a nesting colony of great blue herons near the Proposed Project site. Three of the bald eagle nests are described as being in the vicinity of the project area in the letter.

Bald and golden eagles are currently protected by the Bald and Golden Eagle Protection Act which was enacted in 1940. Bald eagles are also known to occur at the open water at the confluence of the Chippewa River with the Mississippi River during the winter. The nesting season for the bald eagle in the northern United States is from December to September.[61] Bald eagles typically prefer nesting in mature

[56] Minnesota Department of Natural Resources. 2016. Minnesota Profile. Paddlefish (Polyodon spathula). Electronic resource, https://www.dnr.state.mn.us/mcvmagazine/issues/2016/may-jun/minnesota-profile-paddlefish.html, accessed on February 16, 2023.

[57] Steuck, M.J., Yess, S., Vooren, A.V., Pitlo, J.M., & Rasmussen, J. 2010. Distribution and Relative Abundance of Upper Mississippi River Fishes. Electronic document, https://docs.wixstatic.com/ugd/d70a05_eb4f98d13f514733b3a43ef8447390ca.pdf, accessed on February 16, 2023.

[58] Upper Mississippi River Conservation Committee. 2020. UMRCC Fisheries Compendium 4th Edition. Electronic resource, https://umrcc.org/wp-content/uploads/2022/04/Compendium-4th-Edition-Final-For-Printer-2-28-2020.pdf, accessed on February 16, 2023.

[59] Upper Mississippi River Restoration program. 2015. Graphical Fisheries Database Browser – Stratified Random Sampling. United States Geological Survey, Upper Midwest Environmental Sciences Center. Electronic resource, https://www.umesc.usgs.gov/data_library/fisheries/graphical/fish_front.html, accessed on February 16, 2023.

[60] Audubon. 2023. Upper Mississippi River NWR IBA. Electronic resource, https://www.audubon.org/important-bird-areas/upper-mississippi-river-nwr-iba, accessed on February 16, 2023.

[61] United States Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. Electronic document, https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf, accessed on March 2, 2023.

or old-growth forests. A study of 53 active bald eagle nests in the USFWS Winona District of the UMR in 2009 indicated that 93 percent of nesting sites had a supercanopy of eastern cottonwood and silver maple.[62] Nest trees were observed to be the tallest trees in the immediate area at 67 percent of nest sites, however, the nests were on average situated just below the level of the surrounding tree canopy.[20] The majority of nests observed in the Winona District (79%) were on islands or island complexes within the Mississippi corridor.[20]

The peregrine falcon is a state-listed species of special concern and is on the USGS list of SGCN. Peregrine falcons often nest on buildings and bridges in urban environments. The species is also known to inhabit the cliff/talus system along the Mississippi River within the Blufflands subsection.[63]

Other Wildlife

Northern Long-eared Bat (*Myotis septentrionalis*)

The federal listing of the northern long-eared bat (NLEB) was recently uplisted from threatened to endangered. Because of this, the previous 4(d) rule can no longer be used. Interim guidance has been released that will be followed until April 1st, 2024. Potential threats to the NLEB include white-nose syndrome (WNS), human disturbance in caves, wind turbine-caused mortalities, and habitat loss and degradation. An estimated population decline of 97 to 100-percent over 79 percent of the species range has been caused by WNS.[64]

The NLEB can be found in Minnesota in both the summer and winter. Winter hibernacula including caves, mines, and tunnels, are not present at the Wabasha Barge Terminal site. Summer roosting sites include the Floodplain Forest ecosystem which is present at the site (Wetland 3). NLEB prefer intact mature forest for foraging but are also known to use fragmented and immature forests. Roosting trees have loose bark, broken limbs, cavities, or cracks. Wabasha County is not on the list of known maternity roost trees and/or hibernacula entrances for Minnesota.[65]

Timber Rattlesnake

The timber rattlesnake is a state-listed threatened species. According to the MNDNR, the timber rattlesnake has been observed near the project site. The ideal habitats for the timber rattlesnake in Minnesota are within the Blufflands Subsection of the Mississippi River valley in forested bluffs, south-

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[62] Mundahl, Neal & Bilyeu, Anthony & Maas, Lisa. 2013. Bald Eagle Nesting Habitats in the Upper Mississippi River National Wildlife and Fish Refuge. Journal of Fish and Wildlife Management. 4. 131120115259003. 10.3996/012012-JFWM-009. Electronic document, https://www.researchgate.net/publication/274427630_Bald_Eagle_Nesting_Habitats_in_the_Upper_Mississippi_River_National_Wildlife_and_Fish_Refuge, accessed on February 27, 2023.

[63] Minnesota Department of Natural Resources. 2018b. Rare Species Guide: Falco peregrinus. Electronic resource,

https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKD06070#:~:text=The%20Peregrine%20Falcon%20is%20best,are%20brown%20or%20blue%2Dbrown, accessed on February 22, 2023.

[64] United States Fish & Wildlife Service. 2022. Species Status Assessment Report for the Northern long-eared bat (*Myotis septentrionalis*) version 1.2., Electronic document, https://www.fws.gov/sites/default/files/documents/Species%20Status%20Assessment%20Report%20for%20the%20Northern%20long-eared%20bat-%20Version%201.2.pdf, accessed on February 27, 2023.

[65] Minnesota Department of Natural Resources and United States Fish and Wildlife Service. 2021. Townships Containing Documented Northern Long-Eared Bat (NLEB) Maternity Roost Trees and/or Hibernacula Entrances in Minnesota. Electronic document, http://files.dnr.state.mn.us/eco/ereview/minnesota_nleb_township_list_and_map.pdf, accessed on March 2, 2023.

facing rock outcrops, and bluff prairies.[66] They may be active outside of their dens from April to October. They are most active during the day in spring and fall and at night in summer.

4.15.2.2 No-Build Alternative Assessment

No additional impacts would occur at the site as a result of the no-build alternative. The project objectives would not be achieved. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar impact to the ecosystems surrounding this site as the preferred permanent alternative.

4.15.2.3 Preferred Alternative Assessment

Aquatic Organisms

Dredging has the potential to directly affect fish and benthic invertebrates by capturing and removing organisms via the dredge head or push boat propeller, causing harm or fatalities. Impacts to aquatic organisms from dredging are largely correlated with the organism's motility (USACE 2015). Mobile organisms are less affected by dredging activities because they are able to move away from disturbed areas.

Benthic organisms are particularly vulnerable due to their location in reference to the dredge head. Direct impacts could also include mortality due to the burial of sessile or less mobile organisms with sediment and degradation of water quality. Dredging operations cause the re-suspension of sediments into the water column, reducing transparency and lowering the amount of available oxygen.

Available dissolved oxygen (DO) in the water column may be reduced due to dredging as a result of the suspension of anaerobic sediments and resulting chemical and biological oxygen demands. Dissolved oxygen may decrease almost 100% in near-bottom waters around a bucket dredge in operation (USACE 2015). The observed decreases in DO are likely to be greatest near the bottom at the dredging location, however, low to moderate DO decreases in the upper water column and general area are also likely.

Indirect impacts to fish and benthic invertebrates may also be caused by dredging. Indirect impacts could include degradation of water quality, noise disturbance, and physical habitat disturbance including spawning habitat. Indirect impacts may cause behavioral changes in aquatic organisms. Direct and indirect dredging-related impacts would be localized and temporary.

Below is a discussion of the environmental consequences to rare, threatened, and endangered aquatic organisms.

<u>Mussels</u>

Existing mussel species may experience direct mortality and short-term impacts because of the Proposed Project (dredging activities). Based on the recent mussel survey conducted within the project area June 6th through June 8th, 2023, one state-listed threatened species, the mucket, may be present

[66] Minnesota Department of Natural Resources. 2023d. Rare Species Guide: Crotalus horridus. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARADE02040, accessed on March 2, 2023.

within the dredging area. Based on historical data and the results of the recent survey, the project would have no impacts on federally listed species.

Fish

Studies have shown that fish move away from actively disturbed areas during dredging and return after completion (USACE 2015). Use of the habitat by fish after dredging depends on the resulting water quality in those locations. Dredged habitats may attract fish due to warmer water during winter months and suspended food.

Fish may be affected by the removal and burial of sessile or less mobile organisms on which the fish feed. The extent of this effect on fish would be determined by the extent and presence of the existing benthic communities in the area and fish that prey on them.

Dredging may impact fish through potential loss of spawning habitat, disruption of movement to the side channel, resuspension of sediments as barges are maneuvered, and possible entrainment in barge propellers.

Side channel habitat is considered an important spawning area for many fish species. Dredging the side channel for barge access at the site will likely reduce the overall habitat complexity (stream gradient, grain size distribution, cross-sectional depth, flows velocity) resulting in the area being potentially less suitable for fish spawning.

While dredging operations are occurring, fish movement to the side channel would be temporarily prevented. This is considered a temporary impact as fish will be able to resume movement to the side channel when dredging operations are not ongoing.

Barge maneuvering within the shallower and slower moving water of the side channel has the potential to reduce water quality by resuspension of sediments. Sediment resuspension has a negative consequence of water quality in terms of increased turbidity and additionally toxicity if the sediment has contaminants. Silts and clays are the primary contributors of turbidity from sediment resuspension during dredging operations. As discussed in Section 4.14, main channel sediments are primarily medium to coarse sands with only trace amounts of silts and clays. Sediments analyzed during the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were uncontaminated.

Entrainment in barge propellers is a concern for fish, particularly younger fish that may not be able to elicit an avoidance response[67]. Mature fish typically elicit an avoidance response to dredging activity and are less likely to be affected. The potential for entrainment would be greater during spawning season, therefore, limiting the dredging timeframe to avoid critical timeframes would be beneficial.

Habitat loss and alteration have been linked to the decline in population of numerous fish species within the Mississippi River, including the paddlefish. Human alteration of rivers has also been cited as one of the contributors to the decline of paddlefish populations in the Upper Mississippi River. Turbulence from

[67] United States Army Corps of Engineers. Literature Review (for studies conducted prior to 2008): Fish Behavior in Response to Dredging & Dredged Material Placement Activities (Contract No. W012P7-07-P-0079). 2009. Electronic document: https://www.spn.usace.army.mil/Portals/68/docs/Dredging/LMTS/S%20and%20S/FishBehaviorResponsetoDredging6-05-13.pdf, accessed on December 4, 2023.

barges has also been known to cause mortality of yolk-sac paddlefish larvae (UMRCC 2020). Based on the items listed above, the proposed dredging and barge operations could have an effect on the listed fish species, including paddlefish if present.

Terrestrial Organisms

Vegetation

Potential habitat for state-listed plant species (cattail sedge, Muskingum sedge, and gray's sedge) exists on-site within Wetland 3. Construction at the site will not impact Wetland 3 and therefore no direct impacts are anticipated for these protected species.

Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Ground disturbance from construction activities also presents a chance for aggressive and opportunistic invasive species to spread. The spread of invasive species can have a detrimental effect on native plant communities and wildlife that use those communities. Impacts associated with the spread of invasive species will be mitigated through the use of BMPs as described in Section 4.15.2.4.

Birds

The project is likely to have some temporary and long-term effects on the bird community due to construction activities (including tree cutting), increased traffic (road and near shore), and anthropogenic noise.

Tree cutting has the potential to reduce the available habitat and nesting sites for bird species. Forested areas along the river at the site, including Wetlands 2 and 3 with eastern cottonwood and silver maple documented as dominant vegetation, have the potential for suitable nesting sites for the bald eagle. A survey of active bald eagle nests should be performed within the vicinity of the site prior to site disturbance which would take place in the nesting season. Buffer guidelines are given in Section 4.15.2.4.

Anthropogenic noise caused by road noise has been linked with the avoidance of those areas by birds, including migratory birds (McClure et al. 2013). Impacts due to noise are limited as individuals are able to avoid noise at the site.

With the very large amount of habitat available in the general project area for the full variety of bird behaviors, impacts to the wading bird community are expected to be temporary and minimal.

Timber Rattlesnake

Forested bluffs along the Minnesota River at the project site could provide habitat for this species. Existing forested bluffs along the river will not be directly impacted by site construction. Infrastructure at the docking area near the river will be constructed in a previously disturbed area where an existing road/path is located. Therefore, habitat for the timber rattlesnake will not be directly impacted.

The three highest causes of mortality in Minnesota's timber rattlesnake populations are poaching, vehicle collisions, and habitat destruction (MNDNR Correspondence # MCE 2022-00127). Snakes,

including the timber rattlesnake, are known to use roads for thermoregulation. The chance of vehicle collisions could increase with the construction of this project.

Northern Long-Eared Bat

Potential summer foraging and roosting habitat for the NELB is present at the site. Wetlands 2 and 3, as well as forested uplands could provide habitat for the NELB. Construction at the site will not impact Wetlands 2 or 3. Tree clearing will be limited to 2.7 acres. Based on determination key completed in the USFWS IPaC system, this project "May Affect, Not Likely to Adversely Affect" the NLEB.

4.15.2.4 Preferred Alternative Mitigation Measures

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 134) prohibit the take of threatened or endangered species without a permit. Minnesota's Endangered Species Statute and associated Rules do not regulate federally-listed species. Prior to the take of a Federally protected species a USFWS permit to take will be approved. There are no critical habitats listed at the project site for the endangered species (USFWS 2023). The USFWS and MNDNR will be notified in the event of sight or contact with protected species.

Mitigation measures for aquatic species:

To prevent harm to spawning populations of paddlefish and other listed fish species, work within the water will be avoided from April to mid-June or further consultation and/or permitting with MN DNR will be required (MNDNR Correspondence # MCE 2022-00127).

To mitigate impacts from dredging operations, standard Best Management Practices (BMPs) will be implemented for dredging activities which includes:

- Dredging locations will be restricted to authorized locations
- Dredging will be restricted to daytime operations during summer months
- Dredging will abide by all applicable federal and/or state regulations which are designed to be protective of aquatic organisms

Mitigation measures for terrestrial species:

Erosion control BMPs will be used on newly exposed soils. These may include the use of wildlife friendly natural fiber, erosion control blankets, silt fencing, synthetic fiber-free hydro-mulch, and rock checks; specifications for BMPs and allowed materials would be included in construction contracts and specifications. Exposed areas of sediment would be stabilized as soon as possible and seeded with an approved BWSR seed mix to establish vegetative cover. Invasive plant species would be monitored and managed to ensure success of native species establishment.

Surveys of nesting bald eagles will be performed prior to on-land construction activities at the site. If active nests are found, no construction activities will be completed within a buffer of 660-feet from the nest (USFWS 2007).

Tree cutting will be minimized at the site to preserve habitat. Minimizing areas of disturbance, including natural vegetation and tree removals, will be limited to the extent possible. Approximately 2.7 acres of trees will be cut. Tree removal will be limited to the winter months, between November 1 - March 31.

Potential habitat for the timber rattlesnake may occur on site, however, direct impacts are not expected. Because this is a ground dwelling motile species, the potential does exist for vehicular impacts. To mitigate potential impacts to this species:

- Erosion control blankets will be limited to "bio-netting" or other natural netting types
- Working crews will be made aware of the potential to encounter the timber rattlesnake and instructed to not disturb
- DNR will be contacted if rattlesnakes are encountered at the site
- The Wabasha Port Authority's agreement with the operator of the facility will impose a no-wake restriction on barge operations in the channel

4.15.2.5 Alternate Site Assessment

A review of MNDNR's protected species database was performed for a one-mile radius around each of the five alternative project locations. Based on **Table 1 – Alternate Site Assessment** the five alternative sites include between 17 and 20 threatened, endangered, or species of special concern within a one-mile radius. The South Fitzgerald site has 17 listed species within a one-mile radius. The Izaak Walton Park and Wabasha Municipal Dock sites both have 18 total listed species, and the Mississippi Parkside Marina and Wabasha Marina have 20 listed species within a one-mile radius. For all alternate sites, additional coordination with the USFWS and MNDNR would be required to determine the potential impacts for all protected species and BMPs would be implemented for all activities as is the case for the preferred Carrels Site.

4.15.2.6. Alternate Scale/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to species within and adjacent to the Carrels Site. The expanded dredge area would disrupt fish and benthic macroinvertebrates along the channel bed. Additionally, if expanded material storage areas were implemented, this would cause additional impacts to wetlands and result in further tree removals. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts Additional 4 acres of tree clearing
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	Increased number of trips may disrupt bird and fish species

4.16 Historic Resources

4.16.1 Existing Conditions

A Phase IA archaeological literature review was prepared by Secretary of the Interior (SOI) standards qualified archaeologists at Bolton & Menk, Inc. (BMI) for the Proposed Project in August 2021.[68] This report reviewed prior land uses and disturbance within the Proposed Project area, documented previously recorded cultural resources pertinent to the project area, and made recommendations of proposed appropriate archaeological investigation fieldwork methodology. In a letter dated September 15, 2021, the State Historic Preservation Office (SHPO) concurred with the recommendations pertaining to proposed archaeological field methodology pursuant to its review of the Proposed Project under applicable State statues (MS 138.665-666 and 138.40).[69] The letter clarified that review pursuant to Section 106, if applicable, would need to be initiated by the lead federal agency, which was anticipated to be the US Army Corps of Engineers (Corps). Since the time of the Phase IA and SHPO review, the proposed ground disturbance limits associated with the project were further defined, limiting the recommended archaeological reconnaissance survey area.

On September 13, 2022, BMI SOI qualified archaeologists conducted a Phase I archaeological reconnaissance survey on the Wabasha Port Authority on privately owned land.[70] No new archaeological sites were identified in the course of the survey and additional testing within a previously recorded archaeological site boundary (21WB0076) outside of the ground disturbance limits failed to yield additional cultural materials. BMI recommended no further archaeological investigations for the project as proposed at the time of survey and recommended a finding of no adverse effect to historic properties. At the time of the archaeological survey, land included in the project area was in private ownership; as such State statutes pertinent to cultural resources did not apply at the time of survey. If the property becomes non-federal, public lands, then MS 138.665-666 and 138.40 will apply.

As part of the Corps permitting anticipated to be required for the project, it is anticipated that the Corps will consult with necessary cultural resource parties pursuant to Section 106 of the National Historic Preservation Act (NHPA). If the project receives federal funding through the Maritime Administration (MIRAD), however, the lead federal agency may be the US Department of Transportation (DOT). As the project moves toward the permitting stage it is anticipated these agencies will determine who will lead the Section 106 process.

4.16.2 No-Build Alternative Assessment

There are no identified consequences to historic properties under the No-Build Alternative.

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[68] August 2021. *Phase IA Archaeological Literature Review for the Wabasha Barge Facility Project, City of Wabasha, Wabasha County, Minnesota*. Prepared for the City of Wabasha. Bolton & Menk, Inc.

[69] September 15, 2021. Wabasha Barge Terminal, T111N, R10W, S30 NE, Wabasha, Wabasha County, SHPO Number 2021-2509. Letter from SHPO to Bolton & Menk, Inc.

[70] September 20, 2022. Phase I Archaeological Survey Letter Report for the Wabasha Barge Facility Project, SHPO No. 2021-2509. Letter report from Bolton & Menk, Inc. to Wabasha Port Authority.

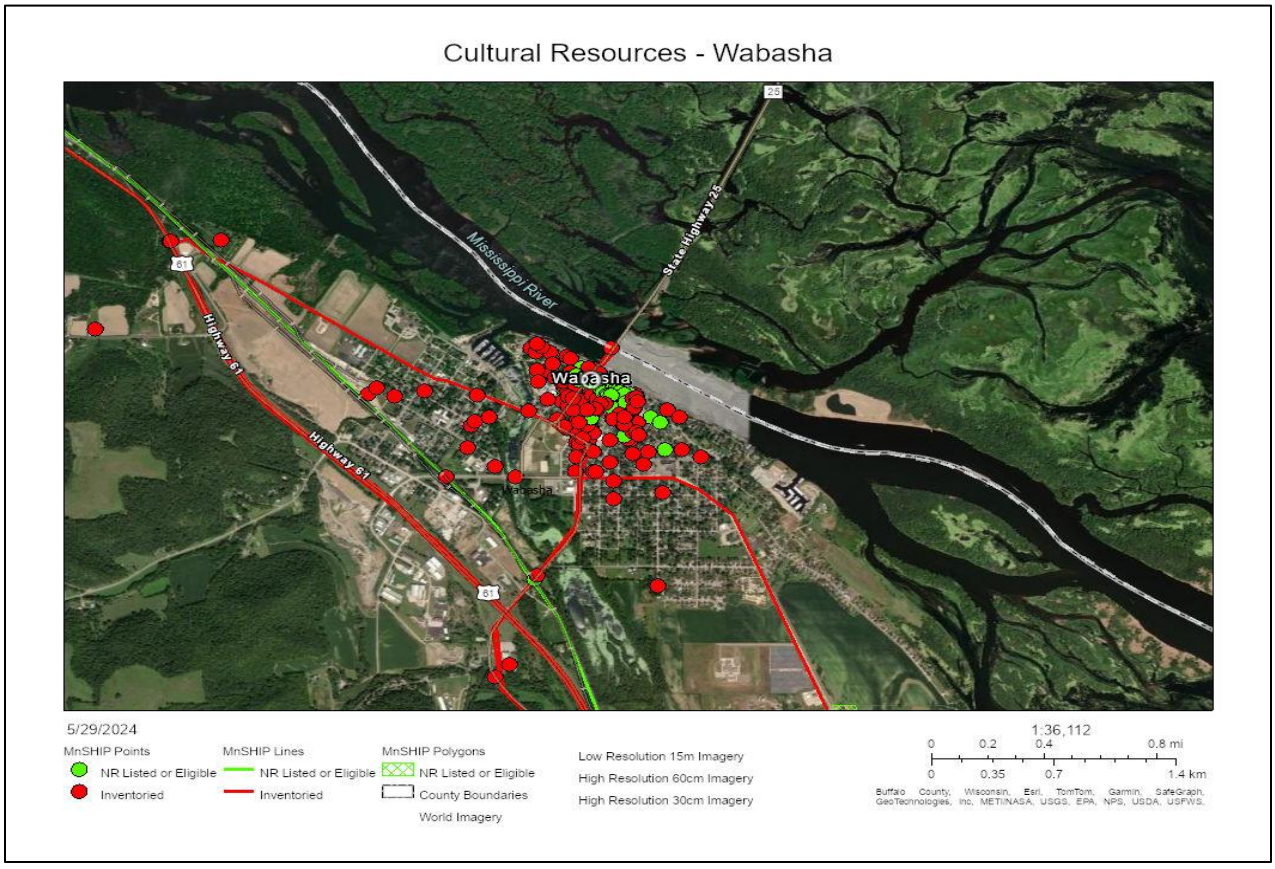
4.16.3 Preferred Alternative Assessment

There are no identified consequences to historic properties under the Preferred Alternative as long as the proposed ground disturbance limits are not expanded or there are no other substantial project modifications relative to the Preferred Alternative.

4.16.4 Preferred Alternative Mitigation Measures

There are no identified mitigation measures concerning historic or cultural properties.

Exhibit 12: MN SHPO Listed or Eligible Cultural Resources



4.16.5 Alternate Site Assessment

The MN SHPO has inventoried and identified downtown Wabasha as a Historic District. With the proximity of this district to the Mississippi Parkside Marina, the Wabasha Municipal Dock, and the Izaak Walton Park (see **Exhibit 12**), development of those areas for a barge facility may adversely affect the historic properties within and adjacent to the district.

4.17 Visual Resources

4.17.1 Existing Conditions

The existing visual aesthetic of the project site is primarily woodlands with an assortment of left behind construction equipment and materials (scrap metal and various vehicle parts) that were abandoned following the mining operation that previously occupied this site.

The northern and northwestern portions of the project site contain wetlands and provide views of the Mississippi River. The eastern, western, and southern borders of the project site provide views of the surrounding agricultural land and the forested hillside located west of US Highway 61.

4.17.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to scenic views, vistas, and visual effects. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same visual impacts as the preferred permanent alternative.

4.17.3 Preferred Alternative Assessment

The Proposed Project would alter the existing visual aesthetic of the project site with the introduction of trucks, barges, other industrial equipment, storage facilities, and the temporary introduction of construction vehicles and equipment. This altered visual aesthetic would be visible from neighboring parcels, roadways, the Mississippi River, and from the surrounding hillside.

4.17.4 Preferred Alternative Mitigation Measures

Barge facility operations will occur primarily during day-time working hours. Exterior lights, if installed at the facility, will be down-casting and set on timers to reduce wildlife and aesthetic impacts during non-operating hours.

Construction lighting will follow DNR's recommendation to use the MnDOT Approved Products for luminaries, which limits the Uplight rating to 0. Lighting will be turned off during the Mayfly hatch. Per the Audubon Society's Lights Out program, buildings and structures will be darkened during the bird migration from midnight until dawn March 15 - May 31 and August 15 - Oct 31.

4.17.5 Alternate Site Assessment

The three northern alternate sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area. An area with a high concentration of residential homes facing the river for views and recreational opportunities, recreational facilities such as parks, boat docks, beaches, and trails, and the traditional downtown commercial area. These more compacted uses bring in more dense populations of residents to live, work, and play in this area. The proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would be visually impactful.

The Wabasha Marina and South Fitzgerald sites are located south of the downtown area in a quiet low density residential area that is largely underdeveloped due to a lack of public streets and utilities in the area as well as shoreland and floodplain constraints. Constructing the proposed barge facility and

necessary heavy truck traffic in either of these two sites would be extremely visually impactful to these areas.

4.17.6 Alternate Design/Magnitude Assessment

Alternatives reviewed at the Carrels site, including the expanded dredging, material storage areas and alternate layouts, may impact visual quality by immediate neighbors and/or the hospital just east of the proposed location. These alternatives may require additional screening berms or specific operating hours to reduce impacts to adjacent properties.

If the smaller barge alternative were used, this would see an increase by two or three times of the number of barge trips required for hauling material. This may impact adjacent property owners and/or recreational users of the river system.

4.18 Dust and Odors

4.18.1 Existing Conditions

The existing project site is of vacant land use and there are no activities currently occurring on the project site that contribute to existing dust- or odor-related effects.

4.18.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to dust and odors. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same dust impacts as the preferred permanent alternative.

4.18.3 Preferred Alternative Assessment

The Proposed Project may generate minor dust-related impacts during construction and operation because of vehicles operating within the site along internal roads. Dust may also be generated from the offloading of materials, transportation, and loading operations. All dust-related impacts are anticipated to be minor and typical of an industrial facility located in a rural setting.

The Proposed Project is not anticipated to generate any nauseous odors during construction or operations.

4.18.4 Preferred Alternative Mitigation Measures

The operation of the Proposed Project is not anticipated to generate any adverse impacts or effects related to dust and odors. Any unanticipated dust- or odor-related effects resulting from the construction or operation of the Proposed Project will be fully mitigated through standard Best Management Practices.

Due to the potential for chloride containing dust suppressants to build up in the environment at levels that can be harmful to plants and wildlife, chloride containing dust suppressants will not be used.

4.18.5 Alternate Site Assessment

The three northern alternative sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area; a dense compact area. The

proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would add substantial dust and particulate matter to the area and would need to be mitigated.

The Wabasha Marina and South Fitzgerald sites are located in a low-density residential area that is largely underdeveloped. Constructing the proposed barge facility and necessary heavy truck traffic in either of these more rural sites could mitigate the dust for the immediate sites but careful mitigating dust standards would be necessary for the truck materials as they passed through the 85-95 homes along the haul routes to U.S. Highway 61.

4.19 Noise

4.19.1 Existing Conditions

Existing sources of noise in the vicinity of the Proposed Project include vehicle traffic on 5th Grant Boulevard West (County Road 59), noise from farming located on parcels adjacent to the project site, and an active freight railroad line located approximately 300 feet south of the project site.

The project site is bounded by the Mississippi River to the north and active agricultural land to the south, east, and west. Some of the agricultural lots adjacent to the project site contain houses, however the nearest lots to the project site that are primarily of residential use are located approximately 0.25 miles southeast of the project site. Additional noise receptors in the vicinity of the Proposed Project include: the Riverview Cemetery, approximately 250 feet west of the project site; the Gunderson St. Elizabeth Hospital, approximately 2,000 feet east of the project site; and a couple rural residents south of 5th Grant Blvd (County Road 59), approximately 1,600 and 1,750 feet south.

4.19.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to noise. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same noise impacts as the preferred permanent alternative.

4.19.3 Preferred Alternative Assessment

Operational Noise

The Proposed Project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday. Construction-related noise effects from the Proposed Project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal pad, access road, dock/mooring piles, barge staging winch system, loading truck scale, and scale house/field office building. See Table 9, “Typical Construction Equipment Noise Levels at 50 Feet,” for typical noise levels of construction equipment measured at 50 feet.

Table 9: Typical Construction Equipment Noise Levels at 50 Feet

Equipment	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA*)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

* Units of "A-weighted decibels"

Source: United States Environmental Protection Agency and Federal Highway Administration

Noise resulting from the Proposed Project's operational activities—occurring between 7:00am and 6:00pm, Monday through Friday—would be generated by the loading and unloading of barges and trucks, from trucks and barges used to transport commercial and/or dredged materials to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site, and internal site operations equipment (e.g., material haulers: hoppers, conveyors, etc.).

Traffic Noise

The Proposed Project would generate traffic-related noise from trucks hauling construction materials during the construction of the Proposed Project, trucks hauling dredged materials during the operation of the Proposed Project, and from employees using personal vehicles to travel to and from the project site. However, because the Proposed Project would include no more than ten parking spaces for employee and operator parking and would generate less than 250 vehicle trips during peak hour operations and less than 2,500 daily trips, traffic congestion and traffic-related noise are not anticipated to adversely affect surrounding areas or sensitive receptors. The Proposed Project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday.

4.19.4 Preferred Alternative Mitigation Measures

The Proposed Project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday.

The project operator agreement is consistent with the State of Minnesota rules (MN Statute 7030.0020), which define daytime hours as 7am to 10pm, and nighttime hours as 10pm to 7am. All construction and operational activities associated with the Proposed Project would conform with the project operator

agreement as well as the State of Minnesota noise standards listed in Table 10, "Noise Standards (MN Statute 7030.0040)."

Table 10: Noise Standards (MN Statute 7030.0040)

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1 (Residential)	60	65	50	55
2 (Commercial)	65	70	65	70
3 (Industrial)	75	80	75	80

*L_{10} is the sound level, expressed in dBA, which is exceeded 10% of the time for one hour

*L_{50} is the sound level, expressed in dBA, which is exceeded 50% of the time for one hour

4.19.5 Alternate Site Assessment

The three northern alternative sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area; a dense compact area. The proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would add substantial noise and safety issues to the area that would need to be carefully mitigated as well as possibly rerouting pedestrian and vehicle traffic and phasing out incapable uses in the project areas and along the haul routes.

The Wabasha Marina and South Fitzgerald sites are located in quiet low-density residential areas that are largely underdeveloped. Constructing the proposed barge facility and necessary heavy truck traffic in either of these more rural sites could be mitigated from in increased noise generated by the barge terminal use by limiting the working hours for the site but careful mitigating dust standards would be necessary for the truck materials as they passed through the 85-95 homes along the haul routes to U.S. Highway 61.

4.20 Transportation

4.20.1 Traffic

4.20.1.1 Existing Conditions

The barge terminal site is located along 5th Grant Boulevard W (also known as Wabasha County Road 59), a collector roadway with low traffic volumes. Access to the site is approximately a half mile south of the 5th Grant Boulevard intersection with Minnesota Trunk Highway (TH) 61, a principal arterial that provides regional mobility for passenger vehicle and freight trips along this segment of the Mississippi River. Operations to the barge terminal site would see trucks traveling to/from the site using 5th Grant Boulevard W to the north and accessing TH 61 at the 5th Grant Boulevard/County Road 59 intersection. There are two existing intersections that are along the truck route between the barge site and one of

the proposed onshore transfer sites: TH 61 and 5th Grant Boulevard W, and TH 61 and Shields Avenue. This onshore transfer site is being used in the EIS analysis as a reference to calculate distance and potential impacts in transportation routes and greenhouse gas emissions (see Section 4.8).

Existing (2022) average daily traffic volume (ADT) along 5th Grant Boulevard is approximately 525 vehicles, Highway 61 is 5,700 vehicles, and Shields Avenue has an ADT of 1,700 vehicles. Based on current levels of traffic, there are minimal approach delays for all roads within the Study Area. The intersections of TH 61 at 5th Grant Boulevard W/County Road 59 and TH 61 at Shields Avenue operate at level of service (LOS) A during the peak AM and PM hours. A LOS of A indicates free-flow conditions with minimal travel delays. Therefore, there are no mobility concerns at these intersections.

A 3-year (2019-2021) crash analysis was completed for the three intersections being investigated in the Study Area. Crash data was reviewed from the Minnesota Crash Mapping Analysis Tool. Intersection crash rates and critical rates were calculated, and all three intersections are operating within the normal range for similar intersections. Therefore, there are no safety concerns at these intersections.

4.20.1.2 No-Build Alternative Assessment

In a no-build scenario, traffic operations will remain the same, and all Study Area intersections will operate with acceptable LOS, and traffic volumes will remain unchanged. The 5th Grant Boulevard roadway will not see an increase in traffic, nor will construction of the Barge Terminal Site Driveway occur under the No-Build Alternative. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would use the same haul routes as outlined in the preferred permanent alternative. However, if the USACE were to use other alternative sites surrounding the City of Wabasha, the city would not be able to control the haul routes.

4.20.1.3 Preferred Alternative Assessment

With construction of the preferred alternative, the Barge Terminal Site will be constructed along 5th Grant Boulevard and a new driveway entrance to the site will be built. Dredged material would be offloaded from barges at the site. Material will then be loaded into trucks and taken offsite, including the site located along Shields Avenue. Traffic entering and exiting the barge terminal site will be minor, with an average of ten trucks in and ten trucks out per hour, between 8:00 AM and 4:00 PM Monday through Friday. There will be a minimal number of additional vehicles accessing the site, including employees and equipment service/delivery vehicles that will periodically visit the site. Due to the low volume of traffic that will be accessing the site, a left turn lane to access the site is not warranted and is not proposed to be constructed.

At each of the Study Area intersections, traffic operations are not expected to be adversely impacted by the Preferred Alternative. The low volume of vehicles being added per hour, with approximately 20 movements per intersection, will not result in measurable impacts to the current operations or safety conditions.

4.20.1.4 Preferred Alternative Mitigation Measures

Based upon the analysis completed and documented in the Traffic Impacts Memorandum, included in Appendix H, no transportation mitigation measures are recommended with the construction of the Preferred Alternative. The analysis of traffic safety and operations suggests that the intersections affected by the operations associated with the new barge terminal facility will continue to safely operate

with minimal delay and an acceptable LOS through at least 2042. It is recommended that the traffic volumes and operational LOS continue to be monitored into the future to ensure safety issues do not arise and traffic operations remain high.

4.20.1.5 Alternate Site Assessment

To develop the proposed barge terminal use at Izaak Walton Park, Maiden Avenue would have to be improved to allow for heavy truck traffic usage and all necessary measures would have to be developed to mitigate the increased traffic and safety concerns for the haul route crossing the emergency entrance/exit for St. Elizabeth's Hospital. Main Street and Bridge Avenue would have to be improved to allow for heavy truck traffic to use the Wabasha Municipal Dock as a barge terminal site.

To develop the proposed barge terminal use at the Mississippi Parkside Marina, Campbell Avenue would have to be improved to allow for heavy truck traffic usage and all necessary measures would have to be developed to mitigate the increased traffic and safety concerns for the haul route crossing the emergency entrance/exit for St. Elizabeth's Hospital.

Angelique Avenue is not constructed, and 12th Street is not a designated truck route. Both roadways would have to be substantially improved to allow for the heavy truck traffic necessary to develop a barge terminal at the Wabasha Marina.

Dugan Avenue is not constructed, and River Street and 12th Street are not designated truck routes. Both roadways would have to be substantially improved to allow for the heavy truck traffic necessary to develop a barge terminal at the Wabasha Marina.

For the three downtown sites, Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina, development of a barge terminal with an estimated 100 heavy truck trips in and out per day would be very impactful to the residents of Wabasha and the adjacent land uses.

For the two southern alternative sites, Wabasha Marina and South Fitzgerald, the development of a barge terminal site and its accompanying traffic increase of 100 heavy trucks per day in and out of the site would be very impactful to the 85-95 residents along the haul route, both in terms of increased noise and safety concerns.

4.20.2 Water-Based Transportation

4.20.2.1 Existing Conditions

Lower Pool 4 is a portion of the Upper Mississippi River and describes the region of the river between Lock and Dam 3, located near Hager City, Wisconsin and Lock and Dam 4, located near Alma, Wisconsin. It is an important part of the US Inland Navigation System. The river is an active commercial corridor, with major types of cargo on the river including grain, fertilizer, coal, and petroleum. Maintaining navigability through this reach of the Mississippi River is necessary to connect barge traffic moving between ports upstream as far as Minneapolis-Saint Paul, Minnesota, downstream as far as New Orleans, Louisiana, and to points east and west on the Illinois, Ohio and Missouri Rivers. USACE maintains the navigable river channel at dimensions suitable for commercial vessels drafting 9 feet. The depth of the channel is typically at least 12 feet with a minimum width of 300 feet.

If dredging activities were not to occur, the shipping channel would become unnavigable during periods of low water levels. This would have a large economic impact, as all river shipping would have to be shut down until the river is either high enough for boats to navigate or the river is dredged to allow boats to pass. It is the goal of the USACE to prevent these conditions from occurring.

The river is also heavily used for recreation purposes, with popular water activities including fishing, recreational boating, canoeing, and island beach use. Recreational use activities mostly occur on the river and within Refuge lands. The entire area of the river is very popular and entertains prominent levels of recreational use. This section of the river is part of the Upper Mississippi River National Wildlife and Fish Refuge, which provides high quality fish and wildlife habitat, which are further described in Sections 4.6.4 and 4.15.1.

4.20.2.2 No-Build Alternative Assessment

Sediment deposits, which are primarily deposited from the Chippewa River, gradually shrink the depth of the navigable channel. The USACE dredges and removes the sediment deposits from the river. In the no-build alternative, dredging activity will continue, but costs of this process will continue to increase. In recent years, costs have increased dramatically due to the increased distance the dredged material needs to be shipped along the river for long-term placement sites and the related transportation and logistics costs. The current system is not cost-effective and could lead to less dredging activity taking place and the potential for restricted water transportation during low water level events.

4.20.2.3 Preferred Alternative Assessment

With the Preferred Alternative, the proposed Barge Terminal Facility would be chosen by USACE as the onshore transfer site, as it is the best feasible location (per the DMMP) to offload barges on the Minnesota shore of Pool 4 of the Mississippi River. This would change the current process for removing sediment from trucking deposits from current sites adjacent to the river. As it provides a more convenient system for removing sediment for the USACE, this alternative would provide a minor beneficial effect to commercial navigation through its use in maintaining the navigation channel.

The proposed facility only has the capacity to serve a maximum of two barges per day. Based on this, there are no expected impacts to recreational activity in the area. There are no anticipated restrictions on recreational access to the channel or dock area imposed as a part of this project. Recreational users of the river are used to interacting with existing barge traffic on the river already. Barge operators and recreational users are required to conform with river navigation laws.

4.20.2.4 Preferred Alternative Mitigation Measures

As dredging activity is already being undertaken, there is very little that will change with water transportation and the dredging process beyond the change in the location of the onshore transfer site. As a result, no mitigation measures are proposed, other than potential signage to inform recreational watercraft of potential barge traffic in the vicinity of the project area. However, future operations should be monitored to ensure challenges do not arise.

There are no anticipated adverse economic or recreational impacts to Refuge users as a result of the proposed project. Mitigation measures for barge traffic include no wake and restricting "nose-in" maneuvering will reduce potential impacts to boaters, hunters, and anglers. In addition, there will only

be two hopper barges per day. All boaters and barge operators will continue to use standard river navigation practices in the area.

4.20.2.5 Alternate Site Assessment

No mitigation measures are proposed for the alternative sites as water-based transportation is already occurring on Lower Pool 4 based on the USACE directive to maintain a navigable channel. Alternative Sites 1-4 would be significantly impacted by the proposed project as all existing public and private marinas would be closed.

4.20.2.6. Alternate Design/Magnitude Assessment

While several of the alternatives reviewed for on-site development do not pose a significant issue for water-based recreation, the use of smaller barges making more trips may impact both recreational and commercial traffic in the vicinity of the Carrels Site. Smaller barges would require two to three times and many trips to move the same amount of material as a larger barge can move in one haul.

4.21 Cumulative Potential Effects

4.21.1 Geographic Scales and Timeframes

It is currently estimated that the port facility will operate for at least 20 years and continue to facilitate the transfer of materials, including but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract out the port operations and transportation of materials.

4.21.2 Future Projects

Future projects may include private land use developments in portions of the city planned for future development and redevelopment.

The current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021, lists the future land use of the project site as “Industrial.” The Comprehensive Plan discusses Wabasha’s unique location and opportunity for development of a commercial river port facility that would be used for commercial purposes.

Transportation projects are likely to be planned and programmed for construction may involve safety, capacity, pavement preservation, and active transportation modes (ped/bike). These projects will be conducted by MnDOT, Wabasha County, or the city.

The City has received no development proposals or plans for the remaining or adjacent properties from the existing landowner or any other party. Due to the shoreland overlay zone standards and other permit mitigation requirements for any future development, the existing property owners cannot develop any unmitigable uses within their parcels.

There are only three permitted uses within the Carrells site Industrial zone that could proceed without additional review from the City of Wabasha and comments from the MNDNR. These uses are *Industrial Service* which is primarily involved in the repair and servicing of machinery, equipment, and some sales,

Industrial warehousing distribution or storage, and *Light Industrial* which includes the processing or assembly of products with relatively clean and nuisance-free products. If any of these uses require the use of more than 60 heavy trucks per day to operate the use, a conditional use permit will be required, triggering additional oversight from the city and the MNDNR will require a public hearing.

4.21.3 Cumulative Effects

Impacts include changes in land cover type (e.g., increased impervious and vegetation/habitat loss), impacts to wetlands, disruption of aquatic and terrestrial species habitat, slight increases in traffic volumes, and adding side channel barge access to the project site. While not anticipated to involve significant social, economic, or environmental effects, all future projects would be subject to applicable local, state, and federal environmental reviews and permitting.

The construction and operation of the Wabasha Barge Facility, as outlined in this FEIS, has the potential to contribute to cumulative effects in the project area. While this FEIS primarily assesses the direct impacts of the Proposed Project, it is essential to consider its interactions with other past, present, and reasonably foreseeable actions in the region.

Cumulative effects may result from the combined impacts of the Proposed Project with other local developments, such as transportation infrastructure improvements, nearby land use changes, or other industrial activities. These effects could manifest in numerous ways, including alterations to traffic patterns, potential changes in air and water quality, habitat fragmentation, and socio-economic dynamics within the community.

While there are no known projects immediately adjacent to the Proposed Project, ongoing monitoring, consultation with stakeholders, and adaptive management strategies will be incorporated to comprehensively assess and address these cumulative impacts over time.

4.22 Other Potential Environmental Effects

No other potential environmental effects were identified in the development of this FEIS document.

5. MITIGATION MEASURES

Table 11: Mitigation Measures

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
Property and Right of Way Needs	Purchase of 8.2-acre Proposed Barge Facility site.	Prior to project construction, the City of Wabasha will collaborate with the current landowner, who is identified as a willing seller, to determine fair market value for purchase of the project site. While this FEIS addresses the entirety of the two parcels, the city only intends to purchase the 8.2-acre portion that is necessary for the Proposed Barge Facility. The remaining areas would remain under private ownership.
Land Use, Plans, Zoning, and Special Districts/Overlays	Impact to existing zoning and overlay zones.	Upon completion and approval of the EIS, the city will initiate a zoning amendment to change the parcels from "R1" to "I" in accordance with the city's future land use plans. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone. Upon completion and approval of the EIS, the city will initiate a traffic generator conditional use permit application to review the haul route and anticipated heavy truck traffic trips generated by the barge terminal use. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone.
Parks, Open Space, and Recreational Facilities	Impact to aquatic recreational users from an increase in barge traffic to and from the Proposed Project site.	Appropriate road and waterway signage will identify this area as increased truck and barge traffic, respectively. Additionally, the contracted operator of the facility will be required to comply with City of Wabasha noise ordinances, and to confine operations to set days and times during the regular work week. No project activities will occur on fee-title land owned by USFWS. While there are no anticipated direct impacts to USFWS lands, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property. This information will be clearly articulated to the contracted facility construction personnel and operators.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
		During the lifespan of the barge facility, the city will routinely audit operations through an impact assessment to identify future additional mitigation requirements and recommendations. The proposed facility at the Carrels Site is currently in private ownership without public river access. The proposed project's Operations Agreement will outline the maximum capacity to serve only two barges per day (one at a time) and require idle/no-wake speeds when entering the channel. There are no anticipated restrictions on recreational access to the channel imposed as a part of this project. Barge operators and recreational users are required to conform with river navigation laws.
Soils and Topography	The Proposed Project will include dredging an access channel from the main Mississippi River navigation channel as well as areas immediately adjacent to the shoreline where the proposed barge dock will be constructed. The current estimate is 37,000 CY of bottom sediment removed to facilitate barge access to the project site. This sediment will be used as fill – and augmented as needed – on the project site to raise access road and facility locations elevations outside of the 100-year floodplain.	All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from MPCA and MNDNR for grading and erosion control. MNDNR and/or BWSR-approved seed mixes and wildlife friendly erosion control mesh will be used to ensure soil stabilization. Additionally, a "No-Rise" review and certificate will be requested from FEMA to identify and facilitate any additional floodplain mitigation requirements. The project proposer and contracted companies shall comply with all permits and approvals and include mitigation and monitoring requirements as needed.
Floodplains	The site will be regraded and fill will be added within the floodplain for the Preferred Alternative construction. Stockpiled dredge material will be placed on the terminal docking site above the 100-year flood elevation. Impacts to flood elevations are described in the attached report "Preliminary No Rise Certification: USACE Dredge Material Management Plan – Wabasha Barge Facility"	Bank armoring along the barge dock area is proposed to reduce erosion potential during high flows. Permanent structural components are proposed along the river side of the barge facility to prevent bank erosion and sediment transport downstream. Dredging activities within the side channel to maintain the barge access lane are anticipated to decrease flood risk by increasing conveyance and flood volume storage within the floodplain.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	(Appendix C). The report details no appreciable impact to flood elevations or velocity due to the proposed barge facility design, and a standard No Rise certification is included.	
Surface Water	The construction of the Preferred Alternative includes tree clearing and ground disturbance, leading to increased likelihood for sediment to be transported to downstream surface waters. With cumulative watershed impacts, turbidity may be added to the list of items contributing to the Mississippi River impairment considerations. Furthermore, the site operator's equipment will require fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). The use of these chemicals increases the likelihood of a spill on site that may flow to surface waters.	The EPA-approved impairments for the Mississippi River are considered non-construction related and all project activities will comply with the NPDES construction stormwater permit. Bank armoring along the proposed transfer site is proposed to reduce erosion potential during high flows and reduce the likelihood of additional impairment to the Mississippi River and adjacent wetland areas. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the NPDES Permit to reduce or eliminate the potential for increased turbidity or other surface water impacts. Stormwater infiltration practices will filter runoff from the project site to offset sediment loading and treat runoff prior to discharging to surface waters. An Industrial Stormwater permit may be necessary, and all site construction activities and operations will comply with these additional permit requirements.
Wetlands	The Preferred Alternative would permanently impact one wetland (Wetland 1). Proposed impacts to Wetland 1 are due to filling a portion of the wetland for grading and construction of the barge facility. Wetland 1 is adjacent to the proposed barge/dock and off-loading area, which contains the material hauler, hopper, scale, and conveyor system. A portion of that wetland will not be filled, however, as a conservative estimate the entire wetland is considered permanently impacted. Permanent proposed impacts to Wetland 1 are 0.40 acres.	Mitigation efforts will be completed in accordance with local, state and federal regulations. Mitigation requirements will be met prior to construction activities impacting wetlands or streams at the site. The city will work closely with local (LGU), state (MNBWSR, MNDNR, and MPCA), and federal (USACE) agency staff to identify requirements and ensure all potential concerns are addressed. Permit applications and plan sets will be submitted to the appropriate agencies for review. The preferred method of mitigation will be to purchase credits from a mitigation bank within the same BSA and major watershed as the site. It is anticipated that mitigation for the wetland impacts will occur at a minimum of a 2:1 ratio (i.e., 0.80 acres of wetland replacement for the 0.40 acres of impact) through a purchase of wetland credits within BSA 7.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
Stormwater	The preferred design adds 3.3 acres of impervious surface to the site by providing an access road and barge docking station with associated infrastructure, increasing discharge rates, runoff volumes, sediment loading and increasing the flashiness of flows within the grading footprint, which discharges directly to the Mississippi River.	Ditches will be constructed around the perimeter of the active operations area to collect, store, and treat runoff prior to discharging to the Mississippi River. Areas not part of the facility operations will remain in natural or historically disturbed condition. An infiltration basin is proposed to mitigate impacts to stormwater runoff caused by the proposed alternative, catching stormwater from previously disturbed areas that are currently not receiving treatment. The design of the infiltration basin is described in the document "USACE Dredge Material Management Plan – Preliminary Drainage Memo" (Appendix E). The water quality volume would infiltrate and receive treatment prior to entering the Mississippi River via shallow subsurface flow. Offsite discharge rates are not increased after mitigation and the majority of stormwater flow throughout the year is treated prior to discharge. Sediment is captured via infiltration pretreatment in the form of rock check dams, mitigating potential sediment load increases due to impervious surface construction. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the MPCA NPDES Permit. The EPA-approved impairments for the Mississippi River are considered non-construction related and do not require any additional best management practices or plan review for compliance with the NPDES Construction Stormwater Permit.
Resources, Habitats, and Vegetation	The Wabasha Barge Facility project is expected to directly impact previously disturbed upland portions of the site, Wetland 1, and the Mississippi River. Approximately 2.7 acres of trees will be cleared for site grading. Increased traffic from hauling trucks can pose a hazard to wildlife attempting to cross the	Preventing the spread of invasive species during construction and operation of the barge terminal facility will occur as part of BMPs measures that will be put in place to control and appropriately manage vegetation and invasive species. Disturbed areas on the site will primarily be replaced with gravel surfaces (access road, loading and stockpile areas). Reseeding and landscaping materials will be native seed mixes which are free of invasive plants or plant parts.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	site. Increased noise at the site may cause wildlife sensitive to noise to relocate or avoid the site. Impacts to Wetland 1 are unlikely to cause loss of rare or protected species as this wetland represents a smaller and lower quality wetland habitat than Wetlands 2 or 3. Wetland 1 is also likely to be incidental in nature, caused by historic mining operations at the site. Animal species would no longer be able to use this wetland and would likely relocate to Wetland 2 or Wetland 3. Impacts to vegetation within the MBS site of Moderate Biodiversity Significance are expected to be minimal and limited to construction of the barge facility infrastructure in uplands and Wetland 1.	Tree removals will be limited to winter timelines to reduce potential impact to bat and bird species. Based on direction from MNDNR (Correspondence # MCE 2022-00127) the following Best Management Practices (BMPs) will be implemented to minimize impacts to the MBS Site of Moderate Diversity, including the minimization of impacts to state-listed plant species of special concern. All equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species. Additional BMPs to mitigate impacts to resources, habitats, and vegetation include: • Vehicular disturbance will be minimized at the site. Vehicles will be restricted to approved areas. • Necessary equipment and supplies will be stored/stockpiled in designated areas. • Dredge material will only be placed in designated upland areas. • Construction will be conducted during the winter months when the ground is frozen. • Equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species. • To the extent possible, operations will occur within already-disturbed areas. • Disturbed areas will be revegetated with native species suitable to the local habitat as soon as possible post-construction. • Weed-free seed mixes, topsoils, and mulches will be used for revegetation. • To prevent the release of plastic fibers to the aquatic resources, the use of erosion control blankets will be limited to bio-netting or natural netting that do not contain plastic components. Hydro-mulch products will also be limited to plastic-free types.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
Rare, Threatened, and Endangered Species and Ecosystems	Aquatic Organisms: Existing mussel species may experience direct mortality and short-term impacts because of the Proposed Project (dredging activities). Based on the recent mussel survey conducted within the project area June 6th through June 8th, 2023, one state-listed threatened species, the mucket, may be present within the dredging area. Based on historical data and the results of the recent survey, the project would have no impacts on federally listed species. Fish may be affected by the removal and burial of sessile or less mobile organisms on which the fish feed. The extent of this effect on fish would be determined by the extent and presence of the existing benthic communities in the area and fish that prey on them. Habitat loss and alteration have been linked to the decline in population of numerous fish species within the Mississippi River, including the paddlefish. Human alteration of rivers has also been cited as one of the contributors to the decline of paddlefish populations in the Upper Mississippi River. Turbulence from barges has also been known to cause mortality of yolk-sac paddlefish larvae (UMRCC 2020). Based on the items listed above, the proposed dredging and barge	Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 134) prohibit the take of threatened or endangered species without a permit. Prior to the take of a protected species, a USFWS permit to take will be approved. There are no critical habitats listed at the project site for the endangered species (USFWS 2023). The USFWS and MNDNR will be notified in the event of sighting or contact with protected species. Aquatic Organisms: Additional coordination with MNDNR will occur in order to determine the potential for impacts and/or takings of state-protected mussel species in the Mississippi River dredge areas. MNDNR is expected to provide guidance on potential mitigation measures associated with species that may be impacted by site activities. To prevent harm to spawning populations of paddlefish and other listed fish species, work within the water will be avoided from April to mid-June or further consultation and/or permitting with MN DNR will be required (MNDNR Correspondence # MCE 2022-00127). To mitigate impacts from dredging operations, standard Best Management Practices (BMPs) will be implemented for dredging activities which includes: • Dredging locations will be restricted to authorized locations • Dredging will be restricted to daytime operations during summer months • Dredging will abide by all applicable federal and/or state regulations which are designed to be protective of aquatic organisms Terrestrial Organisms:

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	operations could have an effect on the listed fish species, including paddlefish if present. Terrestrial Organisms: Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Ground disturbance from construction activities also presents a chance for aggressive and opportunistic invasive species to spread. The spread of invasive species can have a detrimental effect on native plant communities and wildlife that use those communities. Impacts associated with the spread of invasive species will be mitigated through the use of BMPs as described in Section 4.15.2.4. Tree cutting has the potential to reduce the available habitat and nesting sites for bird species. Forested areas along the river at the site, including Wetlands 2 and 3 with eastern cottonwood and silver maple documented as dominant vegetation, have the potential for suitable nesting sites for the bald eagle. A survey of active bald eagle nests should be performed within the vicinity of the site prior to site disturbance which would take place in the nesting season. Buffer guidelines are given in Section 4.15.2.4. With the very large amount of habitat available in the general project area for the	Erosion control BMPs will be used on newly exposed soils. These may include the use of wildlife friendly natural fiber, erosion control blankets, silt fencing, synthetic fiber-free hydro-mulch, and rock checks; specifications for BMPs and allowed materials would be included in construction contracts and specifications. Exposed areas of sediment would be stabilized as soon as possible and seeded with an approved BWSR seed mix to establish vegetative cover. Invasive plant species would be monitored and managed to ensure success of native species establishment. Surveys of nesting bald eagles will be performed prior to on-land construction activities at the site. If active nests are found, no construction activities will be completed within a buffer of 660-feet from the nest (USFWS 2007). Tree cutting will be minimized at the site to preserve habitat. Minimizing areas of disturbance, including natural vegetation and tree removals, will be limited to the extent possible. Approximately 2.7 acres of trees will be cut. Tree removal will be limited to the winter months, between November 1 and March 31. Potential habitat for the timber rattlesnake may occur on site, however, direct impacts are not expected. Because this is a ground dwelling motile species, the potential does exist for vehicular impacts. To mitigate potential impacts to this species: • Erosion control blankets will be limited to “bio-netting” or other natural netting types • Working crews will be made aware of the potential to encounter the timber rattlesnake and instructed to not disturb • DNR will be contacted if rattlesnakes are encountered at the site

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	full variety of bird behaviors, impacts to the wading bird community are expected to be temporary and minimal. Potential summer foraging and roosting habitat for the NELB is present at the site. Wetlands 2 and 3, as well as forested uplands could provide habitat for the NELB. Construction at the site will not impact Wetlands 2 or 3. Tree clearing will be limited to 2.7 acres.	
Visual Resources	The Proposed Project would alter the existing visual aesthetic of the project site with the introduction of trucks, barges, other industrial equipment, storage facilities, and the temporary introduction of construction vehicles and equipment. This altered visual aesthetic would be visible from neighboring parcels, roadways, the Mississippi River, and from the surrounding hillside.	Barge facility operations will occur primarily during day-time working hours. Exterior lights, if installed at the facility, will be down-casting and set on timers to reduce wildlife and aesthetic impacts during non-operating hours.
Noise	Construction-related noise effects from the Proposed Project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal pad, access road, dock/mooring piles, barge staging winch system, loading truck scale, and scale house/field office building. Noise resulting from the Proposed Project's operational activities—occurring between	The Proposed Project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday. The project operator agreement is consistent with the State of Minnesota rules (MN Statute 7030.0020), which define daytime hours as 7am to 10pm, and nighttime hours as 10pm to 7am. All construction and operational activities associated with the Proposed Project would conform with the project operator agreement as well as the State of Minnesota noise standards.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	7:00am and 6:00pm, Monday through Friday—would be generated by the loading and unloading of barges and trucks, from trucks and barges used to transport commercial and/or dredged materials to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site, and internal site operations equipment (e.g., material haulers: hoppers, conveyors, etc.). The Proposed Project would generate traffic-related noise from trucks hauling construction materials during the construction of the Proposed Project, trucks hauling dredged materials during the operation of the Proposed Project, and from employees using personal vehicles to travel to and from the project site. However, because the Proposed Project would include no more than ten parking spaces for employee and operator parking and would generate less than 250 vehicle trips during peak hour operations and less than 2,500 daily trips, traffic congestion and traffic-related noise are not anticipated to adversely affect surrounding areas or sensitive receptors.	
All Other Factors	Minimal impact	Follow local, state, and federal permit and approval requirements.

6. PROJECT COORDINATION

6.1 Federal Agencies

Coordination with Federal Agencies includes the following:

- MARAD: Funding and Federal Environmental Assessment
- USACE: No-Rise certification; river and wetland impacts; 217(d) Agreement (relative but beyond the scope of this review)
- USFWS: Threatened and endangered species and critical habitat areas; Wildlife Refuge areas.

All permits and approvals will be secured prior to construction activities.

With anticipated federal funding applied to the project, additional environmental review documentation will meet any additional federal requirements.

No materials relevant to CFR Title 46, Chapter I, and/or Subchapters D or O are anticipated to be moved through the proposed facility. Therefore, no U.S. Coast Guard coordination is currently required.

6.2 State Agencies and Organizations

Coordination with State Agencies and Organizations includes the following:

- MDH: Unknown well sealing or repair
- MNDNR: Rare, threatened and endangered species and critical habitats; Floodplain and water resources
- MNDOT: Funding; Transportation
- MPCA: Industrial Stormwater permitting
- SHPO: Review of historic resources

All permits and approvals will be secured prior to construction activities.

6.3 Local Agencies and Organizations

Coordination with Local Agencies and Organizations includes the following:

- Wabasha County: Transportation; Water resources
- Izaak Walton League: Environmental concerns

All permits and approvals and continued coordination efforts will occur prior to construction activities.

6.4 Other Project Coordination

Other project coordination includes the following:

- Tribal Organizations: Section 106 review

Continued coordination efforts will occur prior to construction activities.

7. UNRESOLVED OR CONTROVERSIAL ISSUES

7.1 Unresolved or Controversial Issues

All known unresolved or controversial issues have been addressed in the previous sections or will be addressed during the approvals and permits phase of the proposed project.

APPENDIX A

Figures

Figure 1: Regional Location

Goodhue County
Lake Pepin
Lake City
Mississippi River
Wabasha
Robinson Lake
Wabasha County
Pool 5
Plainview
Elba
Altura
Wi
Co

Legend

Project Location

0 3 Miles

Source: MnDNR, MnDOT, NLCD, Wabasha County

Map Location

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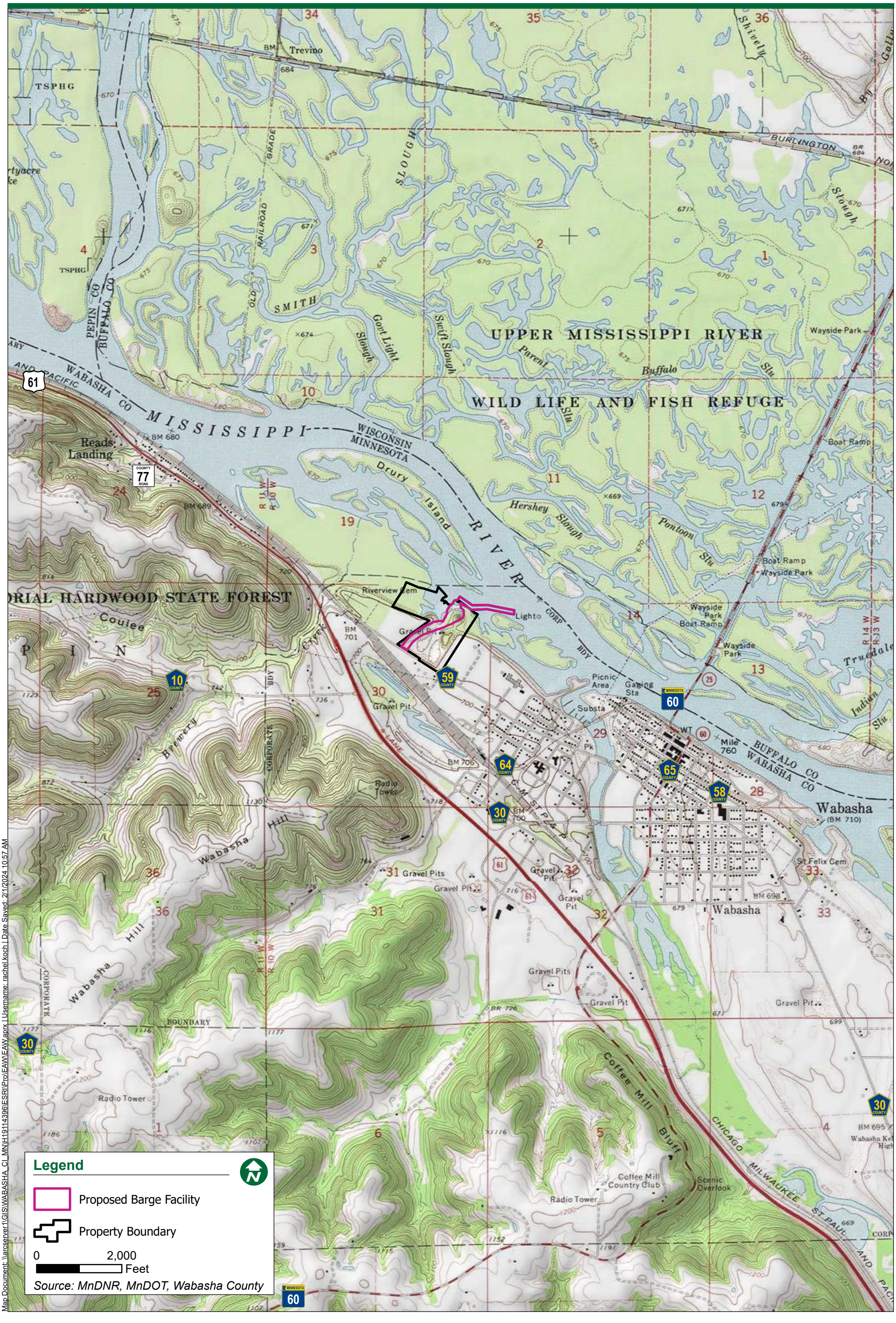

Legend

- Proposed Barge Facility
- Property Boundary

0 2,000 Feet

Source: MnDNR, MnDOT, Wabasha County

Map Document: \\arcserver1\GIS\WABASHA_CI_MN\H19114396\ESRI\Pro\EAW\EAW.aprx | Username: rachel.koch | Date Saved: 2/1/2024 10:57 AM

Mississippi River
Wabasha
Highway 61
County Road 10
3rd Street West
4th Street West
5th Grant Boulevard West
6th Street West
7th Street West
9th Street West
Grant Boulevard West
Rocque Avenue
Phelps Avenue
Campbell Avenue
Gambia Avenue
Cratte Avenue
Shields Avenue
Hiawatha Drive West
Bruegger Valley Road

Legend

- Property Boundary
- Proposed Barge Facility
- Municipal Boundary
- Parcels

0 500 Feet

Source: MnDNR, MnDOT, Wabasha County

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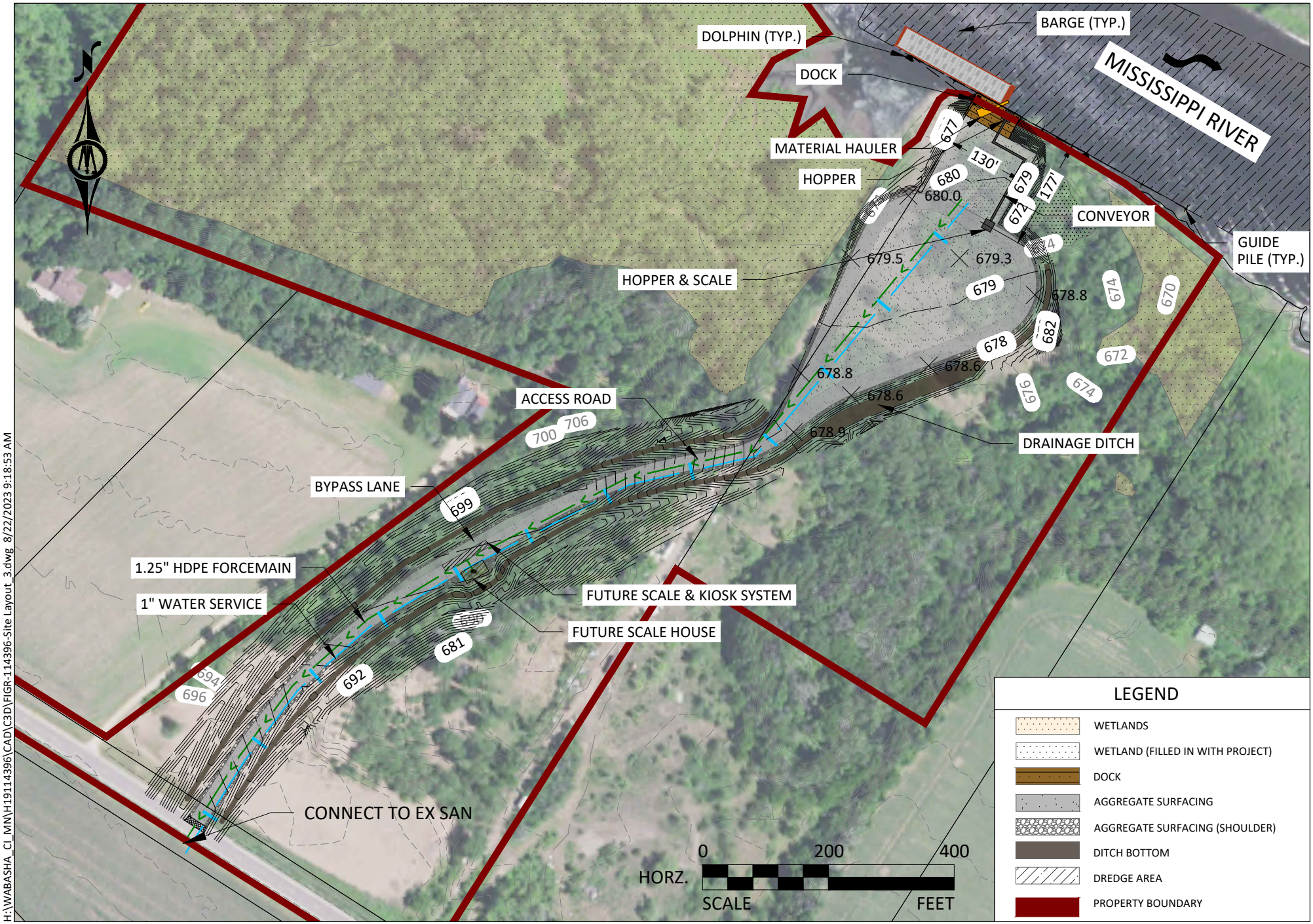
Figure 4: Site Layout

August 2024



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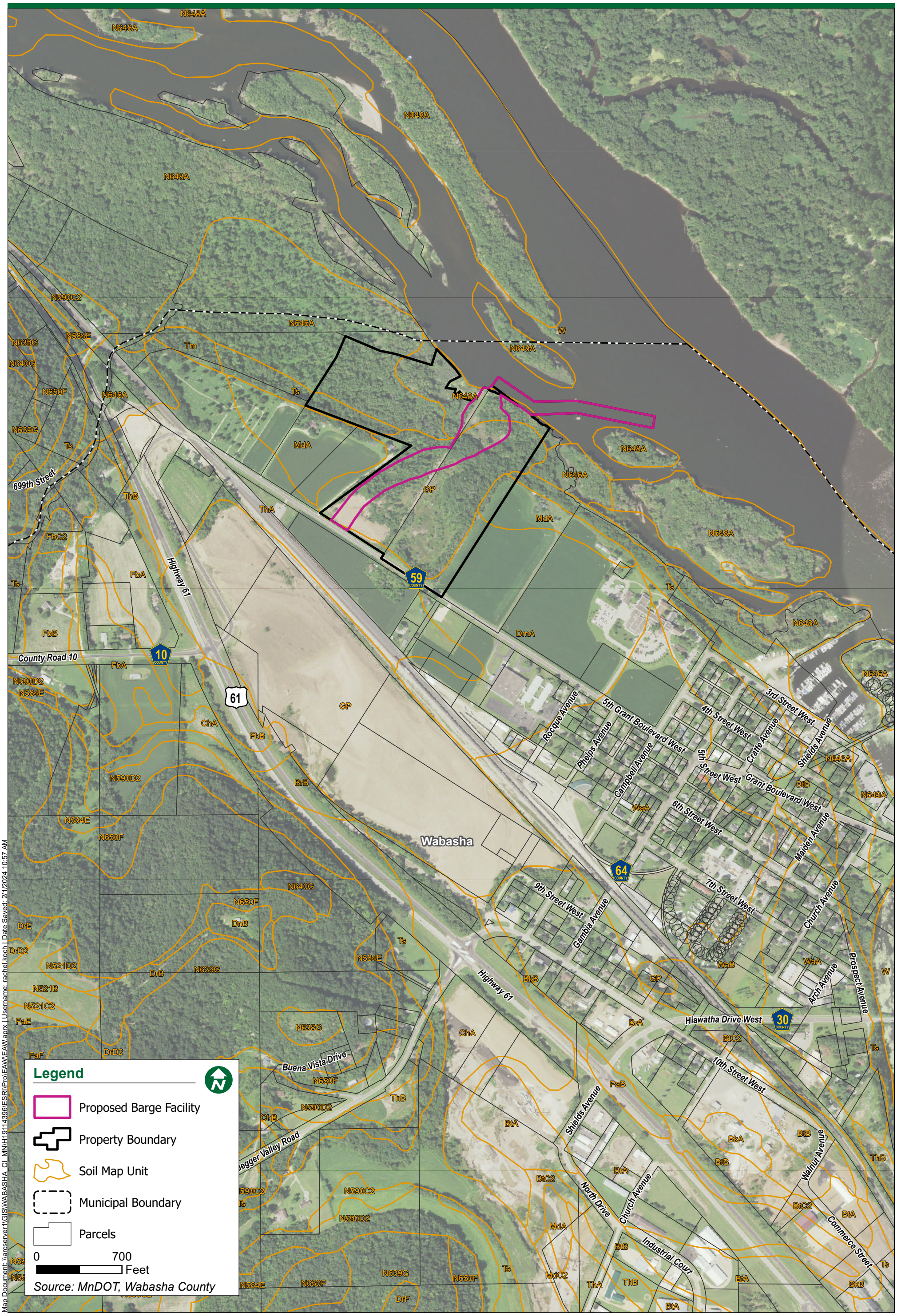

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Wabasha

ID: 00162655 CWOC
ID: 00195286 CWOC
ID: 00563638 CECR
ID: 00634212 CTCW
ID: 00127887 MTPL
ID: 00269368
ID: 00505411 MTPL
ID: 00127857 CWOC
ID: 00250077
ID: 00571143 CWEC
ID: 00127872 QBUA
ID: 00408764 QBAA
ID: 00524595 QBUA
ID: 00536097 CTCW
ID: 00505405 CWOC
ID: 00174769 MTPL
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ID: 00474565 QWTA
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ID: 00266605
ID: 00542404 CWOC
ID: 00408296 CWOC
ID: 00579365 CWOC
ID: 00179138 CWOC
ID: 00120195 QWTA
ID: 00127863 QWTA
ID: 00268903 QPDC
ID: 00579360 CTLR
ID: 00250772 MTPL
ID: 00150310 QWOC
ID: 00634213 CTCW
ID: 00474575 CWOC
ID: 00244643 CTLR
ID: 00218869 CTCW

Legend

- Proposed Barge Facility
- Property Boundary
- Domestic Well
- Public Supply/Non-community-transient Well
- Public Supply/Non-community Well
- Unlocated Wells
- Depth to Bedrock
- Wellhead Protection Areas
- Drinking Water Supply Management Areas
- Carbonate and Sandstone
- Municipal Boundary

0 2,000 Feet

Source: MnDNR, MnDOT, Minn Geologic Atlas, Wabasha County

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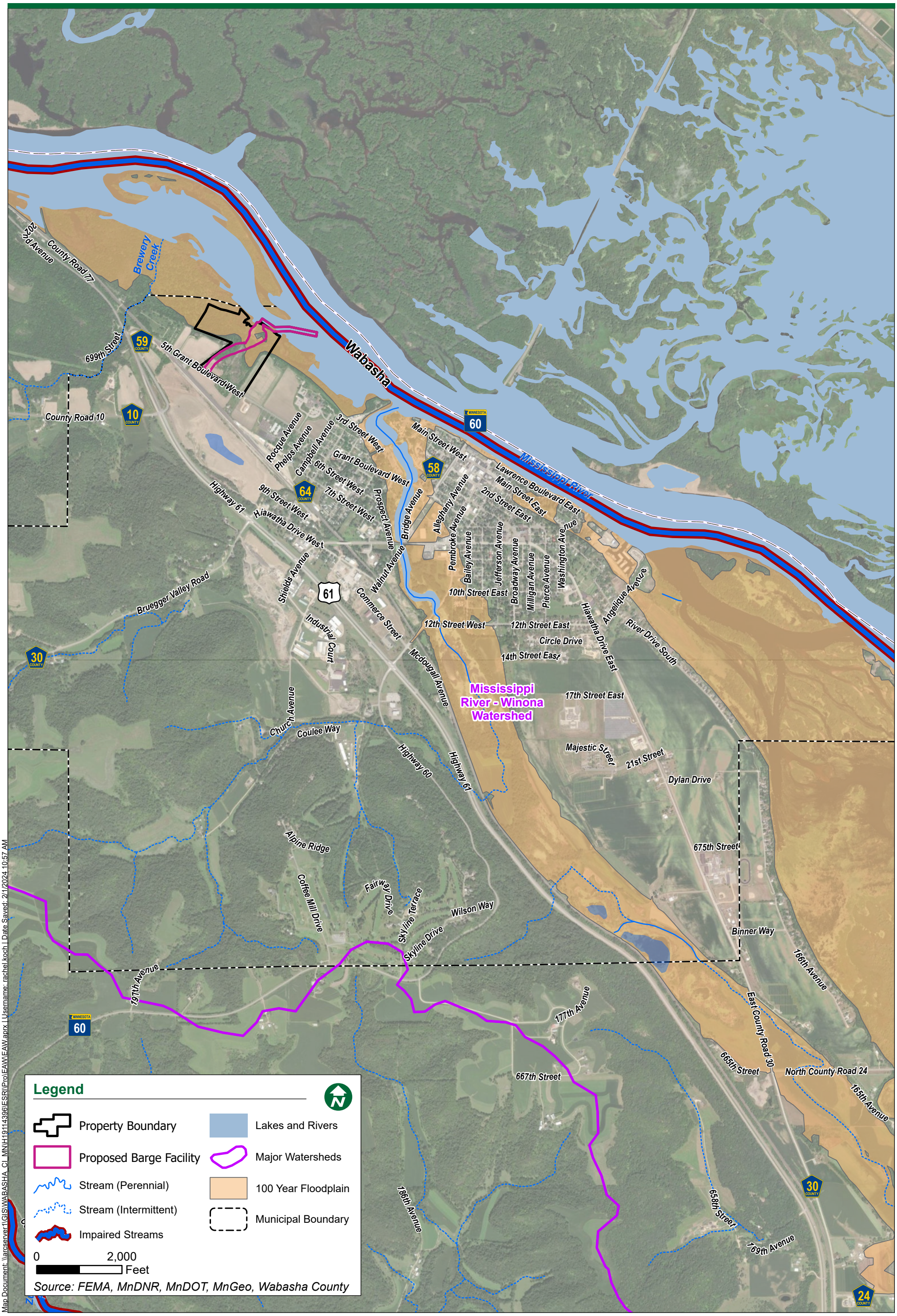

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Wetland 3
Type 1
14.83 ac

Wetland 1
Type 1
0.4 ac

Wetland 2
Type 1
0.92 ac

Wetland 4
Type 1
0.02 ac

5th Grant Boulevard West

5th Grant Boulevard West

59 COUNTY

Highway 61

61

Rocque Avenue

Phelps Avenue

6th Street West

4th Street West

Gambia Avenue

Campbell Avenue

7th Street West

64 COUNTY

Phelps Avenue

9th Street West

Hiawatha Drive West

30 COUNTY

Legend

- Proposed Barge Facility
- Property Boundary
- Municipal Boundary
- Delineated Wetland
- NWI Wetland
- Mississippi River

0 400 Feet

Source: MnDNR, MnDOT, Wabasha County

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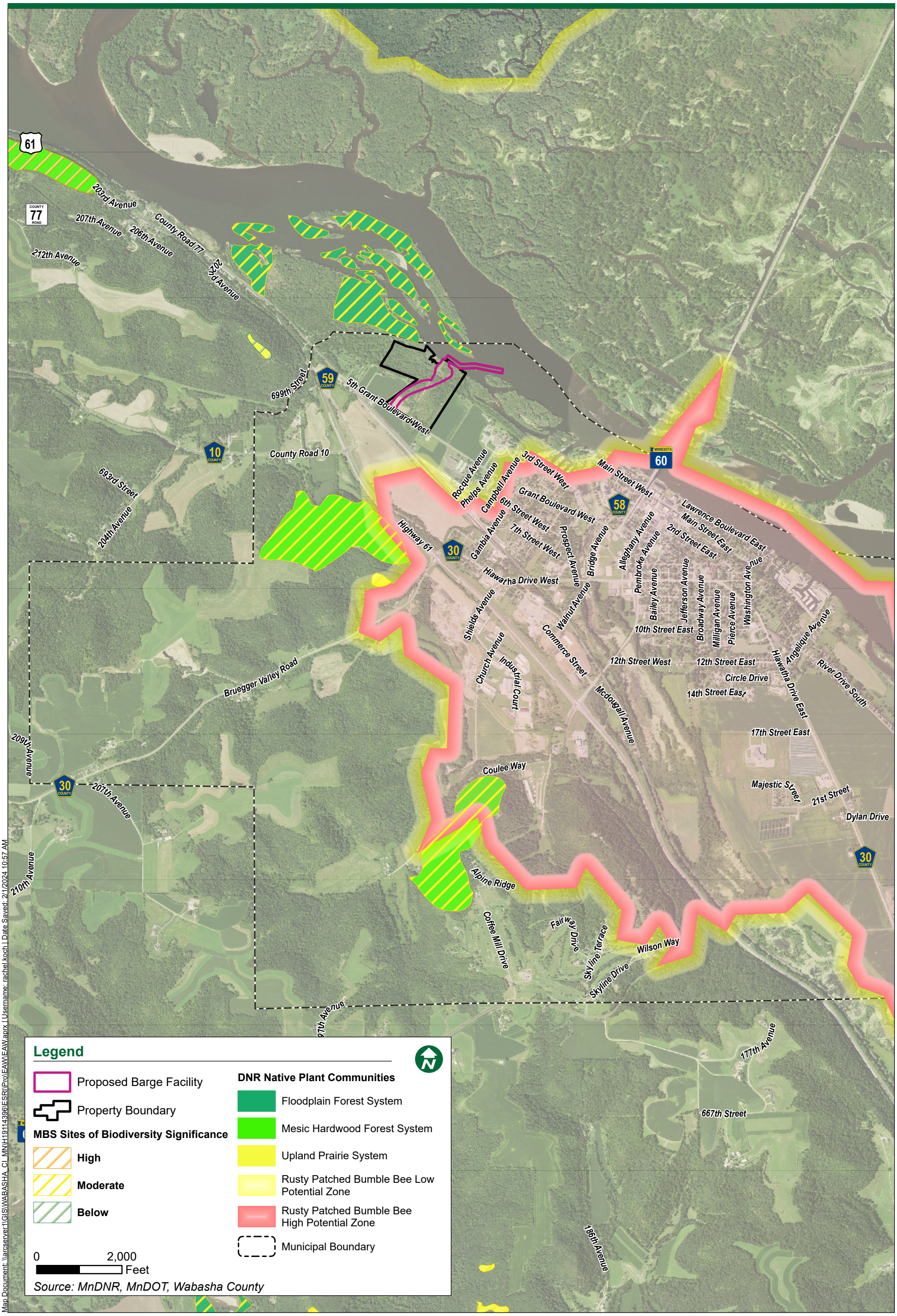

Legend

- Proposed Barge Facility
- Property Boundary

MBS Sites of Biodiversity Significance

- **High**
- **Moderate**
- **Below**

DNR Native Plant Communities

- Floodplain Forest System
- Mesic Hardwood Forest System
- Upland Prairie System
- Rusty Patched Bumble Bee Low Potential Zone
- Rusty Patched Bumble Bee High Potential Zone
- Municipal Boundary

0 2,000 Feet

Source: MnDNR, MnDOT, Wabasha County

Map Document: \\arcserver1\GIS\WABASHA_CI_MN\H19114396\ESRI\ProjEAW\EAW.aprx | Username: rachel.koch | Date Saved: 2/1/2024 10:57 AM

61
699th Street
Highway 61
59
5th Grant Boulevard West
10
County Road 10
Rocque Avenue
Phelps Avenue
6th Street West
Campbell Avenue
Gambia Avenue
7th Street West
64
9th Street West
30
Hiawatha Drive West

Legend

- Proposed Barge Facility
- Property Boundary
- Parcels
- Municipal Boundary

MBS Sites of Biodiversity Significance

- **Moderate**

DNR Native Plant Communities

- Floodplain Forest System
- Mesic Hardwood Forest System
- Rusty Patched Bumble Bee Low Potential Zone
- Rusty Patched Bumble Bee High Potential Zone

0 550 Feet

Source: MnDNR, MnDOT, Wabasha County

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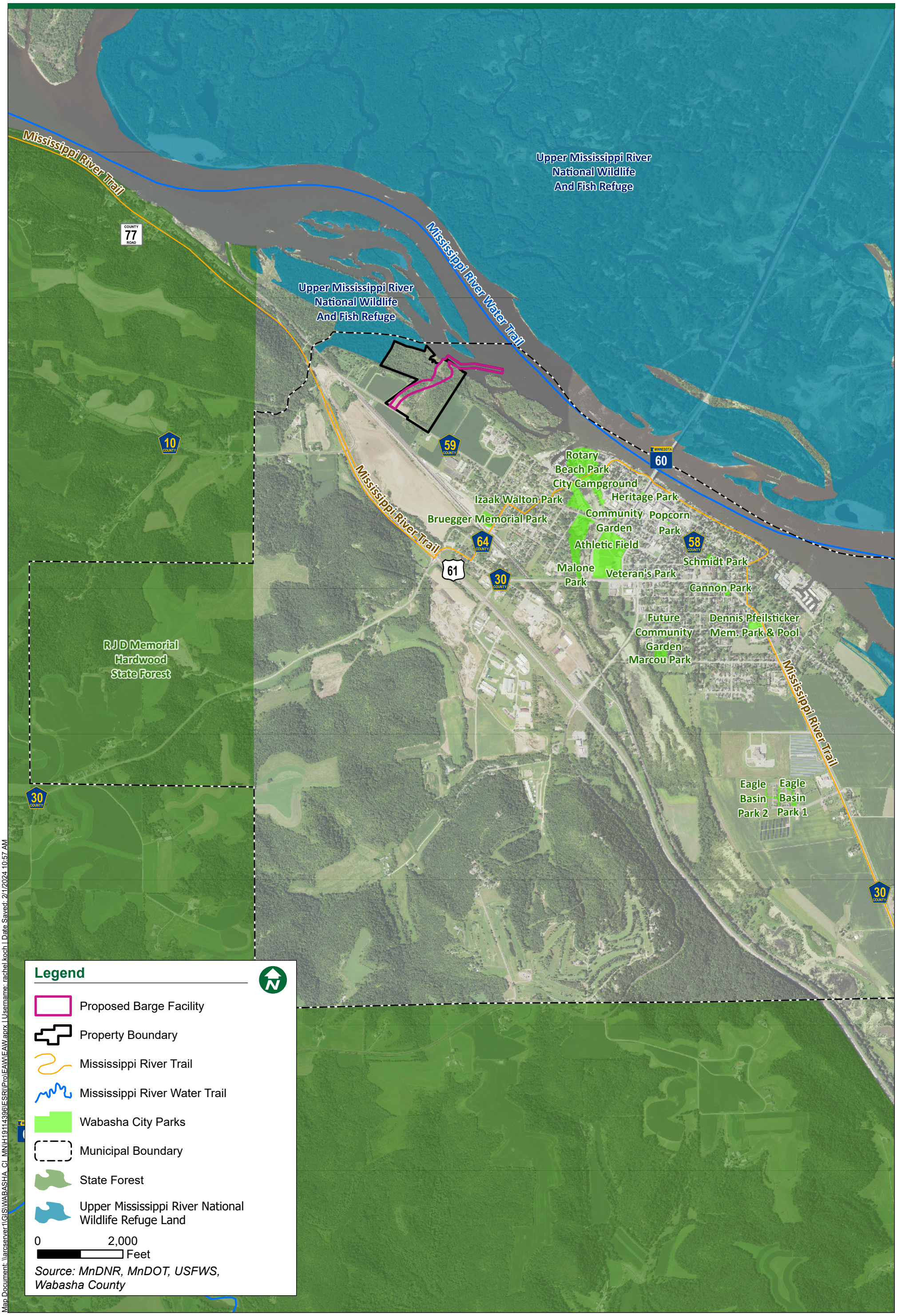

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Figure 10b: Outdoor Recreation

Upper Mississippi River National Wildlife And Fish Refuge

Mississippi River Water Trail

Us Fish & Wildlife Ser

Us Fish & Wildlife Ser

Us Fish & Wildlife Ser

State of MN

Riverview Cemetery Assn

Kohner Sand & Gravel Company

Robert E & Mary J Carrels

Ardis Carrels

Kohner Sand & Gravel Company

Kohner Sand & Gravel Company

Williams Communications Inc

Robert S Kohner

Kevin T & Kylie S Meurer

Harry J & Jean M Lager

Northern States Power

Kpr Us Llc

61

699th Street

Highway 61

59

County Road 10

10

5th Grant Boulevard West

Rocque Avenue

Phelps Avenue

Campbell Avenue

6th Street West

Gambia Avenue

Bruegger Memorial Park

7th Street West

64

Campbell Avenue

9th Street West

30

Hiawatha Drive West

Mississippi River Trail

Legend

- Proposed Barge Facility
- Property Boundary
- Mississippi River Trail
- Mississippi River Water Trail
- Upper Mississippi River National Wildlife Refuge Land
- Wabasha City Parks
- Parcels
- Municipal Boundary

Existing Land Use

- Agricultural
- Cemetery - Public
- Comm Land & Buildings
- Federal Property
- Inds Land & Buildings
- Pub UT ATTH MACH LND
- Res 1-3 Unimproved Land
- Residential

0 550 Feet

Source: MnDNR, MnDOT, USFWS, Wabasha County

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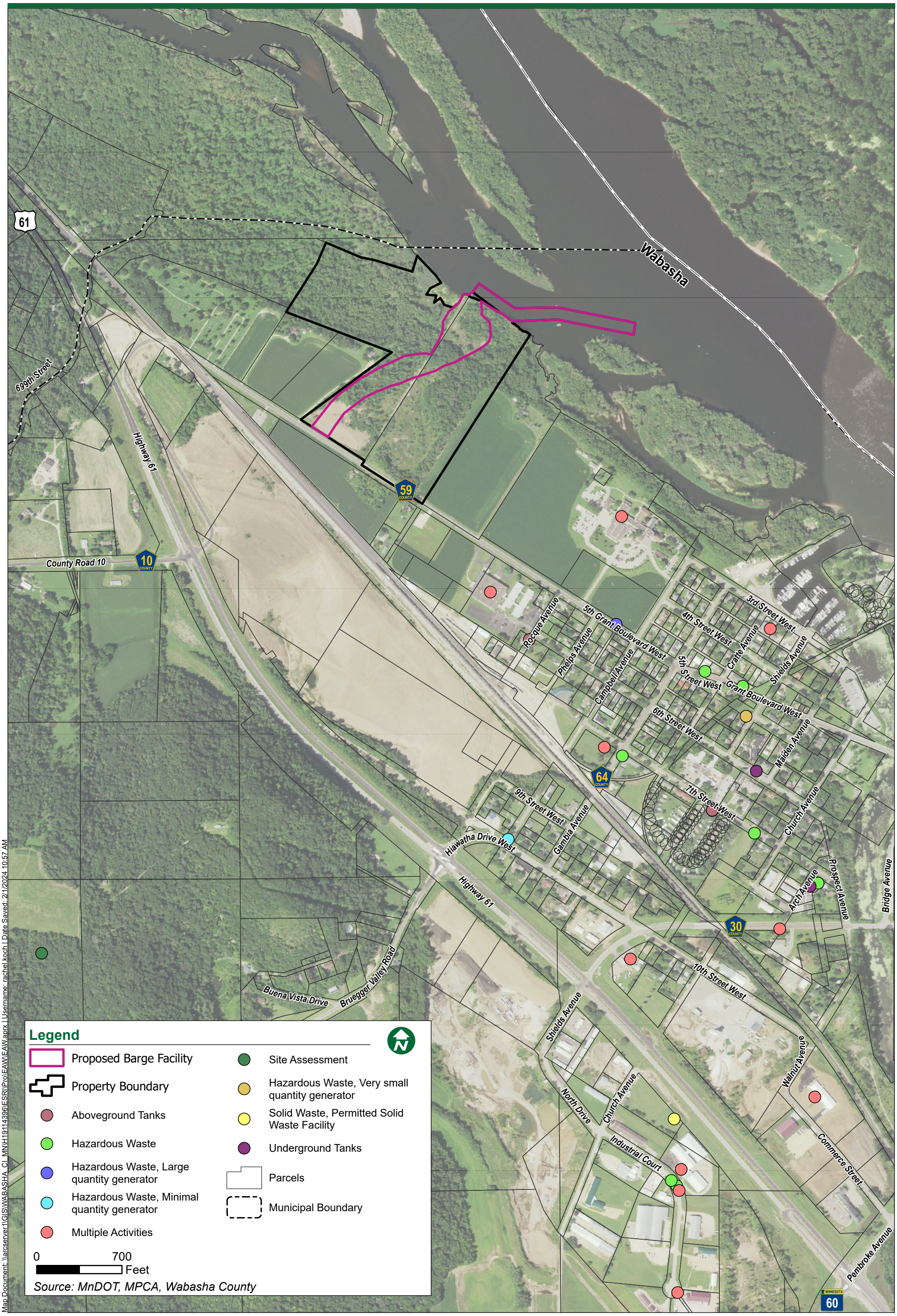
Figure 11: Potentially Contaminated Sites



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APPENDIX B

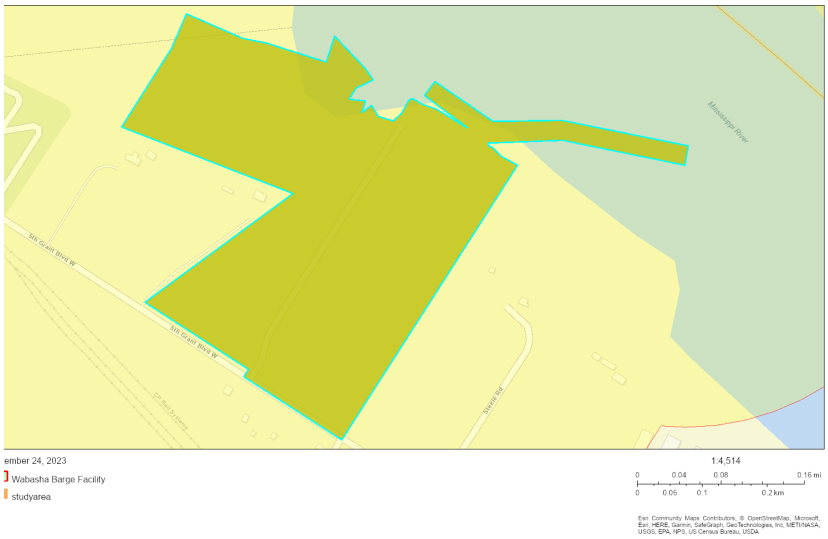
EPA EJScreen Community Report

EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Wabasha, MN

0.25 miles Ring around the Area
Population: 158
Area in square miles: 0.68



LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
No language data available.	

COMMUNITY INFORMATION

- Low income: 38 percent
- People of color: 1 percent
- Less than high school education: 7 percent
- Limited English households: 0 percent
- Unemployment: 1 percent
- Persons with disabilities: 17 percent
- Male: 43 percent
- Female: 57 percent
- 78 years — Average life expectancy
- $32,067 — Per capita income
- Number of households: 44
- Owner occupied: 67 percent

BREAKDOWN BY RACE

- White: 99%
- Black: 0%
- American Indian: 0%
- Asian: 1%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 1%
- Hispanic: 0%

BREAKDOWN BY AGE

From Ages 1 to 4	2%
From Ages 1 to 18	20%
From Ages 18 and up	80%
From Ages 65 and up	33%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	0%
Speak Other Indo-European Languages	0%
Speak Asian-Pacific Island Languages	0%
Speak Other Languages	0%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

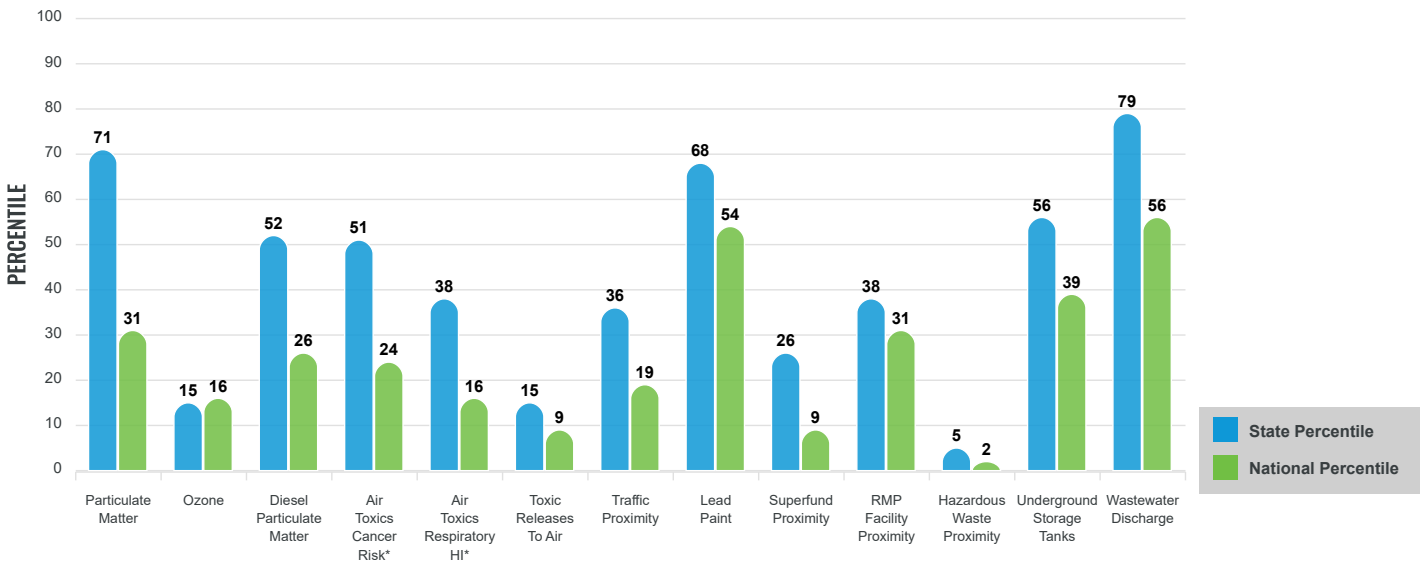
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

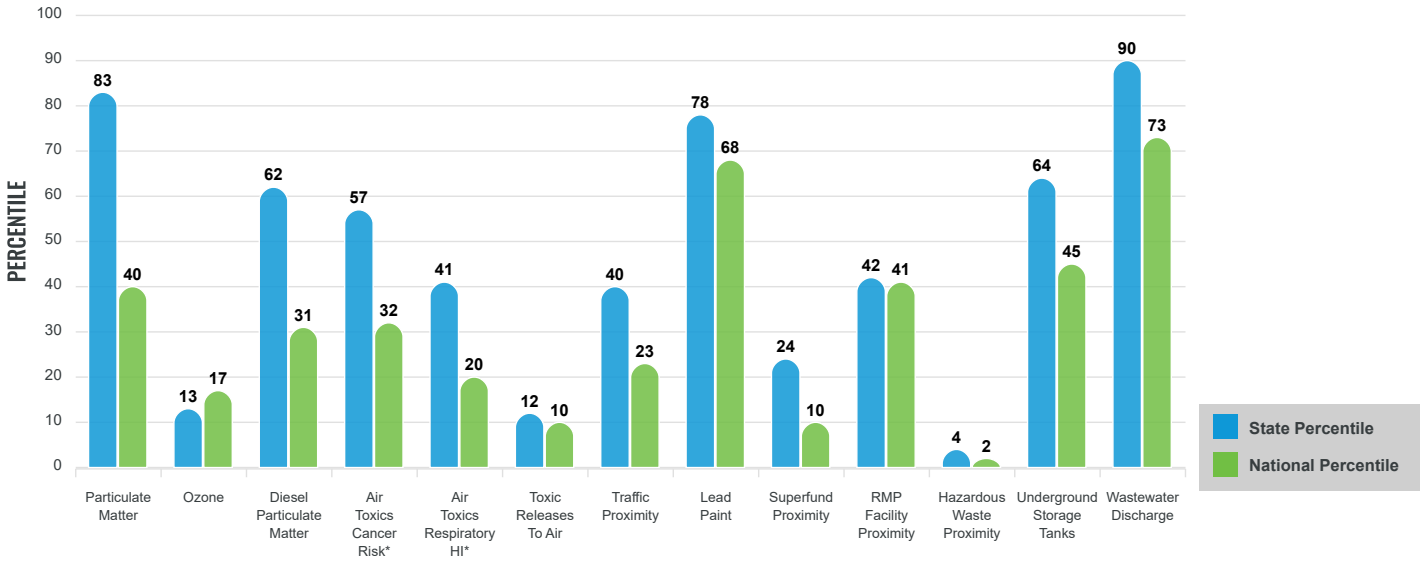
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for 0.25 miles Ring around the Area

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	7.52	6.78	68	8.08	32
Ozone (ppb)	56.3	58.2	8	61.6	14
Diesel Particulate Matter (µg/m^3)	0.124	0.21	36	0.261	23
Air Toxics Cancer Risk* (lifetime risk per million)	20	22	12	25	5
Air Toxics Respiratory HI*	0.2	0.26	7	0.31	4
Toxic Releases to Air	9.4	1,500	8	4,600	8
Traffic Proximity (daily traffic count/distance to road)	9.6	140	22	210	16
Lead Paint (% Pre-1960 Housing)	0.43	0.33	66	0.3	68
Superfund Proximity (site count/km distance)	0.014	0.19	15	0.13	9
RMP Facility Proximity (facility count/km distance)	0.1	0.48	23	0.43	31
Hazardous Waste Proximity (facility count/km distance)	0.021	1.3	3	1.9	2
Underground Storage Tanks (count/km^2)	0.31	1.8	44	3.9	35
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.024	0.19	92	22	74
SOCIOECONOMIC INDICATORS					
Demographic Index	20%	22%	58	35%	31
Supplemental Demographic Index	13%	11%	76	14%	53
People of Color	1%	20%	7	39%	5
Low Income	38%	23%	82	31%	67
Unemployment Rate	1%	4%	25	6%	24
Limited English Speaking Households	0%	2%	0	5%	0
Less Than High School Education	7%	7%	67	12%	46
Under Age 5	2%	6%	17	6%	25
Over Age 64	33%	17%	94	17%	92
Low Life Expectancy	20%	17%	84	20%	60

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 0
Water Dischargers 0
Air Pollution 0
Brownfields 0
Toxic Release Inventory 0

Other community features within defined area:

Schools 0
Hospitals 0
Places of Worship 0

Other environmental data:

Air Non-attainment ..... No
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... No
Selected location contains an EPA IRA disadvantaged community ..... Yes

Report for 0.25 miles Ring around the Area

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	20%	17%	84	20%	60
Heart Disease	8.1	5.6	91	6.1	85
Asthma	8.9	9	47	10	22
Cancer	9.2	6.4	97	6.1	96
Persons with Disabilities	18.1%	11.4%	91	13.4%	79

CLIMATE INDICATORS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	12%	8%	80	12%	73
Wildfire Risk	0%	4%	0	14%	0

CRITICAL SERVICE GAPS

INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	25%	11%	92	14%	83
Lack of Health Insurance	4%	5%	48	9%	27
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for 0.25 miles Ring around the Area

APPENDIX C

Preliminary No-Rise Certification

BOLTON & MENK

Real People. Real Solutions.

DRAFT

Preliminary No Rise Certification

Wabasha Barge Facility

City of Wabasha, Wabasha County, Minnesota

December 2023

Submitted by:
Bolton & Menk, Inc.
2900 43rd Street NW
Rochester, MN 55901
Phone: (507) 208-4332

Certification

Preliminary

No Rise Certification

For

Wabasha Barge Facility

Mississippi River, MN

H19.114396

~~August 2023~~
December 2023

I hereby certify that this report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: DRAFT
Roberta R. Cronquist, P.E.
License No. 52570

Date: DRAFT

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Appendix B: Effective Flood Insurance Study and Flood Insurance Rate Maps
Appendix C: Duplicate Effective Condition HEC-RAS
Appendix D: Existing Condition HEC-RAS
Appendix E: Proposed Condition HEC-RAS
Appendix F: Preliminary Site Layout
Appendix G: DVD of Digital Files

MINNESOTA NO RISE CERTIFICATION

This is to certify that I am a duly qualified professional engineer licensed to practice in the State of Minnesota.

It is further to certify that the attached technical data supports the fact that the proposal to perform the following construction activities associated with the Wabasha Barge Facility Project within the floodplain for the Mississippi River between the Chippewa River and Alma Marina (WI) will not impact the 100-year flood elevation.

This includes the following construction activities:

1. Construction of infrastructure including a site access road, weighing station and small operations facility
2. Construction of a sheet pile dock wall, mooring and maneuvering facilities, and conveyers and hoppers for material processing
3. Temporary storage of dredged material on site
4. Channel dredging for barge access to the proposed docking and off-loading facilities
5. Use of dredged material as fill on the terminal site to raise the dredge material storage area above the 100-year flood elevation

These construction activities will not impact the floodway width or increase the 100-year flood elevation (will not raise by more than 0.00 feet) on the Mississippi River at any published cross sections in the Flood Insurance Study for Wabasha County Minnesota, dated June 20, 2000 or Buffalo County Wisconsin, dated May 3, 2010 and will not increase the 100-year flood elevation (will not raise by more than 0.00 feet) at unpublished cross-sections in the vicinity of the proposed project.

HEC-RAS hydraulic analyses have been prepared for the Mississippi River from the Prescott, WI to La Crosse, WI and are included to support my findings.

Date: 12/15/2023

Signature:_____**DRAFT**_____

Name: Roberta Cronquist

Title: Project Engineer

License Number: #52570, exp. 6/30/2024

MN DNR Waters - 4/2/2004 revision

I. INTRODUCTION

The City of Wabasha in conjunction with the Wabasha Port Authority is working on a dredge material management plan for the Mississippi River that includes constructing a barge facility on the north end of the City of Wabasha, MN (River Mile 760). Approximately 270,000 CY of sand will be dredged annually to maintain a 9-ft navigable channel. This barge facility is intended to facilitate dredged material storage and transportation of agricultural products and shipping containers on the Mississippi River. The primary purpose is to transport sand from the navigation channel dredging operations to offsite locations for beneficial re-use.

Specifically, the following activities may affect the Mississippi River floodplain hydraulics:

1. Construction of infrastructure including a site access road, weighing station and small operations facility
2. Construction of a sheet pile dock wall, mooring and maneuvering facilities, and conveyers and hoppers for material processing
3. Temporary storage of dredged material on site
4. Channel dredging for barge access to the proposed docking and off-loading facilities
5. Use of dredged material as fill on the terminal site to raise the dredge material storage area above the 100-year flood elevation

The project impacts the floodplain limits for the Mississippi River within the City of Wabasha, Wabasha County (WBCO), Minnesota. This portion of the Minnesota River floodplain is also within Buffalo County (BUCO), WI. Because portions of the project propose construction activities within a FEMA designated floodplain, this report documents the no rise condition of the proposed site development.

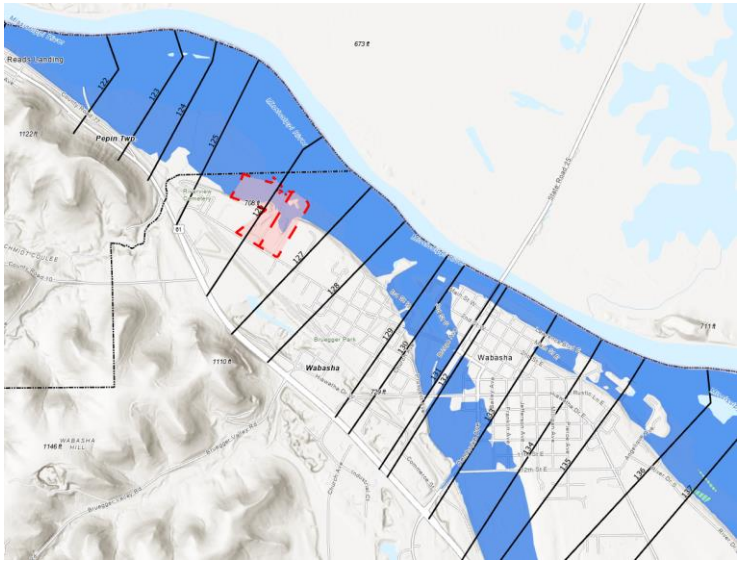

Figure 1: Vicinity Map
(not to scale)

II. EFFECTIVE FLOOD INSURANCE STUDY DATA

The Mississippi River is currently mapped by FEMA as a Zone AE floodplain with a floodway, and is shown on the FEMA FIRM Panels listed in Table 1. Preliminary FIRM panels and a Flood Insurance Study for Wabasha County are expected in December of 2022.

Table 1: Effective FIRM Panels

County	Map No.	Panel No.	Effective Date
Minnesota			
Wabasha	27157C	0090D	June 20, 2000
Wabasha	27157C	0095D	June 20, 2000
Wabasha	27157C	0210D	June 20, 2000
Wabasha	27157C	0230D	June 20, 2000
Wabasha	27157C	0235D	June 20, 2000
Wisconsin			
Buffalo	55011C	0140D	May 3, 2010
Buffalo	55011C	0145D	May 3, 2010
Buffalo	55011C	0165D	May 3, 2010
Buffalo	55011C	0285D	May 3, 2010

Excerpts from the effective Wabasha County FIS, Buffalo County FIS, and a copy of the listed effective FIRMs are included in Appendix B of this report. Buffalo County FIRMs and FIS excerpts are included for reference and that data is reported in the NAVD 88 datum.

III. HYDROLOGY

A. Effective Discharges

Information about effective FEMA discharges for the Mississippi River are included in the Effective FIS for Wabasha County and Buffalo County. FIS flow values matched those in the effective HEC-RAS model received from the MnDNR.

Table 2: Effective FEMA Discharges

Flooding Source and Location	Drainage Area (sq-miles)	Peak Discharges (cubic feet per second)			
		10% Annual-Chance	2% Annual-Chance	1% Annual-Chance	0.2% Annual-Chance
Mississippi River (WBCO FIS) At Wabasha	56,610	145,000	210,000	240,000	320,000
Mississippi River (BUCO FIS) Just Downstream of Chippewa River	-	-	-	229,611	-
Mississippi River (Effective Model) XS 761.327 XS 760.994	- -	- -	- -	229,611 229,611	- -

IV. TOPOGRAPHIC DATA

The following topographic data was utilized to develop the hydraulic models for this study.

A. LiDAR Data

Table 3: Topography Data Sources

County	Topography Source	Datum
Wabasha	Wabasha County LiDAR – 2008	NAVD 88

The effective model for the Mississippi River was based on the NAVD 88 vertical datum. The Buffalo County FIS reports a datum conversion of 0.0 between the NGVD 29 and NAVD 88 datums. All results are reported in the NAVD 88 datum.

V. HYDRAULIC MODELING

A. Duplicate Effective HEC-RAS Model

The duplicate effective HEC-RAS analysis for Mississippi River was obtained from the Minnesota Department of Natural Resources (MNDNR), updated in 2018 from a prior 2004 study and using the NAVD 88 datum. The duplicate effective model was computed in its native HEC-RAS version 4.1.0 to confirm the model results. No changes were made in the duplicate effective model.

Table 4: Duplicate Effective Digital Files

Source	File Name	Description
USACE (~ 2004, 2018)	UMR_floodway.prj	HEC-RAS 4.1.0 model from Prescott, WI to Guttenburg, IA

HEC-RAS model output for the duplicate effective model is included in Appendix C. A workmap is provided in Appendix A. Digital files of the received HEC-RAS models are included in the link in Appendix G.

B. Corrected Effective HEC-RAS Model

No corrections were made to the effective model and the duplicate effective model was treated as the corrected effective model.

C. Existing Condition HEC-RAS Model

An existing conditions HEC-RAS analysis for the Mississippi River was updated throughout the project area to provide better geometric data at the project site.

The following modifications were made in HEC-RAS to reflect the existing condition within the Mississippi River:

- Added 4 new cross sections (761.296, 761.268, 761.207, 761.2) to intersect the proposed barge docking site
  - Left overbank geometry and channel bathymetry were copied from adjacent cross sections into the new cross sections
  - Right overbank and some channel data came from LiDAR, site topographic survey, and site bathymetric survey data collected by AMI, Inc in 2022
- Geometry data and the right bank station was modified slightly in effective cross section 761.327 using LiDAR and site survey

Table 5: Existing Condition HEC-RAS Digital Files

File Name	Type	Description
Mississippi_USACEModel_2018.prj	Project File	
Mississippi_USACEModel_2018.g03	Geometry	Existing terrain
Mississippi_USACEModel_2018.f02	Flow	Multiple Profile
Mississippi_USACEModel_2018.p03	Plan	Existing MP

The Existing Condition HEC-RAS data is provided in Appendix D. HEC-RAS workmaps are included in Appendix A. Digital files of all HEC-RAS files are included in the link in Appendix G.

D. Proposed Condition HEC-RAS Model

This condition includes all of the modifications made through the existing conditions model. The following modifications were made in HEC-RAS to reflect the proposed conditions of the Barge Facility site:

- Right overbank topographic data was extracted between XS 760.994 and 761.327 to reflect proposed development of the barge terminal facility, including temporary stockpiling of dredged material.
- Manning's n values were modified at the barge terminal cross sections to reflect the paved surface and access road
- Permanent ineffective flow regions were added at cross sections 761.268 and 761.296 to model stagnant regions on the upstream side of the unloading facility

Dredged areas within the Mississippi River shown in Appendix F were not accounted for in the proposed conditions analysis to provide a conservative estimate of project impacts.

Table 6: Proposed Condition HEC-RAS Digital Files

File Name	Type	Description
Mississippi_USACEModel_2018.prj	Project File	
Mississippi_USACEModel_2018.g08	Geometry	Proposed grading
Mississippi_USACEModel_2018.f02	Flow	Multiple Profile
Mississippi_USACEModel_2018.p07	Plan	Proposed MP

The Proposed Condition HEC-RAS data is provided in Appendix E. HEC-RAS workmaps are included in Appendix A. A preliminary site plan showing the proposed site layout is included in Appendix F. Digital files of all HEC-RAS files are included in the link in Appendix G.

VI. COMPARISON OF 100-YEAR RESULTS

Table 8 summarizes the impact of the proposed project on the 100-year water surface elevations along the Mississippi River. The analyses presented address only the 100-year floodplain modeling, and does not include revised floodway analyses, or a determination of impacts other than the 100-year event.

*Table 7: Comparison of 100-year WSELs**

HEC-RAS Cross Section**	FEMA Cross Section (Model)	Published BFE WBCO, Prelim Model	DE WSE (100yr)	EX WSE (100yr)	Impact (DE-EX)	PR WSE (100yr)	Impact (PR – EX)
769.696	111	681.3	681.2528	681.2452	-0.0076	681.2452	0.0000
768.717	112	681.3	681.2484	681.2407	-0.0077	681.2407	0.0000
767.605	113	681.2	681.2431	681.2355	-0.0076	681.2355	0.0000
766.672	114	681.2	681.2372	681.2296	-0.0076	681.2296	0.0000
765.995	115	681.2	681.2308	681.2232	-0.0076	681.2232	0.0000
765.528	116	681.2	681.2227	681.2151	-0.0076	681.2151	0.0000
765.103	117	681.1	681.1874	681.1797	-0.0077	681.1797	0.0000
764.552	118	681	681.0563	681.0485	-0.0078	681.0485	0.0000
764.091	119	680.8	680.8628	680.8549	-0.0079	680.8549	0.0000
763.659	120	680.5	680.5348	680.5265	-0.0083	680.5264	-0.0001
763.082	121	680.1	680.1697	680.1608	-0.0089	680.1607	-0.0001
762.578	122	679.8	679.8575	679.8479	-0.0096	679.8478	-0.0001
762.273	123	679.5	679.5953	679.5851	-0.0102	679.5850	-0.0001
762.062	124	679.3	679.2567	679.2457	-0.0110	679.2454	-0.0003
761.826	125	679.1	679.0542	679.0428	-0.0114	679.0425	-0.0003
761.327	126	678.7	678.6602	678.6478	-0.0124	678.6475	-0.0003
761.296	---	---	---	678.6328	---	678.6293	-0.0035
761.268	---	---	---	678.6108	---	678.6052	-0.0056
761.207	---	---	---	678.5510	---	678.5463	-0.0047
761.2	---	---	---	678.5391	---	678.5364	-0.0027
760.994	127	678.3	678.2943	678.3035	0.0092	678.3035	0.0000
760.759	128	678.1	678.0528	678.0528	0.0000	678.0528	0.0000
760.495	129	677.8	677.8153	677.8153	0.0000	677.8153	0.0000
760.4	130	677.7	677.7733	677.7733	0.0000	677.7733	0.0000
760.216	131	677.6	677.6870	677.6870	0.0000	677.6870	0.0000
760.2	HWY 25						
760.181	132	677.5	677.4159	677.4159	0.0000	677.4159	0.0000
759.926	133	677.4	677.3667	677.3667	0.0000	677.3667	0.0000
759.684	134	677.3	677.3054	677.3054	0.0000	677.3054	0.0000
759.458	135	677.3	677.2606	677.2606	0.0000	677.2606	0.0000
759.17	136	677.2	677.1453	677.1453	0.0000	677.1453	0.0000
758.833	137	677	677.0261	677.0261	0.0000	677.0261	0.0000

*DE = Duplicate Effective Model, EX = Existing Model, PR = Proposed Model

**Gray cells denote approximate project grading extents.

Appendix A:
HEC-RAS Workmaps

765.528
765.103
764.552
764.091
763.659
763.082
762.578
762.273
762.062
761.826
761.327
760.495
760.181
759.926
759.684
759.458
759.170
758.833
758.299
758.010
757.668
757.381
757.105
756.765
756.373

116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147

Wabasha
Rochester
La Crosse
Austin
Mason City
Eau Claire
WISCONSI

Wabasha
Glasgow Twp.
Greenfield Twp.

Legend

- Bank Stations
- River Reaches
- Cross Sections
- FEMA XS
- Municipal Boundaries
- FEMA Preliminary Floodplain (MN)

0 2,000 Feet

Source: City of Wabasha, MNDNR, USACE

Map Document: H:\WABASHA_CI_MN\H191143960\GIS\Pro_Hydraulics.aprx | Username: BradyNahkala | Date Saved: 12/8/2022 1:40 PM

765.528
765.103
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763.082
762.578
762.273
762.062
761.826
761.327
761.196
761.098
761.207
761.2
760.495
760.181
759.926
759.684
759.458
759.170
758.833
758.299
758.010
757.668
757.361
757.105
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Wabasha
Glasgow Twp.
Greenfield Twp.

Legend

- Bank Stations
- River Reaches
- Cross Sections
- FEMA XS
- Municipal Boundaries
- FEMA Preliminary Floodplain (MN)

0 2,000 Feet

Source: City of Wabasha, MNDNR, USACE

Map Document: H:\WABASHA_CI_MN\H911439\GIS\Pro_Hydraulics.aprx | Username: BradyNahkala | Date Saved: 12/8/2022 1:40 PM

Area Clear of Mississippi River Floodplain

Wabasha

Grant Blvd W

Legend

- Cross Sections
- Proposed Contour (5 ft)
- Proposed Contour (1 ft)

LiDAR Contour

- Depression (2 ft)
- Index (10 ft)
- Index Depression (10 ft)
- Intermediate (2 ft)
- FEMA XS
- Municipal Boundaries
- Proposed Floodplain (Revised to LiDAR and Proposed Contours at Site)
- FEMA Preliminary Floodplain (MN)

0 200 Feet

Source: City of Wabasha, MNDNR, USACE

Map Document: H:\WABASHA_CI_MNH19114396\GIS\Proj_Hydraulics.aprx | Username: BradyNahkala | Date Saved: 12/8/2022 1:40 PM

Appendix B:
Effective Flood Insurance Study and Flood Insurance Rate Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations and therefore may not exactly reflect the flood elevation data presented in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in the FIS report in conjunction with the data shown on this FIRM.

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Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on this map can be made available on CD-ROM by request. The files are currently archived in MicroStation design (DGN) file format referenced to the Universal Transverse Mercator (UTM) projection and the North American Datum of 1927 (NAD27). To obtain the digital files, send a written request to: Flood Insurance Information Specialist, 2977 Prosperity Avenue, Fairfax, Virginia 22031. Telephone (703) 876-0148, FAX (703) 876-0073.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

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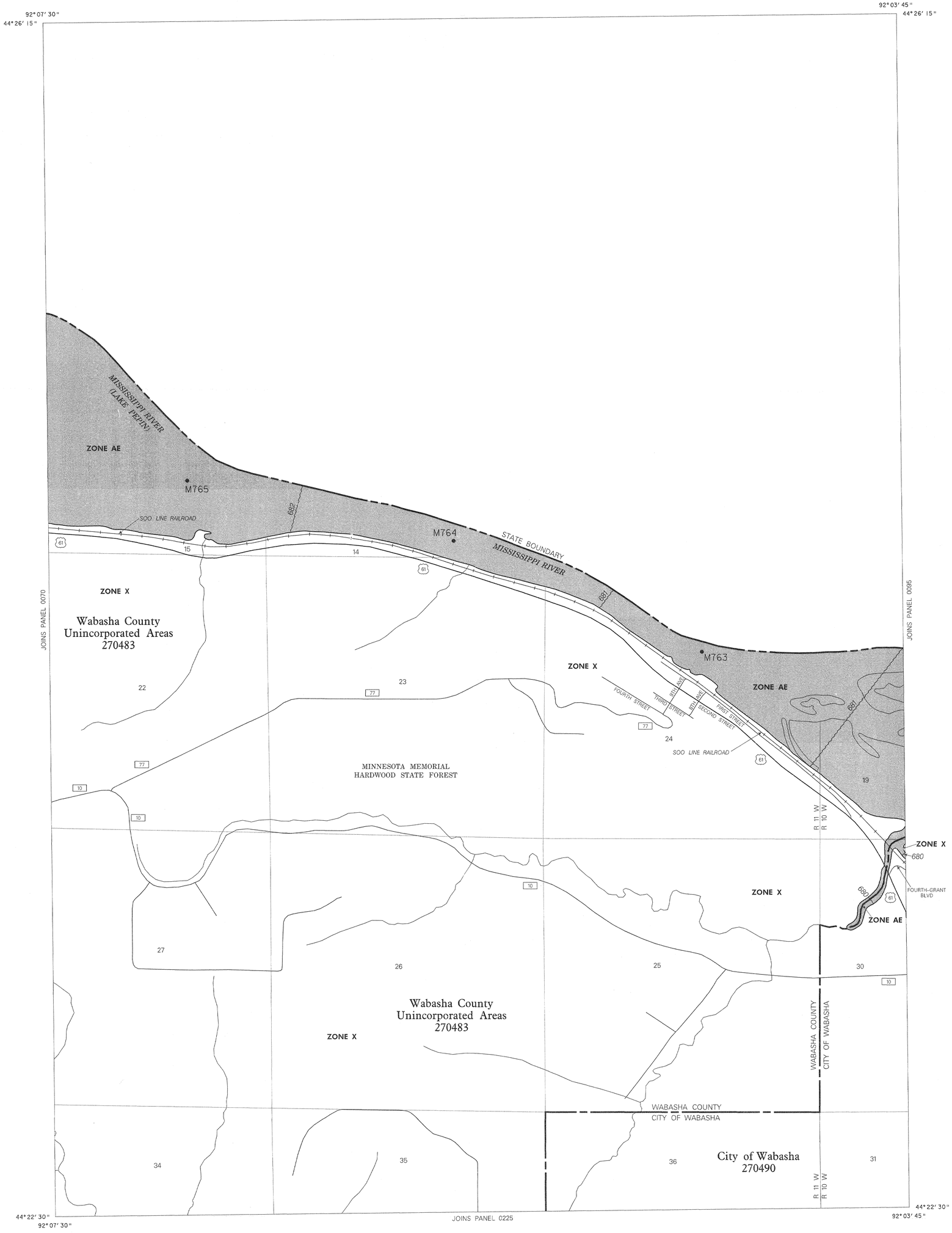
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Base map files were provided by the State of Minnesota Department of Transportation. These files were compiled at a scale of 1:24,000 from U.S. Geological Survey 7.5-Minute Series Topographic Maps and updated using aerial photographs and road construction plans. Users of this FIRM should be aware that minor adjustments may have been made to specific road locations.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
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- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
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FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

- Identified 1983
- Identified 1990 or Later
- Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

WABASHA COUNTY,
MINNESOTA
AND INCORPORATED AREAS

PANEL 90 OF 500

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WABASHA, CITY OF	270490	0090	D
WABASHA COUNTY	270483	0090	D

Notice to User: The MAP NUMBER shown below should be used when placing map order; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
27157C0090 D

EFFECTIVE DATE:
JUNE 20, 2000

Federal Emergency Management Agency

NOTES TO USERS

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Silver Spring, Maryland 20910
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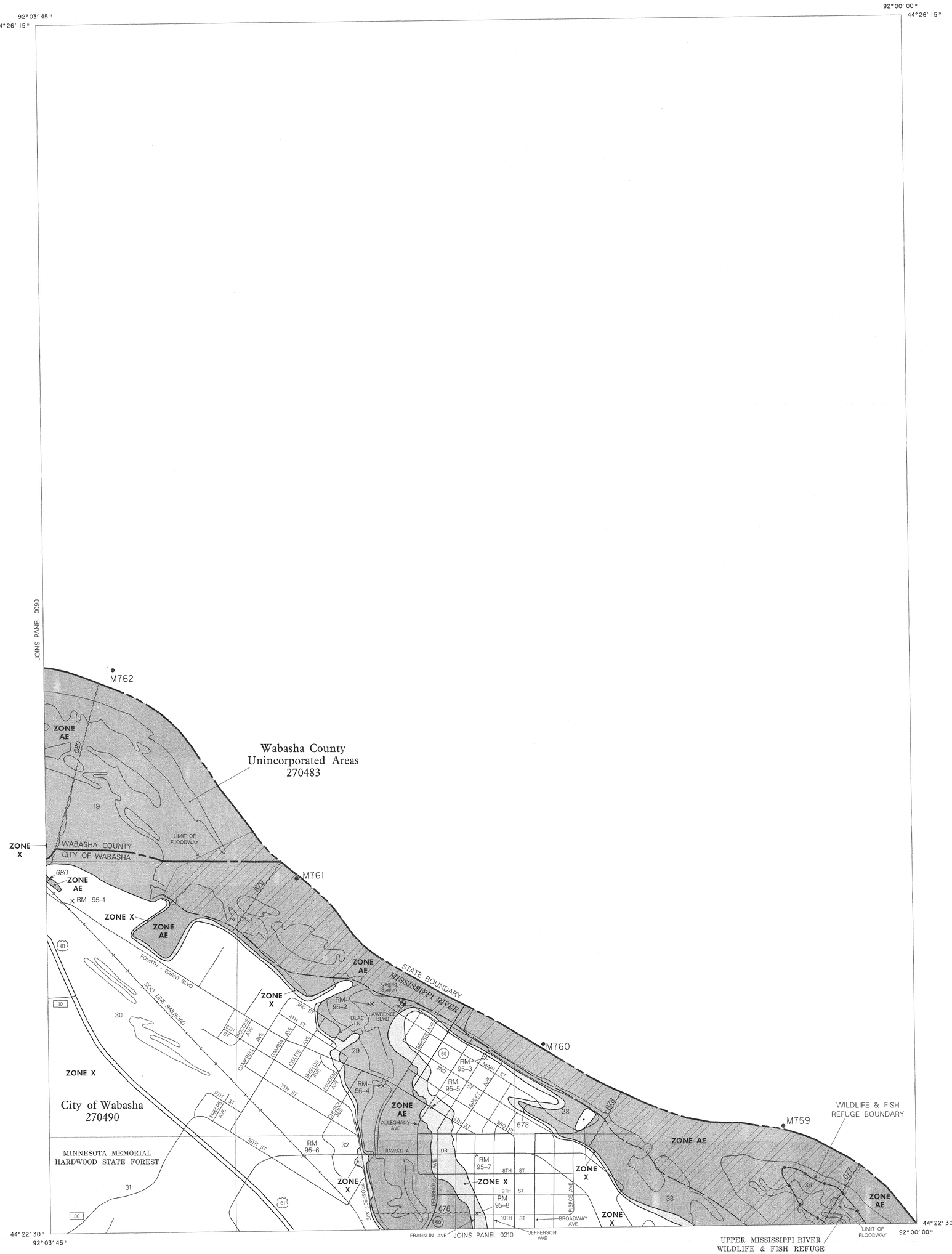
ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 95-1	700.806	U.S. Coast and Geodetic Survey disk stamped N 248 1970, set on top of copper coated rod and is encased in 4-inch iron pipe which projects 2 inches above surface, located approximately 154 feet southeast of centerline of crossing of Soo Line Railroad and Fourth-Grant Boulevard, approximately 25 feet northeast of centerline of Fourth-Grant Boulevard, approximately 33 feet northwest of main entrance to Riverview Cemetery.
RM 95-2	673.72	Top of water valve, approximately 3 feet west of concrete pad in picnic area, approximately 50 feet west of large swing set, and approximately 320 feet north of railroad spur, and approximately 610 feet west of gaging station.
RM 95-3	691.311	U.S. Coast and Geodetic Survey disk stamped B 26 1933, set in top of southwest end of concrete guardrail, approximately 77 feet north of north corner of post office, approximately 175 feet northeast of centerline of Main Street, approximately 11.7 feet southeast of centerline of Pembroke Avenue.
RM 95-4	677.49	Minnesota Highway Department disk set in southeast corner wing wall at intersection of crossing river bed at Fourth-Grant Boulevard.
RM 95-5	682.93	Top nut of fire hydrant at intersection of Fourth-Grant Boulevard and Alleghany Avenue.
RM 95-6	700.035	U.S. Geological Survey standard disk, stamped A-26, set in concrete at base of southeast concrete bridge pier crossing Soo Line Railroad on Hiawatha Drive.
RM 95-7	691.67	Top nut of fire hydrant at intersection of Franklin Avenue and Hiawatha Drive.
RM 95-8	685.59	Top nut of fire hydrant at intersection of 10th Street and Franklin Avenue.

[1] National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
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FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year floodplain.
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UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

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- Floodway Boundary
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- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- ● M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

WABASHA COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 95 OF 500

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WABASHA, CITY OF	270490	0095	D
WABASHA, COUNTY	270483	0095	D

Notice to User: The MAP NUMBER shown below should be used when placing map order; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER
27157C0095 D

EFFECTIVE DATE:
JUNE 20, 2000

Federal Emergency Management Agency

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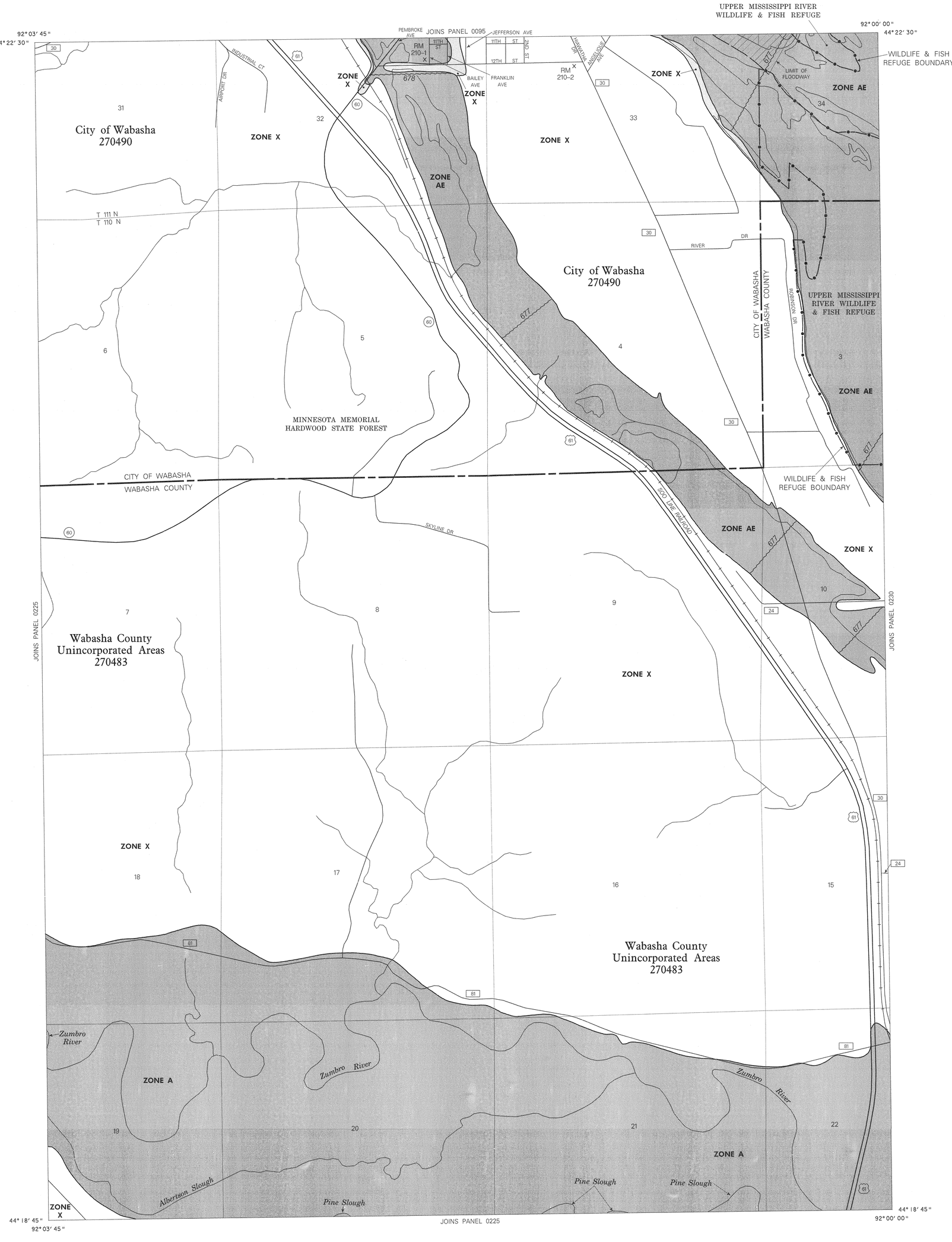
ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FT. (NGVD)[1]	DESCRIPTION OF LOCATION
RM 210-1	676.49	Top nut of fire hydrant at intersection of 12th Street and Bailey Avenue.
RM 210-2	698.440	U.S. Coast and Geodetic Survey disk stamped M 248 1970, set in top of concrete post which is level with surface of ground, located approximately 150 feet west of intersection of 12th Street and Hiawatha Drive, approximately 30 feet south of centerline of 12th Street.

[1] National Geodetic Vertical Datum of 1929



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

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- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
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- RM7 X — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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APPROXIMATE SCALE
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
WABASHA COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 210 OF 500

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WABASHA, CITY OF	270490	0210	D
WABASHA COUNTY	270483	0210	D

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MAP NUMBER
27157C0210 D

EFFECTIVE DATE:
JUNE 20, 2000

Federal Emergency Management Agency

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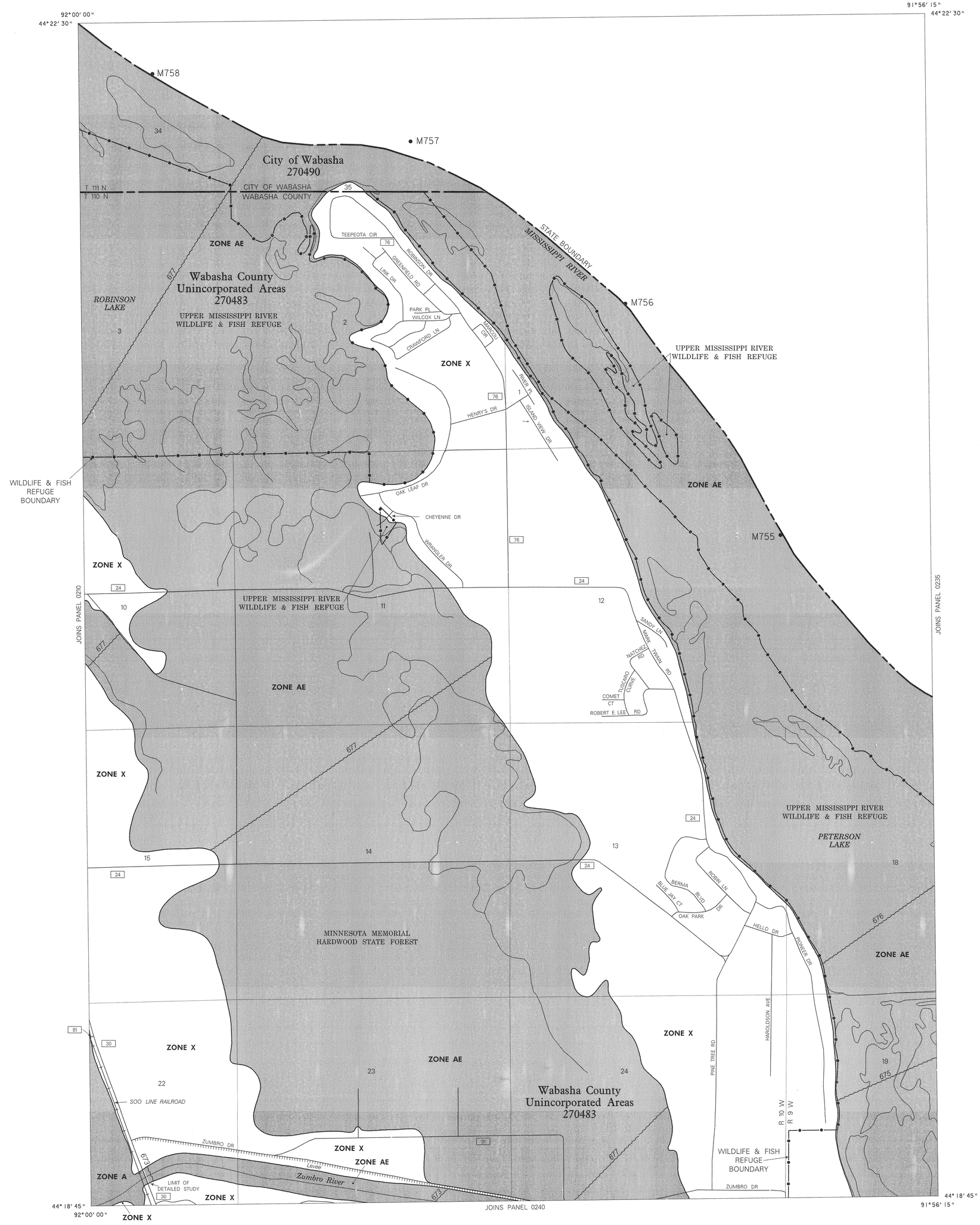
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Base map files were provided by the State of Minnesota Department of Transportation. These files were compiled at a scale of 1:24,000 from U.S. Geological Survey 7.5-Minute Series Topographic Maps and updated using aerial photographs and road construction plans. Users of this FIRM should be aware that minor adjustments may have been made to specific road locations.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside 500-year floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Please refer to the Listing of Communities table on the FIRM Index for NFIP Initial Identification and Post-FIRM dates for all jurisdictions shown on this map.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

WABASHA COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 230 OF 500

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WABASHA, CITY OF	270490	0230	D
WABASHA COUNTY	270483	0230	D

Notice to User: The MAP NUMBER shown below should be used when placing map order; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER 27157C0230 D

EFFECTIVE DATE: JUNE 20, 2000

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for possible updated flood hazard information prior to use of this map for property purchase or construction purposes.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations and therefore may not exactly reflect the flood elevation data presented in the FIS report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in the FIS report in conjunction with the data shown on this FIRM.

Elevation Reference Mark (ERM) elevations listed on this map were obtained and/or developed to establish vertical control for determination of flood elevations and floodplain boundaries portrayed on this map. Users should be aware that these ERM elevations may have changed since the publication of this map. To obtain up-to-date elevation information on National Geodetic Survey (NGS) ERMs shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at WWW.NGS.NOAA.GOV. Map users should seek verification of non-NGS ERM monument elevations when using these elevations for construction or floodplain management purposes.

Coastal base flood elevations apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD), and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

Corporate limits shown on this map are based on the best data available. The user should contact appropriate community officials to verify the corporate limit delineations shown on this map.

For community map revision history prior to countywide mapping, see section 6.0 of the Flood Insurance Study Report.

For adjoining map panels see separately printed Map Index.

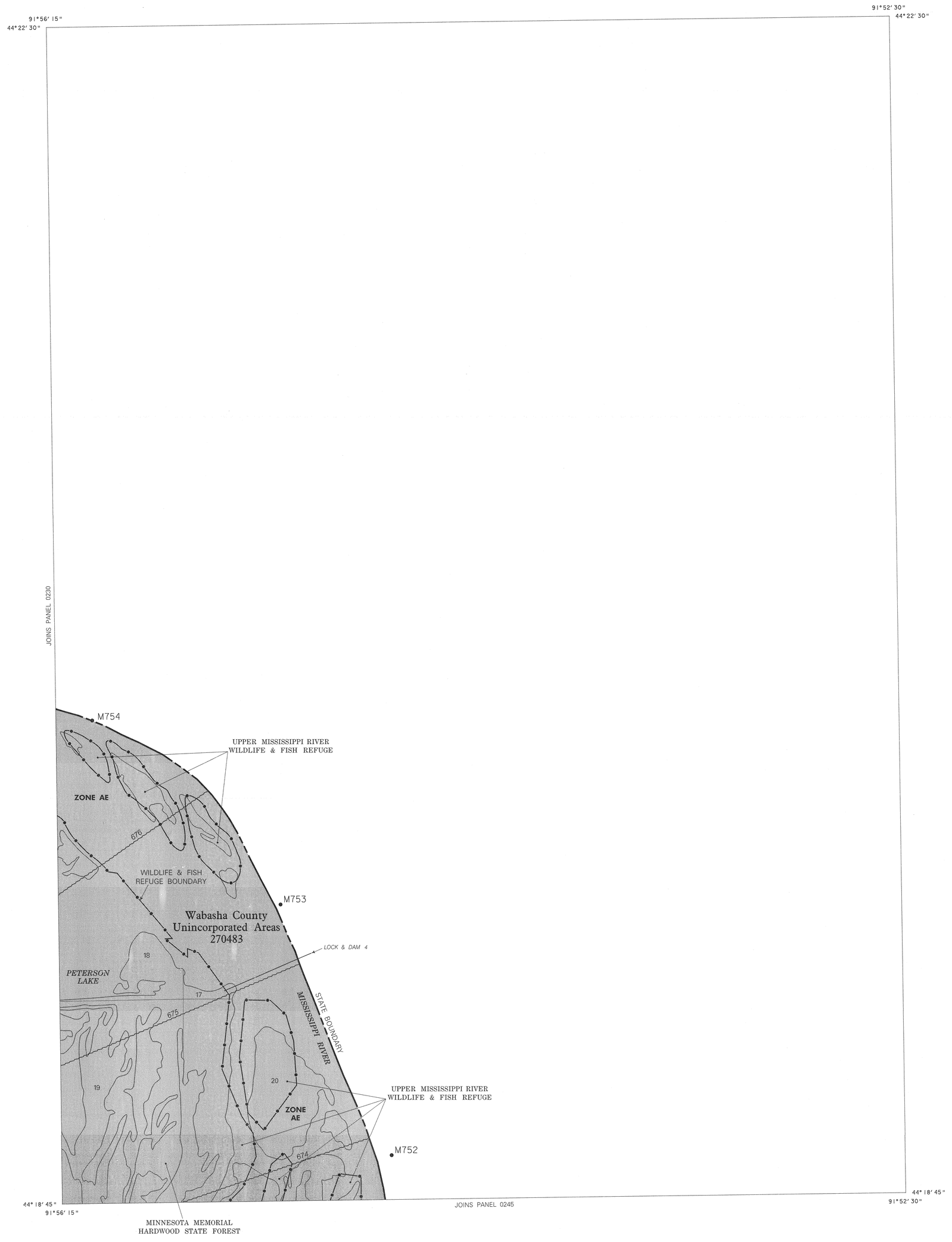
DIGITAL DATA AVAILABILITY: Digital files containing the thematic floodplain information shown on this map can be made available on CD-ROM by request. The files are currently archived in MicroStation design (DGN) file format referenced to the Universal Transverse Mercator (UTM) projection and the North American Datum of 1927 (NAD27). To obtain the digital files, send a written request to: Flood Insurance Information Specialist, 2977 Prosperity Avenue, Fairfax, Virginia 22031. Telephone (703) 876-0148, FAX (703) 876-0073.

NOTE: The coordinate system used for the production of this Flood Insurance Rate Map (FIRM) is Universal Transverse Mercator (UTM), North American Datum of 1927 (NAD27), Clarke 1866 spheroid. Corner coordinates shown on the FIRM are in latitude and longitude referenced to the Universal Transverse Mercator projection, NAD27. Differences in the datum and spheroid used in the production of FIRMs for adjacent counties may result in slight positional differences in map features at the county boundaries. These differences do not affect the accuracy of the information shown on the FIRM.

ATTENTION: Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

BASE MAP SOURCE: Base map files were provided by the State of Minnesota Department of Transportation. These files were compiled at a scale of 1:24,000 from U.S. Geological Survey 7.5-Minute Series Topographic Maps and updated using aerial photographs and road construction plans. Users of this FIRM should be aware that minor adjustments may have been made to specific road locations.



LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- **ZONE A** — No base flood elevations determined.
- **ZONE AE** — Base flood elevations determined.
- **ZONE AH** — Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** — Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE A99** — To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** — Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** — Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- **ZONE X** — Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

- **ZONE X** — Areas determined to be outside 500-year floodplain.
- **ZONE D** — Areas in which flood hazards are undetermined, but possible.

UNDEVELOPED COASTAL BARRIERS*

Identified 1983 | Identified 1990 or Later | Otherwise Protected Areas Identified 1991 or Later

*Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
- 513 — Base Flood Elevation Line; Elevation in Feet**
- A — A — Cross Section Line
- (EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone**
- RM7 X — Elevation Reference Mark
- M1.5 — River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

JUNE 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

Please refer to the Listing of Communities table on the FIRM Index for NFIP Initial Identification and Post-FIRM dates for all jurisdictions shown on this map.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE

1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

WABASHA COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 235 OF 500

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WABASHA COUNTY	270483	0235	D

Notice to User: The MAP NUMBER shown below should be used when placing map order; the COMMUNITY NUMBER shown above should be used on insurance applications for the subject community.

MAP NUMBER 27157C0235 D

EFFECTIVE DATE: JUNE 20, 2000

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by the Buffalo County Land Management Office. This information was derived from 2006 digital orthophotography produced at a resolution of 1 foot.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

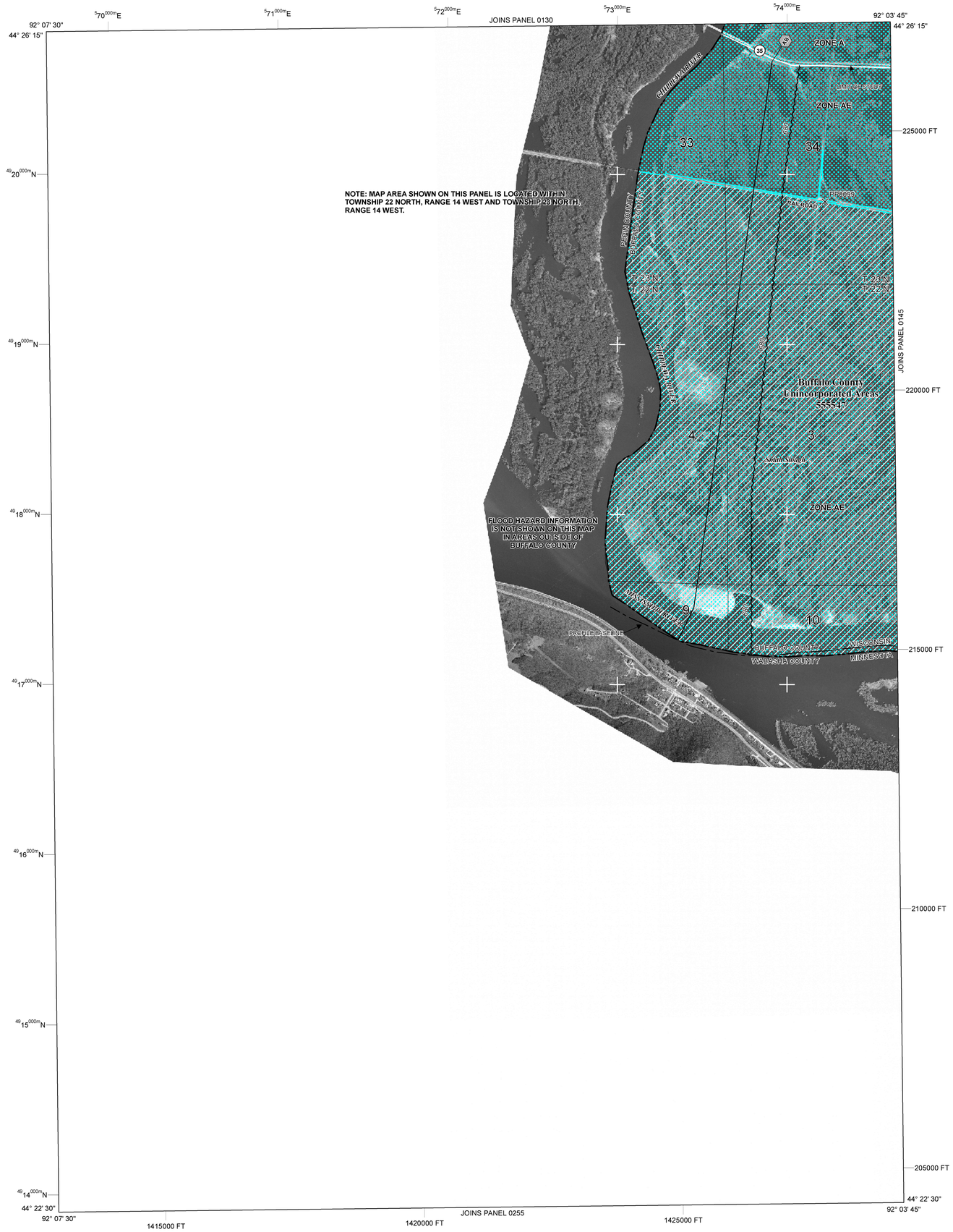
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% Annual Chance Floodplain Boundary
	0.2% Annual Chance Floodplain Boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 - - - - - 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
3100000 FT	5000-foot ticks: Wisconsin State Plane Central Zone (FIPS Zone 4802), Lambert Conformal Conic projection
4989000mN	1000-meter Universal Transverse Mercator grid values, zone 15
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 3, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0140D

FIRM

FLOOD INSURANCE RATE MAP

BUFFALO COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 140 OF 520
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BUFFALO COUNTY	555547	0140	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55011C0140D

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography provided by the Buffalo County Land Management Office. This information was derived from 2006 digital orthophotography produced at a resolution of 1 foot.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
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- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 3100000 FT — 5000-foot ticks: Wisconsin State Plane Central Zone (FIPS Zone 4802), Lambert Conformal Conic projection
- 4989000m N — 1000-meter Universal Transverse Mercator grid values, zone 15
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 3, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0145D

FIRM

FLOOD INSURANCE RATE MAP

BUFFALO COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 145 OF 520
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BUFFALO COUNTY	555547	0145	D
NELSON, VILLAGE OF	550232	0145	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55011C0145D

EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

NOTES TO USERS

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Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

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The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

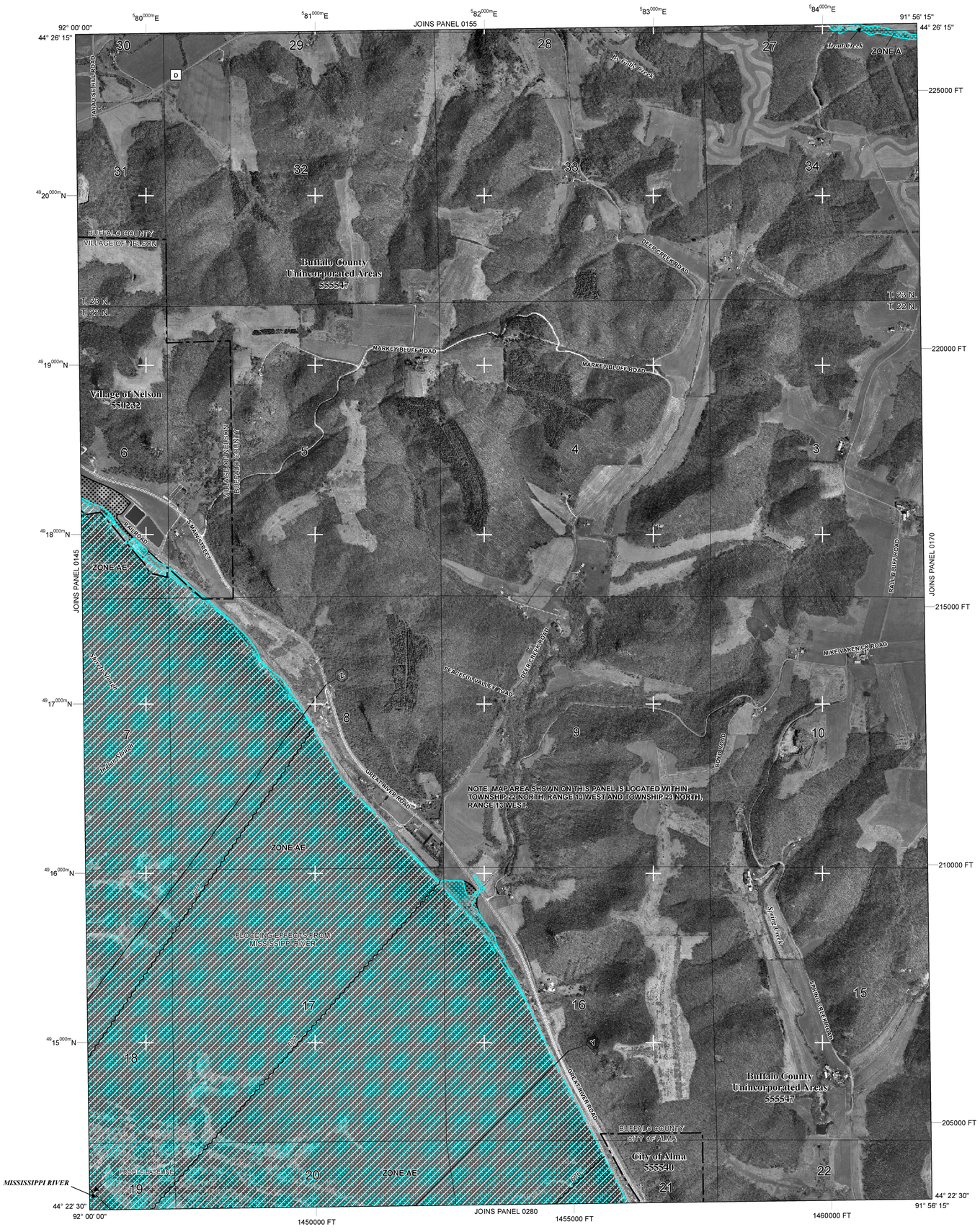
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 3100000 FT — 5000-foot ticks: Wisconsin State Plane Central Zone (FIPS Zone 4802), Lambert Conformal Conic projection
- 4989000m N — 1000-meter Universal Transverse Mercator grid values, zone 15
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
May 3, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0165D

FIRM

FLOOD INSURANCE RATE MAP

BUFFALO COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 165 OF 520
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALMA, CITY OF	555540	0165	D
BUFFALO COUNTY	555547	0165	D
NELSON, VILLAGE OF	550232	0165	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55011C0165D
EFFECTIVE DATE
MAY 3, 2010

Federal Emergency Management Agency

NOTES TO USERS

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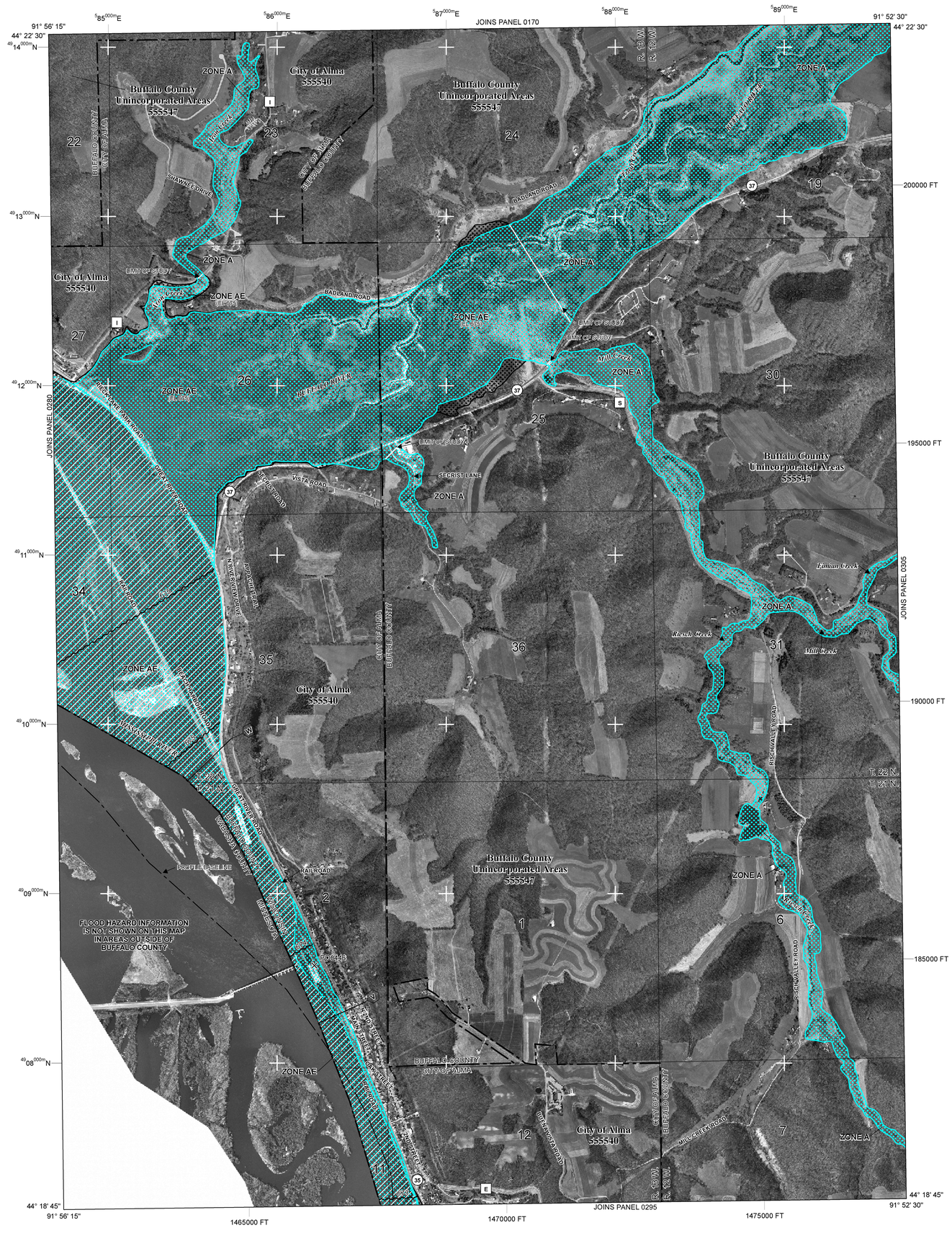

LEGEND

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	Zone D boundary
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

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May 3, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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500 0 1000 2000 FEET
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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0285D

FIRM

FLOOD INSURANCE RATE MAP

BUFFALO COUNTY, WISCONSIN AND INCORPORATED AREAS

PANEL 285 OF 520

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALMA, CITY OF	555540	0285	D
BUFFALO COUNTY	555547	0285	D

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MAP NUMBER
55011C0285D
EFFECTIVE DATE
MAY 3, 2010

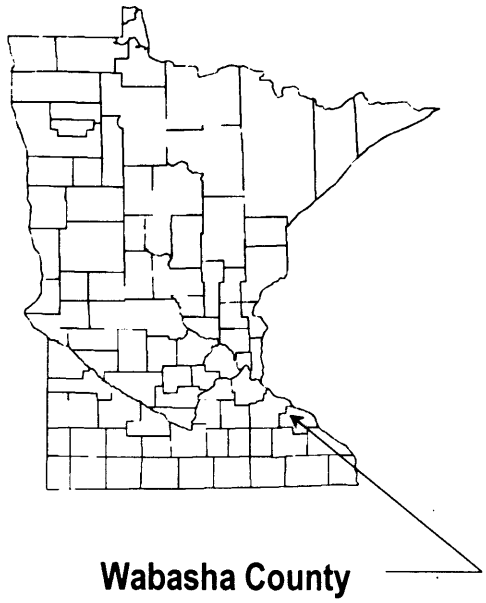
Federal Emergency Management Agency

FLOOD INSURANCE STUDY



WABASHA COUNTY, MINNESOTA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
ELGIN, CITY OF	270484
HAMMOND, CITY OF	270485
KELLOGG, CITY OF	270655
LAKE CITY, CITY OF	270486
MAZEPPA, CITY OF	270487
MILLVILLE, CITY OF	270488
MINNEISKA, CITY OF	270489
WABASHA, CITY OF	270490
WABASHA COUNTY (UNINCORPORATED AREAS)	270483
ZUMBRO FALLS, CITY OF	270491



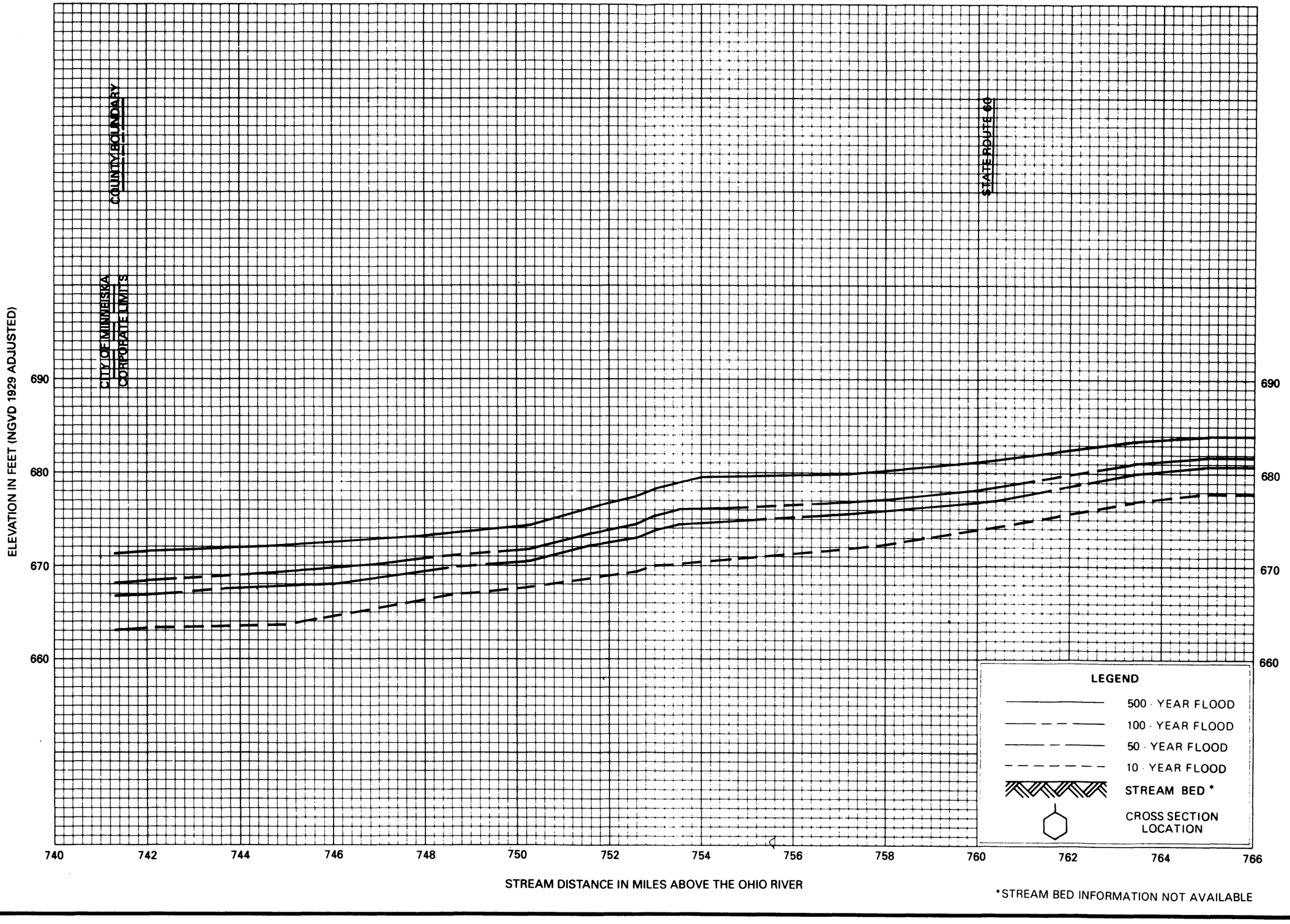
EFFECTIVE:

JUNE 20, 2000

Federal Emergency Management Agency

TABLE 2 - SUMMARY OF DISCHARGES - continued

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
GILBERT CREEK					
At mouth	27.06	3,200	5,100	6,300	10,000
Above confluence with Sugarloaf Creek	15.63	1,690	2,800	3,500	5,600
MILLER CREEK					
At confluence with Mississippi River	17.24	2,100	3,400	4,300	7,100
MISSISSIPPI RIVER					
At USGS gage No. 5-3835 at LaCrosse	62,800	162,000	229,000	260,000	*
At USGS gage No. 5-3785 at Winona	59,200	154,000	223,000	254,000	331,000
At Wabasha	56,610	145,000	210,000	240,000	320,000
At USGS gage No. 5-3445 at Prescott	44,800	113,000	176,000	207,000	290,000
At USGS gage No. 5-3310 at St. Paul	36,800	79,500	133,000	160,000	232,000
NORTH FORK ZUMBRO RIVER					
At confluence with Zumbro River	239	9,427	17,849	22,358	35,194
Upstream of confluence of Trout Brook	182	8,151	16,220	20,710	33,966
SOUTH ZUMBRO RIVER TRIBUTARY					
At mouth	1.59	490	880	1,115	1,765
SUGARLOAF CREEK					
At confluence with Gilbert Creek	8.15	1,350	2,100	2,600	4,300
WEST ZUMBRO RIVER TRIBUTARY					
At confluence with Zumbro River	9.68	2,255	3,930	4,880	7,470



FLOOD PROFILES

MISSISSIPPI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

WABASHA COUNTY, MN
AND INCORPORATED AREAS

15P

FLOOD INSURANCE STUDY



BUFFALO COUNTY, WISCONSIN
AND INCORPORATED AREAS

Community Name	Community Number
Alma, City of	555540
Buffalo, City of	555546
Buffalo County (Unincorporated Areas)	555547
Cochrane, Village of	555550
Fountain City, City of	555555
Mondovi, City of	550031
Nelson, Village of	550232



EFFECTIVE:
MAY 3, 2010

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
55011CV000A

Analyst Extension and ArcHydro Tools in conjunction with the USGS canopy cover raster (Reference 13).

Peak discharge-drainage area relationships for streams studied by detailed methods are shown in Table 2, Summary of Discharges.

TABLE 2 – SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES(cfs) 10-PERCENT ANNUAL CHANCE	2-PERCENT ANNUAL CHANCE	1-PERCENT ANNUAL CHANCE	0.2-PERCENT ANNUAL CHANCE
BROWNLEE CREEK					
At Confluence with Mirror Lake	4.1	500	950	1,200	2,000
BUFFALO RIVER					
At Southern Mondovi Corporate Limit	218	6,000	10,000	12,000	16,000
MISSISSIPPI RIVER					
Just Downstream of Confluence with Chippewa River	*	*	*	229,611	*
At Buffalo City	*	*	*	236,145	*
At southern county boundary	*	*	*	238,959	*
PEESO CREEK					
Above Mirror Lake	14.1	1,200	2,400	3,000	4,800
Below Mirror Lake	18.2	1,700	3,400	3,600	5,650

* Data not available or not calculated

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

City of Mondovi is the only community in Buffalo County which has a previously printed FIS report. The hydraulic analyses described in that report have been compiled and summarized below.

Roughness factors (Manning's “n” values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the streams and floodplain areas. Roughness factors for all streams studied by detailed methods are shown in Table 3, "Manning's “n” Values."

TABLE 3 – MANNINGS "N" VALUES

Stream	Channel “n”	Overbank “n”
Brownlee Creek	0.040	0.080
Buffalo River	0.035	0.090-0.110
Mississippi River	0.028-0.038	0.045-0.150
Peeso Creek	0.040	0.080-0.110

For the flooding sources which are studied approximate analyses and listed in “2.1 Scope of Study”, HEC-GeoRAS was used to convert centerline and cross section data created in ArcGIS (Reference 13) for use in HEC-RAS 3.1.3 (Reference 11). HEC-GeoRAS utilized an area Triangulated Irregular Network (TIN) model developed from 10 and 30 meter resolution National Elevation Dataset (NED) Digital Elevation Model (DEM) files to develop the model cross sections. The same TIN which was used for floodplain mapping. Road crossing locations were selected by looking at the aerial photos and modeled as inline structures. Normal depth was used as the downstream boundary condition for reaches in this study. The slope was calculated using the channel invert profile between the five downstream most cross sections (approximately most downstream mile of channel).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross-section locations are also shown on the FIRM (Exhibit 2).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD). With the completion of the North American Vertical Datum of 1988 (NAVD), many FIS reports and FIRMs are now prepared using NAVD as the referenced vertical datum.

Flood elevations shown in this FIS report and on the FIRM are referenced to the NAVD. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. Some of the data used in this revision were taken from the prior effective FIS reports and FIRMs and adjusted to NAVD88. The datum conversion factor from NGVD29 to NAVD88 in Buffalo County is 0.

For additional information regarding conversion between the NGVD and NAVD, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks shown on this map, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS report provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1- and 0.2-percent-annual-chance floodplains; and a 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS report as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied

FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
MISSISSIPPI RIVER (continued)								
Y	757.38[1]	6,993[3] / 7,732	107,582	2.1	676.5	676.5	676.5	0.0
Z	758.83[1]	10,110[3] / 12,695	151,616	1.5	677.0	677.0	677.0	0.0
AA	759.93[1]	12,570[3] / 12,654	146,492	1.6	677.4	677.4	677.4	0.0
AB	763.08[1]	8,823[3] / 9,234	106,298	2.2	680.2	680.2	680.2	0.0
PEESO CREEK								
A	1,320[2]	245	1,273	2.8	787.9	787.9	787.9	0.0
B	2,640[2]	75	1,095	3.3	791.4	791.4	791.4	0.0
C	3,379[2]	121	968	3.7	792.0	792.0	792.0	0.0
D	6,072[2]	440	2,156	1.4	813.5	813.5	813.5	0.0
E	6,917[2]	428	1,337	2.2	816.7	816.7	816.7	0.0
F	8,395[2]	368	1,468	2.0	818.4	818.4	818.4	0.0
G	9,557[2]	359	1,301	2.3	820.8	820.8	820.8	0.0
H	10,718[2]	415	1,036	2.9	824.2	824.2	824.2	0.0

[1]MILES ABOVE CONFLUENCE OF OHIO RIVER, [2]FEET ABOVE CONFLUENCE WITH BUFFALO RIVER, [3]FLOODWAY WIDTH WITHIN BUFFALO COUNTY

TABLE 4

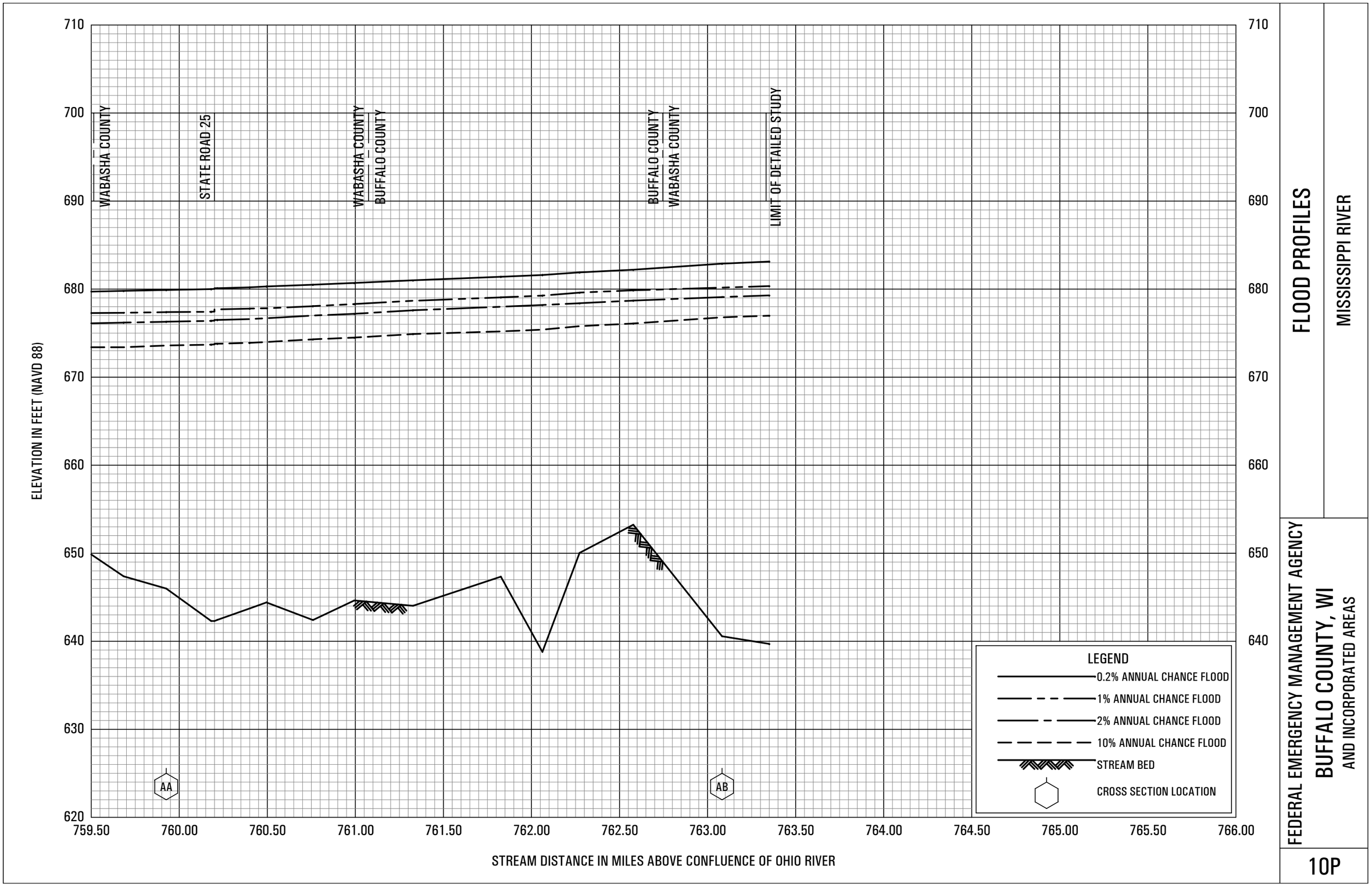
FEDERAL EMERGENCY MANAGEMENT AGENCY

BUFFALO COUNTY

AND INCORPORATED AREAS

FLOODWAY DATA

MISSISSIPPI RIVER - PEESO CREEK



FLOOD PROFILES

MISSISSIPPI RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

BUFFALO COUNTY, WI

AND INCORPORATED AREAS

Appendix C:
Duplicate Effective Condition HEC-RAS

HEC-RAS Plan: Plan1 Locations: User Defined

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrlsIToLaCrosse	796.385	100-yr Base	192930.00	648.28	685.68	663.85	685.73	0.000046	2.92	187564.30	14650.31	0.10
Mississippi	PrlsIToLaCrosse	796.385	IA/MN Max	192930.00	648.28	686.14	663.85	686.19	0.000045	2.90	179526.80	11840.76	0.10
Mississippi	PrlsIToLaCrosse	796.385	WI Fldwy	192930.00	648.28	685.68	663.85	685.73	0.000046	2.92	187485.80	13784.54	0.10
Mississippi	PrlsIToLaCrosse	796.000	100-yr Base	192930.00	643.51	685.46	660.87	685.59	0.000056	3.75	175775.00	13735.46	0.11
Mississippi	PrlsIToLaCrosse	796.000	IA/MN Max	192930.00	643.51	685.93	660.87	686.06	0.000055	3.74	165603.40	10748.33	0.11
Mississippi	PrlsIToLaCrosse	796.000	WI Fldwy	192930.00	643.51	685.47	660.87	685.60	0.000056	3.75	175618.40	13657.18	0.11
Mississippi	PrlsIToLaCrosse	795.445	100-yr Base	192930.00	641.65	685.35	663.22	685.47	0.000062	3.82	184014.20	19506.75	0.12
Mississippi	PrlsIToLaCrosse	795.445	IA/MN Max	192930.00	641.65	685.82	663.22	685.94	0.000062	3.86	169215.50	12245.59	0.12
Mississippi	PrlsIToLaCrosse	795.445	WI Fldwy	192930.00	641.65	685.35	663.22	685.48	0.000062	3.82	183776.20	19463.52	0.12
Mississippi	PrlsIToLaCrosse	795.000	100-yr Base	192930.00	639.73	685.23	663.51	685.37	0.000071	4.08	174186.00	14198.15	0.12
Mississippi	PrlsIToLaCrosse	795.000	IA/MN Max	192930.00	639.73	685.70	663.51	685.84	0.000071	4.12	165870.10	12310.53	0.12
Mississippi	PrlsIToLaCrosse	795.000	WI Fldwy	192930.00	639.73	685.24	663.51	685.37	0.000071	4.09	174023.00	14169.68	0.12
Mississippi	PrlsIToLaCrosse	794.671	100-yr Base	196287.00	650.73	685.15	665.78	685.25	0.000080	3.57	186436.40	14193.77	0.11
Mississippi	PrlsIToLaCrosse	794.671	IA/MN Max	196287.00	650.73	685.62	665.78	685.72	0.000080	3.60	176270.30	12461.18	0.11
Mississippi	PrlsIToLaCrosse	794.671	WI Fldwy	196287.00	650.73	685.15	665.78	685.25	0.000080	3.57	186102.60	14155.82	0.11
Mississippi	PrlsIToLaCrosse	794.379	100-yr Base	196231.00	650.68	685.01	667.96	685.14	0.000082	3.79	166574.60	13249.98	0.13
Mississippi	PrlsIToLaCrosse	794.379	IA/MN Max	196231.00	650.68	685.48	667.96	685.61	0.000083	3.82	155273.80	11468.66	0.13
Mississippi	PrlsIToLaCrosse	794.379	WI Fldwy	196231.00	650.68	685.02	667.96	685.14	0.000082	3.78	166615.90	13247.32	0.13
Mississippi	PrlsIToLaCrosse	794.078	100-yr Base	196276.00	644.35	684.90	665.58	685.04	0.000082	3.95	159785.40	12555.05	0.13
Mississippi	PrlsIToLaCrosse	794.078	IA/MN Max	196276.00	644.35	685.36	665.58	685.51	0.000082	3.99	147640.50	10495.11	0.13
Mississippi	PrlsIToLaCrosse	794.078	WI Fldwy	196276.00	644.35	684.90	665.58	685.04	0.000081	3.94	159826.80	12552.36	0.13
Mississippi	PrlsIToLaCrosse	793.829	100-yr Base	196321.00	645.57	684.80	666.01	684.94	0.000079	3.98	158531.70	12273.51	0.13
Mississippi	PrlsIToLaCrosse	793.829	IA/MN Max	196321.00	645.57	685.27	666.01	685.41	0.000079	4.02	147591.60	9999.41	0.13
Mississippi	PrlsIToLaCrosse	793.829	WI Fldwy	196321.00	645.57	684.81	666.01	684.94	0.000079	3.98	158499.60	12254.52	0.13
Mississippi	PrlsIToLaCrosse	793.559	100-yr Base	196366.00	654.79	684.75	667.42	684.82	0.000051	2.92	171040.00	11794.31	0.10
Mississippi	PrlsIToLaCrosse	793.559	IA/MN Max	196366.00	654.79	685.22	667.41	685.29	0.000051	2.96	157729.00	9978.20	0.10
Mississippi	PrlsIToLaCrosse	793.559	WI Fldwy	196366.00	654.79	684.76	667.42	684.83	0.000051	2.92	170970.00	11769.49	0.10
Mississippi	PrlsIToLaCrosse	793.302	100-yr Base	196412.00	652.56	684.72	668.29	684.76	0.000037	2.43	173988.40	11833.52	0.08
Mississippi	PrlsIToLaCrosse	793.302	IA/MN Max	196412.00	652.56	685.19	668.26	685.23	0.000037	2.46	165441.50	10708.68	0.08
Mississippi	PrlsIToLaCrosse	793.302	WI Fldwy	196412.00	652.56	684.73	668.30	684.76	0.000037	2.43	173907.60	11812.73	0.08
Mississippi	PrlsIToLaCrosse	793.000	100-yr Base	196355.00	654.16	684.65	668.44	684.70	0.000048	2.79	173376.90	11766.48	0.10
Mississippi	PrlsIToLaCrosse	793.000	IA/MN Max	196355.00	654.16	685.12	668.51	685.17	0.000048	2.82	168595.00	10848.41	0.10
Mississippi	PrlsIToLaCrosse	793.000	WI Fldwy	196355.00	654.16	684.66	668.42	684.71	0.000048	2.79	173416.40	11764.02	0.10
Mississippi	PrlsIToLaCrosse	792.640	100-yr Base	196445.00	651.01	684.57	667.14	684.62	0.000046	2.93	168609.30	11179.80	0.10
Mississippi	PrlsIToLaCrosse	792.640	IA/MN Max	196445.00	651.01	685.04	667.20	685.09	0.000046	2.97	165429.30	10531.88	0.10
Mississippi	PrlsIToLaCrosse	792.640	WI Fldwy	196445.00	651.01	684.57	667.14	684.63	0.000046	2.94	168238.00	11124.58	0.10
Mississippi	PrlsIToLaCrosse	792.261	100-yr Base	196491.00	649.10	684.51	666.99	684.56	0.000051	3.04	165372.00	12153.93	0.10
Mississippi	PrlsIToLaCrosse	792.261	IA/MN Max	196491.00	649.10	684.97	667.01	685.03	0.000051	3.07	158080.20	10890.89	0.10
Mississippi	PrlsIToLaCrosse	792.261	WI Fldwy	196491.00	649.10	684.51	666.98	684.57	0.000051	3.04	165410.70	12151.06	0.10
Mississippi	PrlsIToLaCrosse	791.792	100-yr Base	196479.00	643.53	684.31	665.27	684.46	0.000077	4.08	87137.81	6936.83	0.13
Mississippi	PrlsIToLaCrosse	791.792	IA/MN Max	196479.00	643.53	684.77	665.25	684.92	0.000077	4.12	83953.83	5244.41	0.13
Mississippi	PrlsIToLaCrosse	791.792	WI Fldwy	196479.00	643.53	684.31	665.27	684.46	0.000077	4.08	87153.33	6936.15	0.13
Mississippi	PrlsIToLaCrosse	791.531	100-yr Base	196524.00	639.03	684.17	664.97	684.36	0.000092	4.54	73116.74	5474.92	0.14
Mississippi	PrlsIToLaCrosse	791.531	IA/MN Max	196524.00	639.03	684.62	664.97	684.82	0.000092	4.59	70361.47	4403.72	0.14
Mississippi	PrlsIToLaCrosse	791.531	WI Fldwy	196524.00	639.03	684.17	664.96	684.36	0.000092	4.54	73040.93	5449.89	0.14
Mississippi	PrlsIToLaCrosse	791.273	100-yr Base	196570.00	635.36	684.01	665.67	684.25	0.000118	5.25	70319.23	5513.64	0.16
Mississippi	PrlsIToLaCrosse	791.273	IA/MN Max	196570.00	635.36	684.47	665.68	684.72	0.000118	5.30	66895.91	4611.66	0.16
Mississippi	PrlsIToLaCrosse	791.273	WI Fldwy	196570.00	635.36	684.02	665.69	684.26	0.000118	5.25	70242.34	5489.69	0.16
Mississippi	PrlsIToLaCrosse	790.974	100-yr Base	196615.00	643.70	683.91	665.49	684.15	0.000121	4.89	67803.86	6017.63	0.16
Mississippi	PrlsIToLaCrosse	790.974	IA/MN Max	196615.00	643.70	684.37	665.48	684.61	0.000123	4.91	66319.66	5521.83	0.16
Mississippi	PrlsIToLaCrosse	790.974	WI Fldwy	196615.00	643.70	683.91	665.49	684.15	0.000121	4.89	67574.91	5965.48	0.16
Mississippi	PrlsIToLaCrosse	790.604	100-yr Base	196558.00	641.25	683.48	665.90	683.91	0.000183	6.26	42269.49	8473.58	0.20
Mississippi	PrlsIToLaCrosse	790.604	IA/MN Max	196558.00	641.25	683.97	665.90	684.38	0.000172	6.13	43401.88	8570.36	0.19
Mississippi	PrlsIToLaCrosse	790.604	WI Fldwy	196558.00	641.25	683.48	665.90	683.91	0.000183	6.26	42277.02	8473.98	0.20
Mississippi	PrlsIToLaCrosse	790.6		Bridge									
Mississippi	PrlsIToLaCrosse	790.563	100-yr Base	196558.00	642.03	683.45	665.98	683.86	0.000177	6.14	44264.93	8452.49	0.19
Mississippi	PrlsIToLaCrosse	790.563	IA/MN Max	196558.00	642.03	683.95	665.98	684.34	0.000167	6.01	45403.81	8299.07	0.19
Mississippi	PrlsIToLaCrosse	790.563	WI Fldwy	196558.00	642.03	683.46	665.98	683.87	0.000177	6.14	44272.11	8305.89	0.19
Mississippi	PrlsIToLaCrosse	790.442	100-yr Base	196604.00	638.05	683.35	660.85	683.56	0.000087	4.75	103697.90	7528.26	0.14
Mississippi	PrlsIToLaCrosse	790.442	IA/MN Max	196604.00	638.05	683.84	660.85	684.05	0.000089	4.75	100447.10	7093.95	0.14
Mississippi	PrlsIToLaCrosse	790.442	WI Fldwy	196604.00	638.05	683.35	660.85	683.56	0.000087	4.75	103716.60	7528.34	0.14
Mississippi	PrlsIToLaCrosse	790.302	100-yr Base	196604.00	640.72	683.24	663.03	683.42	0.000087	4.44	102764.10	6412.14	0.14
Mississippi	PrlsIToLaCrosse	790.302	IA/MN Max	196604.00	640.72	683.73	663.01	683.91	0.000088	4.44	97743.20	5776.19	0.13
Mississippi	PrlsIToLaCrosse	790.302	WI Fldwy	196604.00	640.72	683.25	663.03	683.42	0.000087	4.44	102630.00	6386.29	0.14
Mississippi	PrlsIToLaCrosse	789.992	100-yr Base	196649.00	652.00	683.12	668.86	683.24	0.000111	3.78	102201.80	6271.39	0.13
Mississippi	PrlsIToLaCrosse	789.992	IA/MN Max	196649.00	652.00	683.60	668.86	683.73	0.000110	3.82	100565.60	5917.70	0.13
Mississippi	PrlsIToLaCrosse	789.992	WI Fldwy	196649.00	652.00	683.12	668.86	683.24	0.000110	3.78	102222.10	6271.42	0.13
Mississippi	PrlsIToLaCrosse	789.574	100-yr Base	196739.00	644.09	682.80	668.35	682.96	0.000116	4.50	92405.25	6593.69	0.15
Mississippi	PrlsIToLaCrosse	789.574	IA/MN Max	196739.00	644.09	683.29	668.34	683.45	0.000115	4.55	89344.31	5970.54	0.15

HEC-RAS Plan: Plan1 Locations: User Defined (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	789.574	WI Fldwy	196739.00	644.09	682.81	668.35	682.97	0.000115	4.50	92427.75	6593.63	0.15
Mississippi	PrIslToLaCrosse	789.000	100-yr Base	196728.00	645.43	682.53	666.57	682.65	0.000084	3.72	117110.00	7798.20	0.13
Mississippi	PrIslToLaCrosse	789.000	IA/MN Max	196728.00	645.43	683.01	666.54	683.14	0.000083	3.76	114597.40	7119.46	0.13
Mississippi	PrIslToLaCrosse	789.000	WI Fldwy	196728.00	645.43	682.53	666.57	682.65	0.000083	3.72	117137.70	7547.64	0.13
Mississippi	PrIslToLaCrosse	788.538	100-yr Base	196819.00	652.50	682.41	662.57	682.46	0.000045	2.76	133198.20	8108.47	0.09
Mississippi	PrIslToLaCrosse	788.538	IA/MN Max	196819.00	652.50	682.90	662.53	682.95	0.000045	2.79	133036.80	7810.16	0.09
Mississippi	PrIslToLaCrosse	788.538	WI Fldwy	196819.00	652.50	682.41	662.57	682.47	0.000045	2.76	133062.50	8080.88	0.09
Mississippi	PrIslToLaCrosse	787.988	100-yr Base	196807.00	635.48	682.27	667.70	682.34	0.000059	2.99	117606.40	7465.81	0.10
Mississippi	PrIslToLaCrosse	787.988	IA/MN Max	196807.00	635.48	682.76	667.72	682.83	0.000059	3.02	111667.70	6509.01	0.10
Mississippi	PrIslToLaCrosse	787.988	WI Fldwy	196807.00	635.48	682.28	667.70	682.34	0.000059	2.99	117634.10	7465.82	0.10
Mississippi	PrIslToLaCrosse	787.726	100-yr Base	196852.00	640.50	682.16	666.21	682.24	0.000067	3.47	106969.50	7360.30	0.11
Mississippi	PrIslToLaCrosse	787.726	IA/MN Max	196852.00	640.50	682.64	665.95	682.73	0.000067	3.49	106891.00	7100.28	0.11
Mississippi	PrIslToLaCrosse	787.726	WI Fldwy	196852.00	640.50	682.16	666.21	682.25	0.000067	3.47	106734.50	7326.86	0.11
Mississippi	PrIslToLaCrosse	787.466	100-yr Base	196898.00	644.85	682.01	664.20	682.09	0.000058	3.21	114502.50	7641.71	0.11
Mississippi	PrIslToLaCrosse	787.466	IA/MN Max	196898.00	644.85	682.50	664.20	682.58	0.000058	3.24	114624.50	7381.92	0.11
Mississippi	PrIslToLaCrosse	787.466	WI Fldwy	196898.00	644.85	682.02	664.19	682.09	0.000058	3.22	114300.60	7610.39	0.11
Mississippi	PrIslToLaCrosse	787.094	100-yr Base	196943.00	650.12	681.87	665.34	681.96	0.000069	3.42	122804.90	7668.62	0.12
Mississippi	PrIslToLaCrosse	787.094	IA/MN Max	196943.00	650.12	682.36	665.34	682.45	0.000070	3.44	113730.40	6405.07	0.12
Mississippi	PrIslToLaCrosse	787.094	WI Fldwy	196943.00	650.12	681.87	665.34	681.96	0.000069	3.42	122607.20	7535.80	0.12
Mississippi	PrIslToLaCrosse	786.623	100-yr Base	196932.00	647.42	681.72	666.85	681.81	0.000069	3.48	124788.60	8330.97	0.12
Mississippi	PrIslToLaCrosse	786.623	IA/MN Max	196932.00	647.42	682.20	666.85	682.30	0.000070	3.50	116666.00	6883.66	0.12
Mississippi	PrIslToLaCrosse	786.623	WI Fldwy	196932.00	647.42	681.72	666.85	681.81	0.000069	3.48	124812.90	8321.70	0.12
Mississippi	PrIslToLaCrosse	786.191	100-yr Base	197022.00	649.40	681.61	667.63	681.66	0.000045	2.69	153450.50	9456.37	0.09
Mississippi	PrIslToLaCrosse	786.191	IA/MN Max	197022.00	649.40	682.10	667.60	682.15	0.000045	2.72	146057.20	8323.46	0.09
Mississippi	PrIslToLaCrosse	786.191	WI Fldwy	197022.00	649.40	681.62	667.63	681.66	0.000045	2.69	153289.00	9212.24	0.09
Mississippi	PrIslToLaCrosse	785.857	100-yr Base	197068.00	647.16	681.57	667.79	681.59	0.000022	2.05	166759.00	11945.99	0.07
Mississippi	PrIslToLaCrosse	785.857	IA/MN Max	197068.00	647.16	682.05	667.79	682.08	0.000022	2.07	146722.50	8708.91	0.07
Mississippi	PrIslToLaCrosse	785.857	WI Fldwy	197068.00	647.16	681.57	667.79	681.60	0.000022	2.05	166781.80	10926.58	0.07
Mississippi	PrIslToLaCrosse	785.584	100-yr Base	197011.00	652.56	681.55	666.97	681.57	0.000015	1.41	177659.80	11191.75	0.05
Mississippi	PrIslToLaCrosse	785.584	IA/MN Max	197011.00	652.56	682.03	666.99	682.05	0.000015	1.43	170527.20	9871.01	0.05
Mississippi	PrIslToLaCrosse	785.584	WI Fldwy	197011.00	652.56	681.55	666.97	681.57	0.000015	1.41	177688.30	11142.60	0.05
Mississippi	PrIslToLaCrosse	785.329	100-yr Base	197056.00	650.40	681.52	666.22	681.54	0.000014	1.46	166766.40	10502.23	0.05
Mississippi	PrIslToLaCrosse	785.329	IA/MN Max	197056.00	650.40	682.01	666.48	682.03	0.000014	1.48	160780.30	8925.93	0.05
Mississippi	PrIslToLaCrosse	785.329	WI Fldwy	197056.00	650.40	681.52	666.22	681.55	0.000014	1.46	166748.60	10466.58	0.05
Mississippi	PrIslToLaCrosse	785.017	100-yr Base	197102.00	652.52	681.49	666.06	681.52	0.000017	1.58	148301.90	9163.74	0.06
Mississippi	PrIslToLaCrosse	785.017	IA/MN Max	197102.00	652.52	681.97	665.95	682.00	0.000017	1.61	143081.60	8028.24	0.06
Mississippi	PrIslToLaCrosse	785.017	WI Fldwy	197102.00	652.52	681.49	666.04	681.52	0.000017	1.58	148260.30	9087.17	0.06
Mississippi	PrIslToLaCrosse	784.715	100-yr Base	197147.00	650.20	681.45	665.65	681.49	0.000018	1.63	138980.80	8268.56	0.06
Mississippi	PrIslToLaCrosse	784.715	IA/MN Max	197147.00	650.20	681.94	665.84	681.97	0.000018	1.63	133313.70	7065.73	0.06
Mississippi	PrIslToLaCrosse	784.715	WI Fldwy	197147.00	650.20	681.46	665.65	681.49	0.000018	1.63	138910.80	8206.29	0.06
Mississippi	PrIslToLaCrosse	784.471	100-yr Base	197090.00	649.82	681.44	664.44	681.46	0.000013	1.42	157382.70	8355.15	0.05
Mississippi	PrIslToLaCrosse	784.471	IA/MN Max	197090.00	649.82	681.93	664.44	681.95	0.000013	1.44	154828.90	7892.35	0.05
Mississippi	PrIslToLaCrosse	784.471	WI Fldwy	197090.00	649.82	681.44	664.44	681.47	0.000013	1.42	157407.50	8294.68	0.05
Mississippi	PrIslToLaCrosse	784.243	100-yr Base	197136.00	647.59	681.42	664.87	681.45	0.000013	1.49	152636.30	8072.39	0.05
Mississippi	PrIslToLaCrosse	784.243	IA/MN Max	197136.00	647.59	681.91	664.94	681.94	0.000013	1.50	149230.50	7448.05	0.05
Mississippi	PrIslToLaCrosse	784.243	WI Fldwy	197136.00	647.59	681.43	664.87	681.45	0.000013	1.49	152658.70	8015.38	0.05
Mississippi	PrIslToLaCrosse	784.020	100-yr Base	197181.00	650.53	681.42	663.18	681.44	0.000009	1.20	180051.80	8796.44	0.04
Mississippi	PrIslToLaCrosse	784.020	IA/MN Max	197181.00	650.53	681.90	663.21	681.92	0.000009	1.21	176602.40	8305.17	0.04
Mississippi	PrIslToLaCrosse	784.020	WI Fldwy	197181.00	650.53	681.42	663.18	681.44	0.000009	1.20	180077.60	8793.51	0.04
Mississippi	PrIslToLaCrosse	783.652	100-yr Base	197226.00	650.49	681.41	660.33	681.42	0.000005	0.91	217873.30	9686.19	0.03
Mississippi	PrIslToLaCrosse	783.652	IA/MN Max	197226.00	650.49	681.90	660.32	681.91	0.000005	0.92	213394.40	9031.64	0.03
Mississippi	PrIslToLaCrosse	783.652	WI Fldwy	197226.00	650.49	681.41	660.33	681.42	0.000005	0.91	217891.50	9624.99	0.03
Mississippi	PrIslToLaCrosse	783.304	100-yr Base	197170.00	650.69	681.40	658.55	681.41	0.000004	0.88	232379.60	9984.76	0.03
Mississippi	PrIslToLaCrosse	783.304	IA/MN Max	197170.00	650.69	681.89	658.55	681.90	0.000004	0.87	224753.50	8744.21	0.03
Mississippi	PrIslToLaCrosse	783.304	WI Fldwy	197170.00	650.69	681.40	658.55	681.42	0.000004	0.88	232409.30	9983.38	0.03
Mississippi	PrIslToLaCrosse	783.000	100-yr Base	197215.00	649.31	681.40	656.78	681.41	0.000003	0.73	271963.60	10415.25	0.02
Mississippi	PrIslToLaCrosse	783.000	IA/MN Max	197215.00	649.31	681.89	656.78	681.89	0.000003	0.73	265943.60	9749.04	0.02
Mississippi	PrIslToLaCrosse	783.000	WI Fldwy	197215.00	649.31	681.40	656.78	681.41	0.000003	0.73	271994.70	10412.90	0.02
Mississippi	PrIslToLaCrosse	781.990	100-yr Base	197294.00	646.75	681.39	653.65	681.39	0.000002	0.62	335887.70	11492.02	0.02
Mississippi	PrIslToLaCrosse	781.990	IA/MN Max	197294.00	646.75	681.87	653.65	681.88	0.000002	0.62	328322.90	10749.50	0.02
Mississippi	PrIslToLaCrosse	781.990	WI Fldwy	197294.00	646.75	681.39	653.65	681.40	0.000002	0.62	335921.90	11445.54	0.02
Mississippi	PrIslToLaCrosse	781.468	100-yr Base	197385.00	644.58	681.38	652.63	681.39	0.000002	0.61	350903.20	11860.60	0.02
Mississippi	PrIslToLaCrosse	781.468	IA/MN Max	197385.00	644.58	681.87	652.62	681.88	0.000002	0.61	342643.40	11015.29	0.02
Mississippi	PrIslToLaCrosse	781.468	WI Fldwy	197385.00	644.58	681.39	652.63	681.39	0.000002	0.61	350756.00	11760.95	0.02
Mississippi	PrIslToLaCrosse	780.984	100-yr Base	197476.00	643.00	681.38	651.11	681.38	0.000002	0.70	317206.40	11414.83	0.02
Mississippi	PrIslToLaCrosse	780.984	IA/MN Max	197476.00	643.00	681.86	651.12	681.87	0.000002	0.71	307463.90	10401.18	0.02
Mississippi	PrIslToLaCrosse	780.984	WI Fldwy	197476.00	643.00	681.38	651.11	681.39	0.000002	0.70	317202.60	11397.29	0.02
Mississippi	PrIslToLaCrosse	780.631	100-yr Base	197419.00	642.60	681.37	650.23	681.38	0.000003	0.84	277136.90	13165.90	0.03
Mississippi	PrIslToLaCrosse	780.631	IA/MN Max	197419.00	642.60	681.86	650.22	681.86	0.000003	0.85	257451.90	8948.73	0.03

HEC-RAS Plan: Plan1 Locations: User Defined (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	780.631	WI Fldwy	197419.00	642.60	681.37	650.23	681.38	0.000003	0.84	277171.20	11478.29	0.03
Mississippi	PrIslToLaCrosse	780.191	100-yr Base	197510.00	642.01	681.36	649.67	681.37	0.000003	0.83	273337.60	11036.73	0.03
Mississippi	PrIslToLaCrosse	780.191	IA/MN Max	197510.00	642.01	681.85	649.68	681.86	0.000003	0.84	259801.60	9354.60	0.03
Mississippi	PrIslToLaCrosse	780.191	WI Fldwy	197510.00	642.01	681.36	649.67	681.37	0.000003	0.83	273370.50	11035.33	0.03
Mississippi	PrIslToLaCrosse	779.984	100-yr Base	198626.00	642.80	681.36	649.94	681.37	0.000002	0.74	292751.20	10640.15	0.02
Mississippi	PrIslToLaCrosse	779.984	IA/MN Max	198626.00	642.80	681.85	649.93	681.85	0.000002	0.74	285430.10	9589.15	0.02
Mississippi	PrIslToLaCrosse	779.984	WI Fldwy	198626.00	642.80	681.36	649.94	681.37	0.000002	0.74	292783.00	10637.98	0.02
Mississippi	PrIslToLaCrosse	779.811	100-yr Base	198615.00	642.80	681.36	649.88	681.37	0.000002	0.66	317517.60	10485.84	0.02
Mississippi	PrIslToLaCrosse	779.811	IA/MN Max	198615.00	642.80	681.85	649.88	681.85	0.000002	0.67	310787.90	9826.24	0.02
Mississippi	PrIslToLaCrosse	779.811	WI Fldwy	198615.00	642.80	681.36	649.88	681.37	0.000002	0.66	317521.10	10473.85	0.02
Mississippi	PrIslToLaCrosse	779.388	100-yr Base	198832.00	643.00	681.35	649.80	681.36	0.000002	0.67	307850.30	9928.49	0.02
Mississippi	PrIslToLaCrosse	779.388	IA/MN Max	198832.00	643.00	681.84	649.80	681.85	0.000002	0.67	300637.00	9014.51	0.02
Mississippi	PrIslToLaCrosse	779.388	WI Fldwy	198832.00	643.00	681.36	649.80	681.36	0.000002	0.67	307880.00	9915.47	0.02
Mississippi	PrIslToLaCrosse	779.187	100-yr Base	198866.00	642.80	681.35	649.46	681.36	0.000002	0.71	293556.80	12155.20	0.02
Mississippi	PrIslToLaCrosse	779.187	IA/MN Max	198866.00	642.80	681.84	649.45	681.85	0.000002	0.71	285342.60	8490.13	0.02
Mississippi	PrIslToLaCrosse	779.187	WI Fldwy	198866.00	642.80	681.35	649.45	681.36	0.000002	0.71	293585.00	9449.95	0.02
Mississippi	PrIslToLaCrosse	779.000	100-yr Base	198900.00	642.80	681.35	649.02	681.36	0.000002	0.70	288168.40	8854.24	0.02
Mississippi	PrIslToLaCrosse	779.000	IA/MN Max	198900.00	642.80	681.84	649.02	681.84	0.000002	0.71	282411.00	8138.86	0.02
Mississippi	PrIslToLaCrosse	779.000	WI Fldwy	198900.00	642.80	681.35	649.02	681.36	0.000002	0.70	288194.60	8817.69	0.02
Mississippi	PrIslToLaCrosse	778.664	100-yr Base	199026.00	643.20	681.35	649.19	681.35	0.000002	0.73	278804.40	8443.44	0.02
Mississippi	PrIslToLaCrosse	778.664	IA/MN Max	199026.00	643.20	681.83	649.19	681.84	0.000002	0.74	273571.70	7922.29	0.02
Mississippi	PrIslToLaCrosse	778.664	WI Fldwy	199026.00	643.20	681.35	649.19	681.36	0.000002	0.73	278829.60	8437.31	0.02
Mississippi	PrIslToLaCrosse	778.290	100-yr Base	199152.00	643.00	681.34	648.85	681.35	0.000003	0.85	252871.70	8402.05	0.02
Mississippi	PrIslToLaCrosse	778.290	IA/MN Max	199152.00	643.00	681.83	648.85	681.84	0.000003	0.85	244461.40	7323.56	0.02
Mississippi	PrIslToLaCrosse	778.290	WI Fldwy	199152.00	643.00	681.34	648.85	681.35	0.000003	0.85	252896.80	8392.53	0.02
Mississippi	PrIslToLaCrosse	778.074	100-yr Base	199186.00	642.60	681.33	648.04	681.34	0.000003	0.96	227615.70	8275.74	0.03
Mississippi	PrIslToLaCrosse	778.074	IA/MN Max	199186.00	642.60	681.82	648.04	681.83	0.000003	0.96	211534.40	5970.74	0.03
Mississippi	PrIslToLaCrosse	778.074	WI Fldwy	199186.00	642.60	681.33	648.04	681.35	0.000003	0.96	227640.50	8275.77	0.03
Mississippi	PrIslToLaCrosse	777.875	100-yr Base	199232.00	641.22	681.33	647.37	681.34	0.000003	0.94	228968.40	8214.97	0.03
Mississippi	PrIslToLaCrosse	777.875	IA/MN Max	199232.00	641.22	681.82	647.37	681.83	0.000003	0.95	216609.70	6130.99	0.03
Mississippi	PrIslToLaCrosse	777.875	WI Fldwy	199232.00	641.22	681.33	647.37	681.34	0.000003	0.94	228944.10	8189.28	0.03
Mississippi	PrIslToLaCrosse	777.488	100-yr Base	199232.00	639.64	681.31	646.63	681.33	0.000005	1.18	200816.40	8529.91	0.03
Mississippi	PrIslToLaCrosse	777.488	IA/MN Max	199232.00	639.64	681.80	646.63	681.82	0.000005	1.19	188679.50	6284.56	0.03
Mississippi	PrIslToLaCrosse	777.488	WI Fldwy	199232.00	639.64	681.32	646.63	681.34	0.000005	1.18	200818.00	8502.00	0.03
Mississippi	PrIslToLaCrosse	777.080	100-yr Base	199232.00	639.25	681.31	646.05	681.32	0.000003	0.93	239466.20	8219.94	0.03
Mississippi	PrIslToLaCrosse	777.080	IA/MN Max	199232.00	639.25	681.80	646.05	681.81	0.000003	0.93	226582.10	6592.74	0.03
Mississippi	PrIslToLaCrosse	777.080	WI Fldwy	199232.00	639.25	681.31	646.05	681.32	0.000003	0.93	239397.50	8187.34	0.03
Mississippi	PrIslToLaCrosse	776.665	100-yr Base	199232.00	638.46	681.30	645.03	681.31	0.000003	0.87	235203.20	6742.25	0.02
Mississippi	PrIslToLaCrosse	776.665	IA/MN Max	199232.00	638.46	681.79	645.03	681.80	0.000003	0.88	229092.10	5931.80	0.02
Mississippi	PrIslToLaCrosse	776.665	WI Fldwy	199232.00	638.46	681.31	645.03	681.32	0.000003	0.87	235223.20	6728.42	0.02
Mississippi	PrIslToLaCrosse	776.002	100-yr Base	199232.00	639.45	681.30	644.60	681.31	0.000002	0.82	256289.40	7015.05	0.02
Mississippi	PrIslToLaCrosse	776.002	IA/MN Max	199232.00	639.45	681.78	644.60	681.79	0.000002	0.82	248922.40	6456.90	0.02
Mississippi	PrIslToLaCrosse	776.002	WI Fldwy	199232.00	639.45	681.30	644.60	681.31	0.000002	0.82	256310.30	7001.74	0.02
Mississippi	PrIslToLaCrosse	775.186	100-yr Base	199232.00	636.49	681.29	644.23	681.30	0.000002	0.75	285520.80	8317.92	0.02
Mississippi	PrIslToLaCrosse	775.186	IA/MN Max	199232.00	636.49	681.78	644.23	681.78	0.000002	0.75	272979.80	7421.44	0.02
Mississippi	PrIslToLaCrosse	775.186	WI Fldwy	199232.00	636.49	681.29	644.23	681.30	0.000002	0.75	285544.30	8315.76	0.02
Mississippi	PrIslToLaCrosse	774.739	100-yr Base	199232.00	636.68	681.28	644.14	681.29	0.000003	0.81	262015.80	8225.18	0.02
Mississippi	PrIslToLaCrosse	774.739	IA/MN Max	199232.00	636.68	681.77	644.14	681.78	0.000003	0.82	248122.20	6477.78	0.02
Mississippi	PrIslToLaCrosse	774.739	WI Fldwy	199232.00	636.68	681.28	644.14	681.29	0.000003	0.81	261957.00	8209.27	0.02
Mississippi	PrIslToLaCrosse	774.330	100-yr Base	199232.00	637.58	681.27	644.78	681.28	0.000003	1.02	217298.80	8549.18	0.03
Mississippi	PrIslToLaCrosse	774.330	IA/MN Max	199232.00	637.58	681.76	644.78	681.77	0.000003	1.03	201372.70	5245.21	0.03
Mississippi	PrIslToLaCrosse	774.330	WI Fldwy	199232.00	637.58	681.27	644.78	681.29	0.000003	1.02	217324.00	8509.62	0.03
Mississippi	PrIslToLaCrosse	774.110	100-yr Base	199232.00	637.48	681.27	643.30	681.28	0.000002	0.74	294488.30	9496.50	0.02
Mississippi	PrIslToLaCrosse	774.110	IA/MN Max	199232.00	637.48	681.76	643.30	681.77	0.000002	0.75	281926.80	7379.76	0.02
Mississippi	PrIslToLaCrosse	774.110	WI Fldwy	199232.00	637.48	681.27	643.30	681.28	0.000002	0.74	294493.20	9470.86	0.02
Mississippi	PrIslToLaCrosse	773.832	100-yr Base	199232.00	637.48	681.27	642.91	681.28	0.000001	0.64	328770.40	9884.96	0.02
Mississippi	PrIslToLaCrosse	773.832	IA/MN Max	199232.00	637.48	681.76	642.91	681.76	0.000001	0.64	316778.10	7815.81	0.02
Mississippi	PrIslToLaCrosse	773.832	WI Fldwy	199232.00	637.48	681.27	642.91	681.28	0.000001	0.64	328799.10	9882.99	0.02
Mississippi	PrIslToLaCrosse	773.623	100-yr Base	199232.00	638.07	681.27	642.94	681.27	0.000001	0.57	366788.50	10392.47	0.02
Mississippi	PrIslToLaCrosse	773.623	IA/MN Max	199232.00	638.07	681.76	642.94	681.76	0.000001	0.57	355849.90	9153.40	0.02
Mississippi	PrIslToLaCrosse	773.623	WI Fldwy	199232.00	638.07	681.27	642.94	681.28	0.000001	0.57	366817.80	10384.46	0.02
Mississippi	PrIslToLaCrosse	773.342	100-yr Base	199232.00	637.94	681.27	643.11	681.27	0.000001	0.56	370102.20	10624.69	0.02
Mississippi	PrIslToLaCrosse	773.342	IA/MN Max	199232.00	637.94	681.76	643.11	681.76	0.000001	0.57	357607.80	9068.54	0.02
Mississippi	PrIslToLaCrosse	773.342	WI Fldwy	199232.00	637.94	681.27	643.11	681.28	0.000001	0.56	370130.40	10607.93	0.02
Mississippi	PrIslToLaCrosse	772.832	100-yr Base	199232.00	637.08	681.26	643.38	681.27	0.000001	0.66	313843.40	9562.99	0.02
Mississippi	PrIslToLaCrosse	772.832	IA/MN Max	199232.00	637.08	681.75	643.38	681.76	0.000001	0.67	303217.50	7677.77	0.02
Mississippi	PrIslToLaCrosse	772.832	WI Fldwy	199232.00	637.08	681.27	643.38	681.27	0.000001	0.66	313861.70	9546.98	0.02
Mississippi	PrIslToLaCrosse	772.560	100-yr Base	199232.00	636.29	681.26	642.39	681.27	0.000001	0.58	355996.10	10878.88	0.02
Mississippi	PrIslToLaCrosse	772.560	IA/MN Max	199232.00	636.29	681.75	642.40	681.75	0.000001	0.58	346150.40	8531.46	0.02

HEC-RAS Plan: Plan1 Locations: User Defined (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	772.560	WI Fldwy	199232.00	636.29	681.27	642.39	681.27	0.000001	0.58	356025.40	10849.35	0.02
Mississippi	PrIslToLaCrosse	772.339	100-yr Base	199232.00	636.29	681.26	642.02	681.27	0.000001	0.50	412704.50	11546.76	0.01
Mississippi	PrIslToLaCrosse	772.339	IA/MN Max	199232.00	636.29	681.75	642.02	681.75	0.000001	0.50	403139.30	9915.38	0.01
Mississippi	PrIslToLaCrosse	772.339	WI Fldwy	199232.00	636.29	681.26	642.02	681.27	0.000001	0.50	412732.00	11404.84	0.01
Mississippi	PrIslToLaCrosse	772.092	100-yr Base	199232.00	637.67	681.26	642.09	681.26	0.000001	0.46	452880.60	11919.31	0.01
Mississippi	PrIslToLaCrosse	772.092	IA/MN Max	199232.00	637.67	681.75	642.09	681.75	0.000001	0.46	443069.80	11001.16	0.01
Mississippi	PrIslToLaCrosse	772.092	WI Fldwy	199232.00	637.67	681.26	642.09	681.27	0.000001	0.45	452916.20	11918.09	0.01
Mississippi	PrIslToLaCrosse	771.809	100-yr Base	199232.00	638.07	681.26	642.33	681.26	0.000001	0.44	476863.60	13982.99	0.01
Mississippi	PrIslToLaCrosse	771.809	IA/MN Max	199232.00	638.07	681.75	642.33	681.75	0.000001	0.44	463854.20	11797.73	0.01
Mississippi	PrIslToLaCrosse	771.809	WI Fldwy	199232.00	638.07	681.26	642.33	681.27	0.000001	0.44	476870.60	13968.64	0.01
Mississippi	PrIslToLaCrosse	771.313	100-yr Base	199232.00	638.26	681.26	642.68	681.26	0.000001	0.42	496085.70	13716.15	0.01
Mississippi	PrIslToLaCrosse	771.313	IA/MN Max	199232.00	638.26	681.75	642.68	681.75	0.000001	0.43	484403.30	12607.02	0.01
Mississippi	PrIslToLaCrosse	771.313	WI Fldwy	199232.00	638.26	681.26	642.68	681.26	0.000001	0.42	496126.70	13716.19	0.01
Mississippi	PrIslToLaCrosse	770.876	100-yr Base	199232.00	637.87	681.26	642.56	681.26	0.000001	0.45	476189.50	14553.49	0.01
Mississippi	PrIslToLaCrosse	770.876	IA/MN Max	199232.00	637.87	681.74	642.56	681.75	0.000001	0.46	448273.30	11393.25	0.01
Mississippi	PrIslToLaCrosse	770.876	WI Fldwy	199232.00	637.87	681.26	642.56	681.26	0.000001	0.45	476044.70	14511.52	0.01
Mississippi	PrIslToLaCrosse	770.530	100-yr Base	199232.00	636.69	681.26	642.40	681.26	0.000001	0.45	472145.60	13811.54	0.01
Mississippi	PrIslToLaCrosse	770.530	IA/MN Max	199232.00	636.69	681.74	642.40	681.75	0.000001	0.46	454841.30	11647.54	0.01
Mississippi	PrIslToLaCrosse	770.530	WI Fldwy	199232.00	636.69	681.26	642.40	681.26	0.000001	0.45	472186.90	13803.99	0.01
Mississippi	PrIslToLaCrosse	769.696	100-yr Base	199232.00	636.69	681.25	642.80	681.26	0.000001	0.45	482406.60	14292.23	0.01
Mississippi	PrIslToLaCrosse	769.696	IA/MN Max	199232.00	636.69	681.74	642.80	681.74	0.000001	0.45	458496.90	11613.89	0.01
Mississippi	PrIslToLaCrosse	769.696	WI Fldwy	199232.00	636.69	681.26	642.80	681.26	0.000001	0.45	482224.80	14235.88	0.01
Mississippi	PrIslToLaCrosse	768.717	100-yr Base	199232.00	635.50	681.25	642.85	681.25	0.000001	0.49	434893.80	11581.23	0.01
Mississippi	PrIslToLaCrosse	768.717	IA/MN Max	199232.00	635.50	681.74	642.85	681.74	0.000001	0.49	424027.40	10773.37	0.01
Mississippi	PrIslToLaCrosse	768.717	WI Fldwy	199232.00	635.50	681.25	642.85	681.25	0.000001	0.49	434928.40	11572.79	0.01
Mississippi	PrIslToLaCrosse	767.605	100-yr Base	199232.00	634.91	681.24	642.08	681.25	0.000001	0.51	409876.40	10764.57	0.01
Mississippi	PrIslToLaCrosse	767.605	IA/MN Max	199232.00	634.91	681.73	642.06	681.73	0.000001	0.51	398986.80	9908.92	0.01
Mississippi	PrIslToLaCrosse	767.605	WI Fldwy	199232.00	634.91	681.25	642.07	681.25	0.000001	0.51	409903.50	10756.58	0.01
Mississippi	PrIslToLaCrosse	766.672	100-yr Base	199232.00	630.97	681.24	640.45	681.24	0.000001	0.60	358500.20	9429.39	0.02
Mississippi	PrIslToLaCrosse	766.672	IA/MN Max	199232.00	630.97	681.72	640.45	681.73	0.000001	0.60	349098.80	8716.27	0.02
Mississippi	PrIslToLaCrosse	766.672	WI Fldwy	199232.00	630.97	681.24	640.45	681.25	0.000001	0.60	358528.30	9427.60	0.02
Mississippi	PrIslToLaCrosse	765.995	100-yr Base	199232.00	629.32	681.23	638.79	681.24	0.000001	0.74	313765.10	8697.49	0.02
Mississippi	PrIslToLaCrosse	765.995	IA/MN Max	199232.00	629.32	681.72	638.79	681.72	0.000001	0.75	305568.70	8030.31	0.02
Mississippi	PrIslToLaCrosse	765.995	WI Fldwy	199232.00	629.32	681.23	638.79	681.24	0.000001	0.74	313785.90	8690.08	0.02
Mississippi	PrIslToLaCrosse	765.528	100-yr Base	199232.00	626.80	681.22	637.59	681.23	0.000002	0.91	273769.60	8769.91	0.02
Mississippi	PrIslToLaCrosse	765.528	IA/MN Max	199232.00	626.80	681.71	637.59	681.72	0.000002	0.92	263654.80	7674.01	0.02
Mississippi	PrIslToLaCrosse	765.528	WI Fldwy	199232.00	626.80	681.23	637.59	681.24	0.000002	0.91	273795.80	8759.29	0.02
Mississippi	PrIslToLaCrosse	765.103	100-yr Base	199232.00	622.56	681.19	634.06	681.22	0.000006	1.68	215139.20	9096.80	0.04
Mississippi	PrIslToLaCrosse	765.103	IA/MN Max	199232.00	622.56	681.67	634.06	681.71	0.000006	1.69	206390.30	7752.42	0.04
Mississippi	PrIslToLaCrosse	765.103	WI Fldwy	199232.00	622.56	681.19	634.06	681.23	0.000006	1.68	215165.40	8755.97	0.04
Mississippi	PrIslToLaCrosse	764.552	100-yr Base	199232.00	639.50	681.06	660.87	681.18	0.000078	3.34	113343.90	8825.10	0.11
Mississippi	PrIslToLaCrosse	764.552	IA/MN Max	199232.00	639.50	681.54	660.87	681.67	0.000079	3.35	106645.90	7082.32	0.11
Mississippi	PrIslToLaCrosse	764.552	WI Fldwy	199232.00	639.50	681.06	660.87	681.19	0.000078	3.34	113369.10	8079.17	0.11
Mississippi	PrIslToLaCrosse	764.091	100-yr Base	199232.00	636.52	680.86	659.34	680.99	0.000079	3.25	123821.50	10520.38	0.11
Mississippi	PrIslToLaCrosse	764.091	IA/MN Max	199232.00	636.52	681.34	659.34	681.47	0.000081	3.27	117418.40	7149.97	0.11
Mississippi	PrIslToLaCrosse	764.091	WI Fldwy	199232.00	636.52	680.87	659.34	680.99	0.000079	3.25	123847.60	8066.23	0.11
Mississippi	PrIslToLaCrosse	763.659	100-yr Base	199232.00	638.70	680.53	661.86	680.76	0.000124	4.43	104038.50	11188.56	0.15
Mississippi	PrIslToLaCrosse	763.659	IA/MN Max	199232.00	638.70	681.00	661.86	681.24	0.000125	4.46	96774.06	7316.29	0.15
Mississippi	PrIslToLaCrosse	763.659	WI Fldwy	199232.00	638.70	680.54	661.86	680.76	0.000124	4.43	104067.00	8357.31	0.15
Mississippi	PrIslToLaCrosse	763.082	100-yr Base	229611.00	640.57	680.17	663.96	680.38	0.000124	4.73	106218.20	11723.27	0.16
Mississippi	PrIslToLaCrosse	763.082	IA/MN Max	229611.00	640.57	680.64	663.96	680.85	0.000125	4.76	98845.95	8008.56	0.16
Mississippi	PrIslToLaCrosse	763.082	WI Fldwy	229611.00	640.57	680.17	663.96	680.38	0.000123	4.72	106252.60	9249.15	0.16
Mississippi	PrIslToLaCrosse	762.578	100-yr Base	229611.00	653.24	679.86	665.76	680.06	0.000142	4.51	129288.20	13485.32	0.16
Mississippi	PrIslToLaCrosse	762.578	IA/MN Max	229611.00	653.24	680.32	665.77	680.54	0.000143	4.58	122441.60	9460.39	0.17
Mississippi	PrIslToLaCrosse	762.578	WI Fldwy	229611.00	653.24	679.86	665.77	680.07	0.000142	4.51	129328.00	10804.65	0.16
Mississippi	PrIslToLaCrosse	762.273	100-yr Base	229611.00	650.04	679.60	666.97	679.76	0.000236	4.39	127226.10	14424.04	0.16
Mississippi	PrIslToLaCrosse	762.273	IA/MN Max	229611.00	650.04	680.05	666.97	680.23	0.000236	4.45	117730.20	9727.76	0.16
Mississippi	PrIslToLaCrosse	762.273	WI Fldwy	229611.00	650.04	679.60	666.97	679.77	0.000235	4.39	127272.70	11576.30	0.16
Mississippi	PrIslToLaCrosse	762.062	100-yr Base	229611.00	638.79	679.26	664.97	679.52	0.000168	5.41	123067.10	14804.18	0.18
Mississippi	PrIslToLaCrosse	762.062	IA/MN Max	229611.00	638.79	679.71	664.97	679.99	0.000169	5.48	113931.10	9501.80	0.18
Mississippi	PrIslToLaCrosse	762.062	WI Fldwy	229611.00	638.79	679.26	664.97	679.53	0.000168	5.41	123114.30	11774.09	0.18
Mississippi	PrIslToLaCrosse	761.826	100-yr Base	229611.00	647.34	679.05	665.46	679.31	0.000170	5.44	136286.10	15237.57	0.18
Mississippi	PrIslToLaCrosse	761.826	IA/MN Max	229611.00	647.34	679.51	665.47	679.78	0.000170	5.51	125335.40	9686.78	0.19
Mississippi	PrIslToLaCrosse	761.826	WI Fldwy	229611.00	647.34	679.06	665.47	679.31	0.000170	5.44	136338.40	12012.16	0.18
Mississippi	PrIslToLaCrosse	761.327	100-yr Base	229611.00	644.03	678.66	664.10	678.89	0.000157	4.80	134838.80	16334.71	0.17
Mississippi	PrIslToLaCrosse	761.327	IA/MN Max	229611.00	644.03	679.11	664.06	679.35	0.000158	4.87	127235.80	11167.42	0.17
Mississippi	PrIslToLaCrosse	761.327	WI Fldwy	229611.00	644.03	678.66	664.10	678.89	0.000157	4.80	134898.00	12774.44	0.17
Mississippi	PrIslToLaCrosse	760.994	100-yr Base	229611.00	644.64	678.29	664.27	678.57	0.000177	5.22	133539.20	17359.24	0.19
Mississippi	PrIslToLaCrosse	760.994	IA/MN Max	229611.00	644.64	678.74	664.26	679.03	0.000178	5.29	124673.90	11754.29	0.19

HEC-RAS Plan: Plan1 Locations: User Defined (Continued)

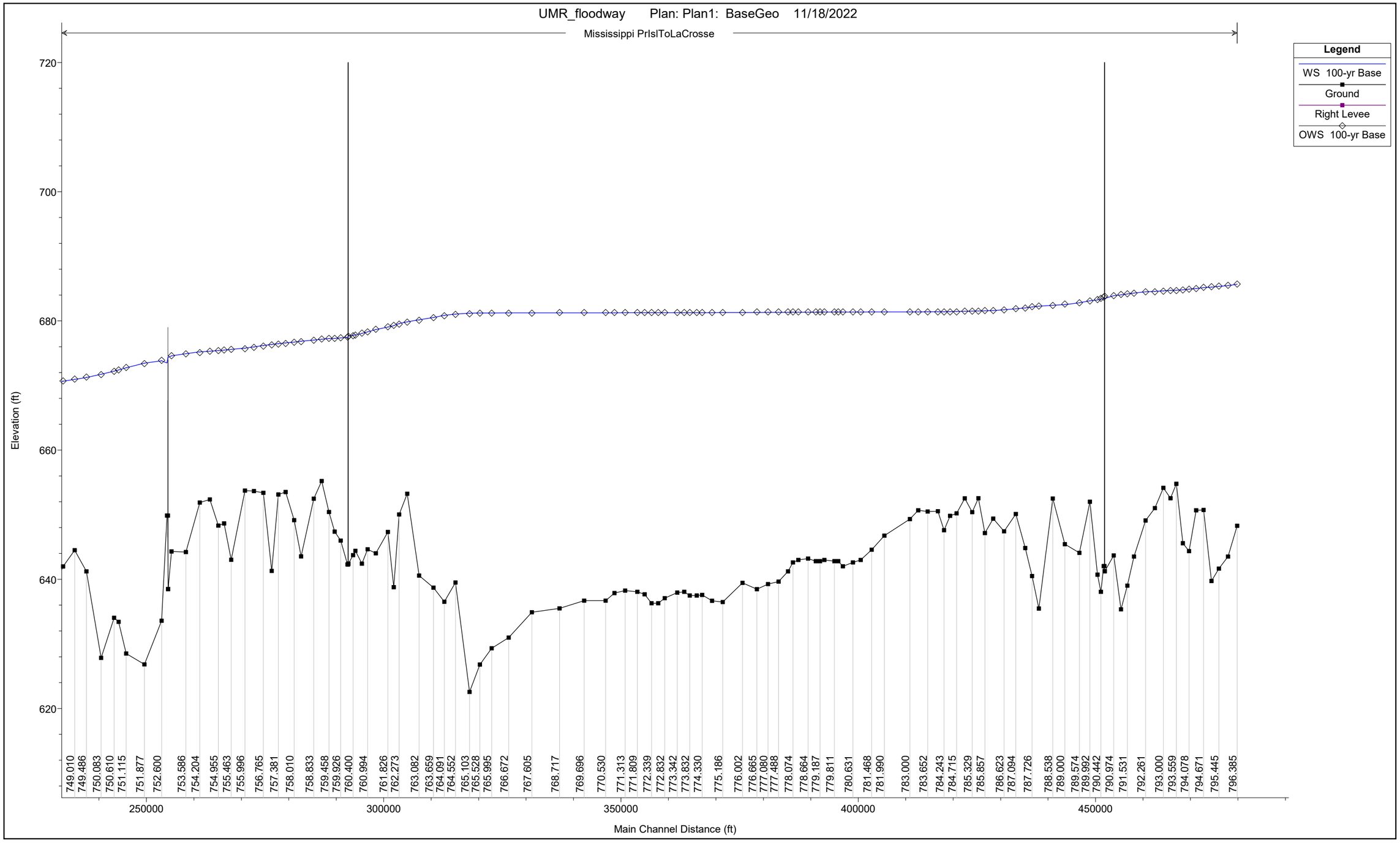
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	760.994	WI Fldwy	229611.00	644.64	678.30	664.27	678.58	0.000177	5.21	133607.20	13263.59	0.19
Mississippi	PrIslToLaCrosse	760.759	100-yr Base	229611.00	642.41	678.05	663.34	678.34	0.000178	5.47	142371.60	15918.74	0.19
Mississippi	PrIslToLaCrosse	760.759	IA/MN Max	229611.00	642.41	678.50	663.34	678.80	0.000179	5.54	131785.30	11953.28	0.19
Mississippi	PrIslToLaCrosse	760.759	WI Fldwy	229611.00	642.41	678.06	663.34	678.34	0.000178	5.47	142447.90	14602.07	0.19
Mississippi	PrIslToLaCrosse	760.495	100-yr Base	229611.00	644.41	677.82	662.94	678.10	0.000170	5.50	141621.90	15728.67	0.18
Mississippi	PrIslToLaCrosse	760.495	IA/MN Max	229611.00	644.41	678.26	662.92	678.56	0.000173	5.54	134811.50	12174.27	0.18
Mississippi	PrIslToLaCrosse	760.495	WI Fldwy	229611.00	644.41	677.82	662.94	678.11	0.000169	5.49	141698.80	15063.63	0.18
Mississippi	PrIslToLaCrosse	760.400	100-yr Base	229611.00	643.73	677.77	665.31	678.00	0.000173	5.25	122586.30	15909.14	0.18
Mississippi	PrIslToLaCrosse	760.400	IA/MN Max	229611.00	643.73	678.23	665.31	678.46	0.000168	5.18	119933.70	12235.25	0.18
Mississippi	PrIslToLaCrosse	760.400	WI Fldwy	229611.00	643.73	677.78	665.31	678.01	0.000173	5.25	122654.40	14994.04	0.18
Mississippi	PrIslToLaCrosse	760.216	100-yr Base	229611.00	642.43	677.69	664.11	677.87	0.000079	4.02	70217.59	15434.44	0.14
Mississippi	PrIslToLaCrosse	760.216	IA/MN Max	229611.00	642.43	678.15	664.09	678.33	0.000074	3.93	71520.89	12325.44	0.14
Mississippi	PrIslToLaCrosse	760.216	WI Fldwy	229611.00	642.43	677.69	664.11	677.87	0.000079	4.02	70240.44	13915.57	0.14
Mississippi	PrIslToLaCrosse	760.2		Bridge									
Mississippi	PrIslToLaCrosse	760.181	100-yr Base	229611.00	642.30	677.42	666.65	677.82	0.000185	6.20	54347.52	15557.62	0.22
Mississippi	PrIslToLaCrosse	760.181	IA/MN Max	229611.00	642.30	677.91	666.66	678.29	0.000171	5.98	55927.42	12308.07	0.21
Mississippi	PrIslToLaCrosse	760.181	WI Fldwy	229611.00	642.30	677.42	666.65	677.83	0.000185	6.20	54367.45	14023.73	0.22
Mississippi	PrIslToLaCrosse	759.926	100-yr Base	229611.00	645.99	677.37	667.35	677.53	0.000113	4.66	140750.90	15098.92	0.17
Mississippi	PrIslToLaCrosse	759.926	IA/MN Max	229611.00	645.99	677.84	667.35	678.01	0.000114	4.69	133505.30	11552.81	0.17
Mississippi	PrIslToLaCrosse	759.926	WI Fldwy	229611.00	645.99	677.37	667.35	677.53	0.000113	4.65	140792.20	15032.40	0.17
Mississippi	PrIslToLaCrosse	759.684	100-yr Base	229611.00	647.38	677.31	667.75	677.39	0.000066	3.61	147763.40	15160.14	0.13
Mississippi	PrIslToLaCrosse	759.684	IA/MN Max	229611.00	647.38	677.78	667.70	677.87	0.000067	3.63	140359.90	11529.75	0.13
Mississippi	PrIslToLaCrosse	759.684	WI Fldwy	229611.00	647.38	677.31	667.75	677.40	0.000066	3.60	147791.80	14971.20	0.13
Mississippi	PrIslToLaCrosse	759.458	100-yr Base	229611.00	650.43	677.26	663.72	677.31	0.000041	2.67	148451.40	14237.99	0.10
Mississippi	PrIslToLaCrosse	759.458	IA/MN Max	229611.00	650.43	677.74	663.72	677.79	0.000041	2.69	142074.30	10964.86	0.10
Mississippi	PrIslToLaCrosse	759.458	WI Fldwy	229611.00	650.43	677.27	663.72	677.32	0.000041	2.67	148308.00	14109.08	0.10
Mississippi	PrIslToLaCrosse	759.170	100-yr Base	229611.00	655.22	677.15	668.29	677.23	0.000090	3.51	147218.40	14647.94	0.14
Mississippi	PrIslToLaCrosse	759.170	IA/MN Max	229611.00	655.22	677.62	668.17	677.71	0.000090	3.57	143966.30	11956.86	0.14
Mississippi	PrIslToLaCrosse	759.170	WI Fldwy	229611.00	655.22	677.15	668.29	677.24	0.000090	3.51	147247.60	14627.17	0.14
Mississippi	PrIslToLaCrosse	758.833	100-yr Base	229611.00	652.49	677.03	667.37	677.09	0.000060	3.13	155104.20	15160.93	0.12
Mississippi	PrIslToLaCrosse	758.833	IA/MN Max	229611.00	652.49	677.50	667.41	677.57	0.000060	3.17	148992.20	11971.29	0.12
Mississippi	PrIslToLaCrosse	758.833	WI Fldwy	229611.00	652.49	677.03	667.37	677.09	0.000060	3.13	155070.50	15129.55	0.12
Mississippi	PrIslToLaCrosse	758.299	100-yr Base	229611.00	643.54	676.85	666.70	676.91	0.000057	3.01	152263.80	14301.85	0.11
Mississippi	PrIslToLaCrosse	758.299	IA/MN Max	229611.00	643.54	677.33	666.68	677.39	0.000057	3.06	141023.30	11170.66	0.11
Mississippi	PrIslToLaCrosse	758.299	WI Fldwy	229611.00	643.54	676.86	666.70	676.92	0.000056	3.01	152351.40	14289.49	0.11
Mississippi	PrIslToLaCrosse	758.010	100-yr Base	229611.00	649.15	676.72	666.84	676.80	0.000068	3.39	133920.50	14848.46	0.13
Mississippi	PrIslToLaCrosse	758.010	IA/MN Max	229611.00	649.15	677.20	666.76	677.28	0.000068	3.44	127634.90	9851.17	0.13
Mississippi	PrIslToLaCrosse	758.010	WI Fldwy	229611.00	649.15	676.73	666.84	676.81	0.000068	3.39	133999.40	14700.91	0.13
Mississippi	PrIslToLaCrosse	757.668	100-yr Base	229611.00	653.51	676.59	666.97	676.68	0.000073	3.26	119497.60	15488.71	0.13
Mississippi	PrIslToLaCrosse	757.668	IA/MN Max	229611.00	653.51	677.07	667.01	677.16	0.000073	3.31	116479.50	8669.63	0.13
Mississippi	PrIslToLaCrosse	757.668	WI Fldwy	229611.00	653.51	676.60	666.97	676.68	0.000073	3.26	119565.70	15487.39	0.13
Mississippi	PrIslToLaCrosse	757.381	100-yr Base	229611.00	653.12	676.47	665.14	676.57	0.000080	3.53	107455.30	16049.33	0.14
Mississippi	PrIslToLaCrosse	757.381	IA/MN Max	229611.00	653.12	676.95	665.14	677.05	0.000080	3.59	105899.30	7427.78	0.14
Mississippi	PrIslToLaCrosse	757.381	WI Fldwy	229611.00	653.12	676.48	665.14	676.58	0.000080	3.53	107513.80	16049.88	0.14
Mississippi	PrIslToLaCrosse	757.105	100-yr Base	229611.00	641.29	676.35	661.79	676.47	0.000067	3.43	94481.04	14793.31	0.13
Mississippi	PrIslToLaCrosse	757.105	IA/MN Max	229611.00	641.29	676.83	661.75	676.95	0.000067	3.47	93916.81	6287.12	0.13
Mississippi	PrIslToLaCrosse	757.105	WI Fldwy	229611.00	641.29	676.36	661.79	676.48	0.000067	3.43	94531.42	14790.63	0.13
Mississippi	PrIslToLaCrosse	756.765	100-yr Base	229611.00	653.40	676.20	663.00	676.34	0.000098	3.67	86410.75	14366.27	0.15
Mississippi	PrIslToLaCrosse	756.765	IA/MN Max	229611.00	653.40	676.67	663.35	676.82	0.000098	3.73	84744.23	5816.77	0.15
Mississippi	PrIslToLaCrosse	756.765	WI Fldwy	229611.00	653.40	676.21	663.00	676.34	0.000098	3.67	86344.86	14346.50	0.15
Mississippi	PrIslToLaCrosse	756.373	100-yr Base	229611.00	653.66	675.97	664.47	676.13	0.000104	3.70	75525.72	12656.26	0.15
Mississippi	PrIslToLaCrosse	756.373	IA/MN Max	229611.00	653.66	676.44	664.59	676.61	0.000104	3.76	73858.54	4900.56	0.15
Mississippi	PrIslToLaCrosse	756.373	WI Fldwy	229611.00	653.66	675.98	664.47	676.13	0.000104	3.70	75519.13	12643.04	0.15
Mississippi	PrIslToLaCrosse	755.996	100-yr Base	229611.00	653.73	675.79	662.73	675.92	0.000099	3.68	84299.00	13938.42	0.15
Mississippi	PrIslToLaCrosse	755.996	IA/MN Max	229611.00	653.73	676.26	662.81	676.40	0.000099	3.75	81967.23	5258.53	0.15
Mississippi	PrIslToLaCrosse	755.996	WI Fldwy	229611.00	653.73	675.80	662.73	675.93	0.000099	3.68	84348.21	13938.88	0.15
Mississippi	PrIslToLaCrosse	755.463	100-yr Base	229611.00	643.03	675.60	657.27	675.68	0.000045	2.55	104051.30	13327.38	0.10
Mississippi	PrIslToLaCrosse	755.463	IA/MN Max	229611.00	643.03	676.08	657.27	676.16	0.000045	2.58	99527.84	5827.44	0.10
Mississippi	PrIslToLaCrosse	755.463	WI Fldwy	229611.00	643.03	675.61	657.27	675.69	0.000045	2.55	104104.80	13320.97	0.10
Mississippi	PrIslToLaCrosse	755.186	100-yr Base	229611.00	648.65	675.47	662.62	675.59	0.000077	3.61	97485.73	13844.89	0.14
Mississippi	PrIslToLaCrosse	755.186	IA/MN Max	229611.00	648.65	675.94	662.65	676.07	0.000077	3.66	95979.17	6498.93	0.14
Mississippi	PrIslToLaCrosse	755.186	WI Fldwy	229611.00	648.65	675.48	662.62	675.60	0.000077	3.61	97549.19	13847.77	0.14
Mississippi	PrIslToLaCrosse	754.955	100-yr Base	229611.00	648.31	675.40	662.26	675.50	0.000065	3.15	108445.30	14745.09	0.12
Mississippi	PrIslToLaCrosse	754.955	IA/MN Max	229611.00	648.31	675.87	662.21	675.98	0.000065	3.19	104159.00	6979.75	0.12
Mississippi	PrIslToLaCrosse	754.955	WI Fldwy	229611.00	648.31	675.41	662.26	675.51	0.000065	3.14	108516.70	14369.67	0.12
Mississippi	PrIslToLaCrosse	754.592	100-yr Base	229611.00	652.36	675.30	664.44	675.38	0.000058	2.77	108146.10	16529.92	0.12
Mississippi	PrIslToLaCrosse	754.592	IA/MN Max	229611.00	652.36	675.77	664.32	675.86	0.000058	2.82	104317.10	7491.60	0.12
Mississippi	PrIslToLaCrosse	754.592	WI Fldwy	229611.00	652.36	675.31	664.43	675.39	0.000058	2.77	108225.10	16027.50	0.11

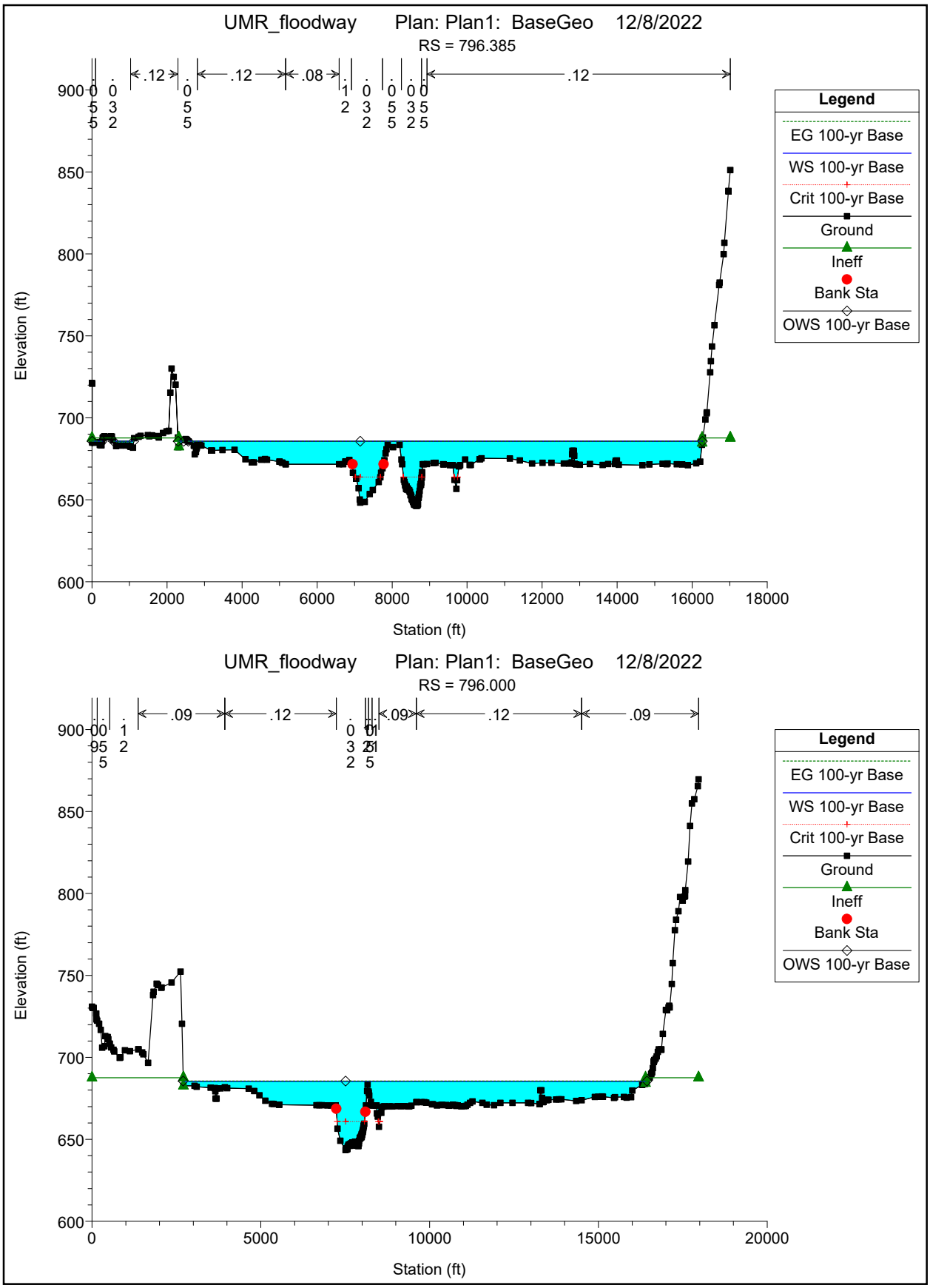
HEC-RAS Plan: Plan1 Locations: User Defined (Continued)

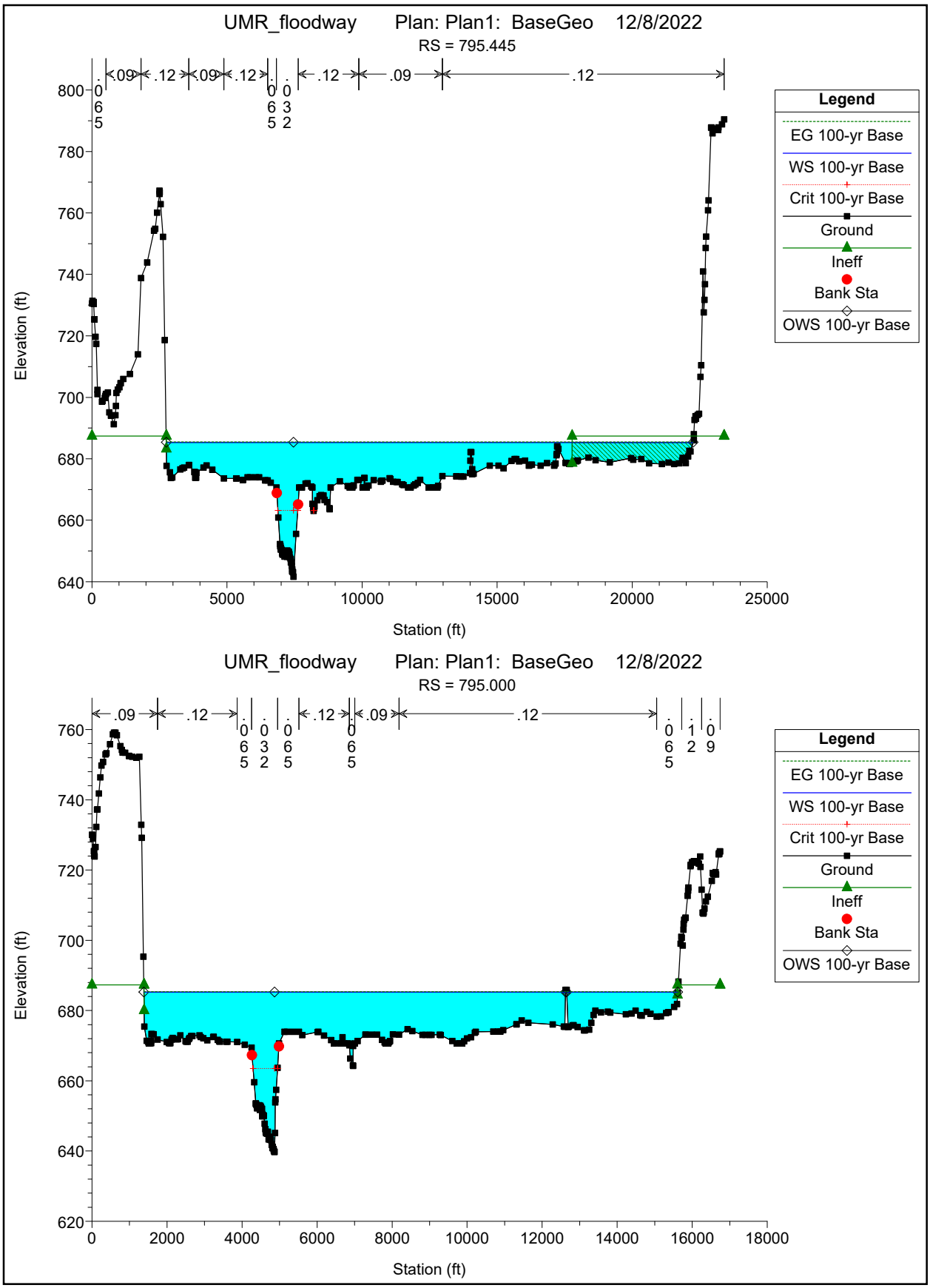
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	754.204	100-yr Base	231280.00	651.87	675.21	662.92	675.27	0.000042	2.31	120203.60	17923.70	0.10
Mississippi	PrIslToLaCrosse	754.204	IA/MN Max	231280.00	651.87	675.68	663.03	675.75	0.000042	2.35	118520.00	8413.40	0.10
Mississippi	PrIslToLaCrosse	754.204	WI Fldwy	231280.00	651.87	675.22	662.92	675.28	0.000042	2.31	120290.30	17595.90	0.10
Mississippi	PrIslToLaCrosse	753.586	100-yr Base	231280.00	644.22	674.92	661.74	675.09	0.000072	3.50	71972.00	12640.25	0.15
Mississippi	PrIslToLaCrosse	753.586	IA/MN Max	231280.00	644.22	675.38	661.78	675.57	0.000072	3.57	69207.11	4506.69	0.15
Mississippi	PrIslToLaCrosse	753.586	WI Fldwy	231280.00	644.22	674.93	661.73	675.10	0.000071	3.50	72023.44	12626.73	0.15
Mississippi	PrIslToLaCrosse	752.950	100-yr Base	231280.00	644.31	674.60	658.21	674.87	0.000059	4.21	55018.50	11437.57	0.15
Mississippi	PrIslToLaCrosse	752.950	IA/MN Max	231280.00	644.31	675.08	658.18	675.35	0.000058	4.17	55420.85	2347.97	0.15
Mississippi	PrIslToLaCrosse	752.950	WI Fldwy	231280.00	644.31	674.61	658.20	674.88	0.000059	4.21	55043.86	11287.12	0.15
Mississippi	PrIslToLaCrosse	752.823	100-yr Base	231280.00	638.50	674.34	654.22	674.80	0.000080	5.49	42262.00	10128.84	0.18
Mississippi	PrIslToLaCrosse	752.823	IA/MN Max	231280.00	638.50	674.82	654.19	675.29	0.000080	5.46	42391.96	1410.95	0.18
Mississippi	PrIslToLaCrosse	752.823	WI Fldwy	231280.00	638.50	674.35	654.22	674.81	0.000080	5.49	42277.44	9715.23	0.18
Mississippi	PrIslToLaCrosse	752.8		Inl Struct									
Mississippi	PrIslToLaCrosse	752.781	100-yr Base	231280.00	649.88	673.48	662.91	674.47	0.000286	8.03	28904.10	10012.96	0.32
Mississippi	PrIslToLaCrosse	752.781	IA/MN Max	231280.00	649.88	673.94	662.98	674.95	0.000288	8.06	28698.47	1407.39	0.31
Mississippi	PrIslToLaCrosse	752.781	WI Fldwy	231280.00	649.88	673.49	662.91	674.49	0.000288	8.06	28919.79	9705.64	0.32
Mississippi	PrIslToLaCrosse	752.600	100-yr Base	231280.00	633.59	673.81	651.22	674.06	0.000044	4.37	60690.73	11106.44	0.13
Mississippi	PrIslToLaCrosse	752.600	IA/MN Max	231280.00	633.59	674.28	651.22	674.54	0.000044	4.41	59832.17	2313.18	0.13
Mississippi	PrIslToLaCrosse	752.600	WI Fldwy	231280.00	633.59	673.82	651.20	674.07	0.000044	4.40	60719.56	10964.78	0.14
Mississippi	PrIslToLaCrosse	751.877	100-yr Base	231280.00	626.83	673.45	650.02	673.80	0.000274	5.56	94419.30	11983.71	0.16
Mississippi	PrIslToLaCrosse	751.877	IA/MN Max	231280.00	626.83	673.92	650.02	674.28	0.000280	5.59	90553.02	4702.19	0.16
Mississippi	PrIslToLaCrosse	751.877	WI Fldwy	231280.00	626.83	673.46	650.02	673.81	0.000273	5.56	94445.61	11975.72	0.16

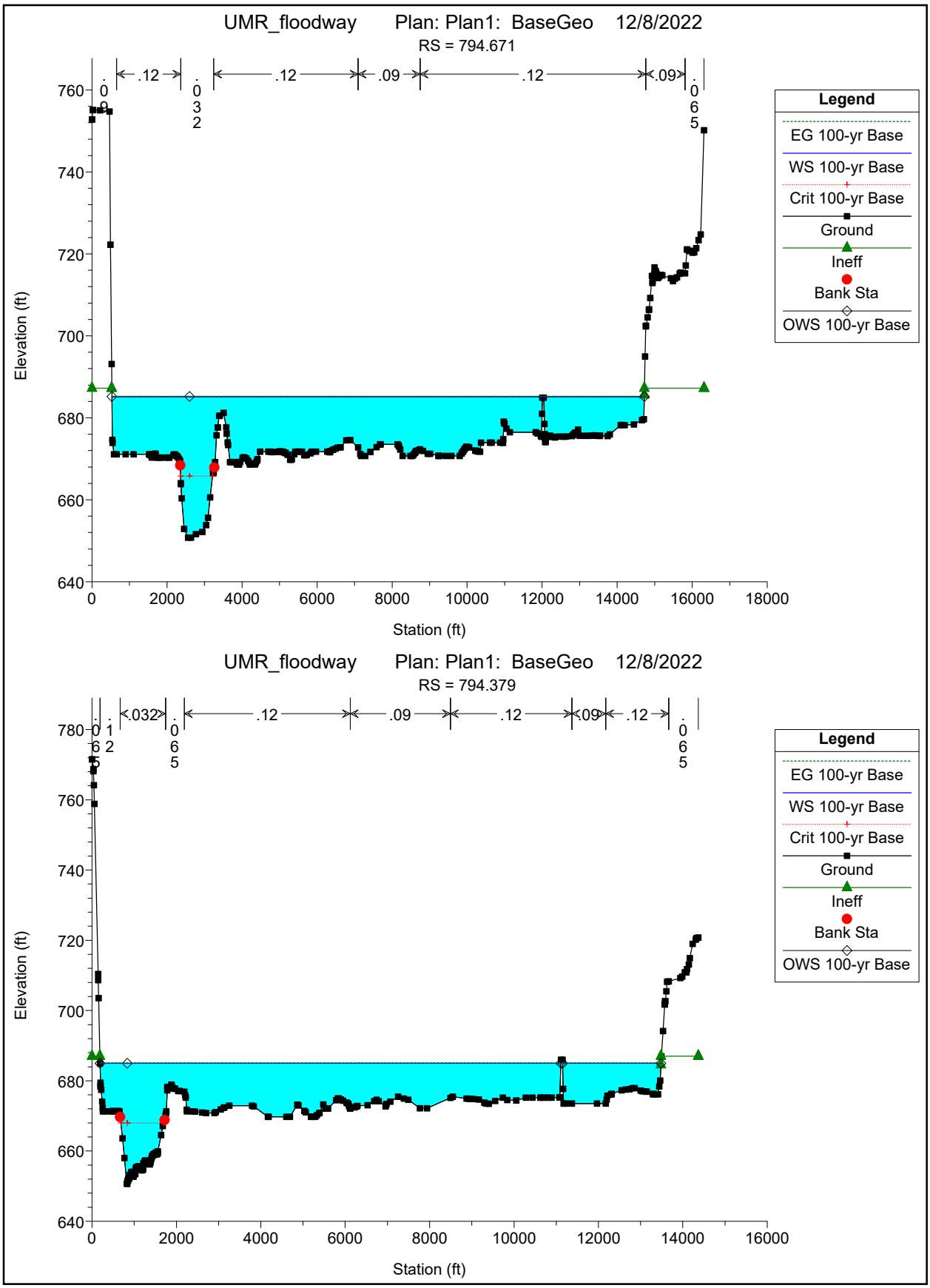
UMR_floodway Plan: Plan1: BaseGeo 11/18/2022

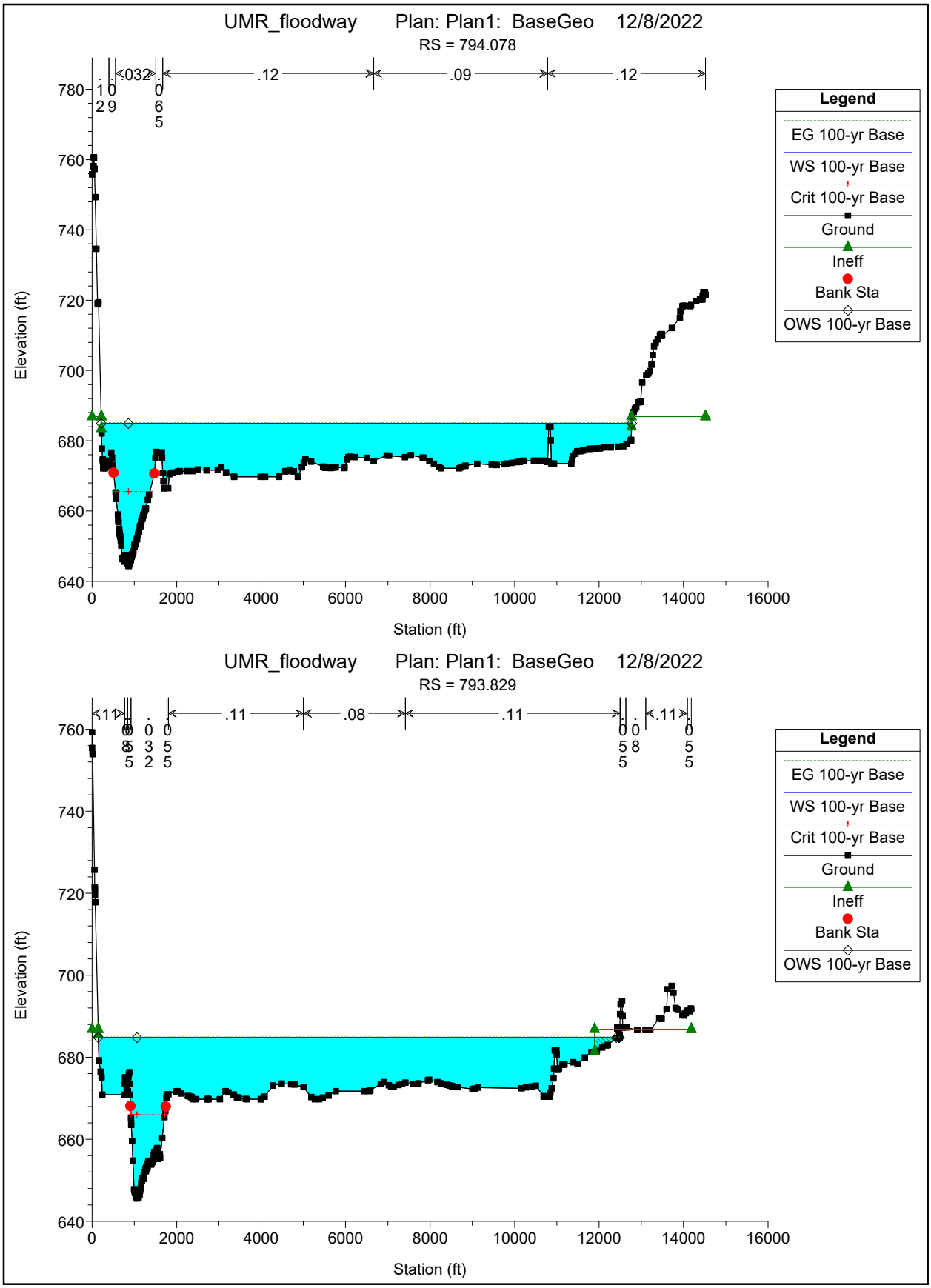
Mississippi PrIslToLaCrosse

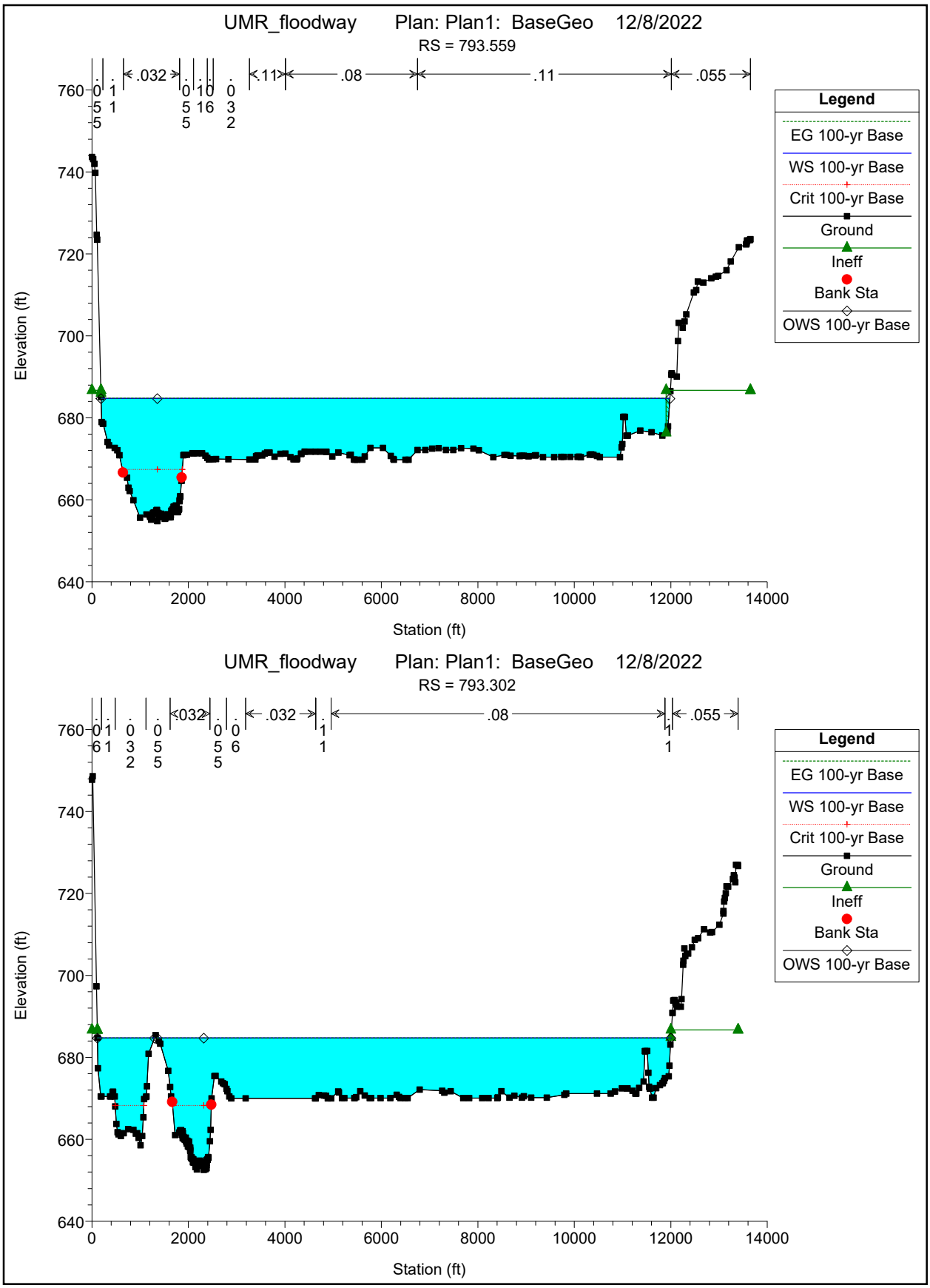


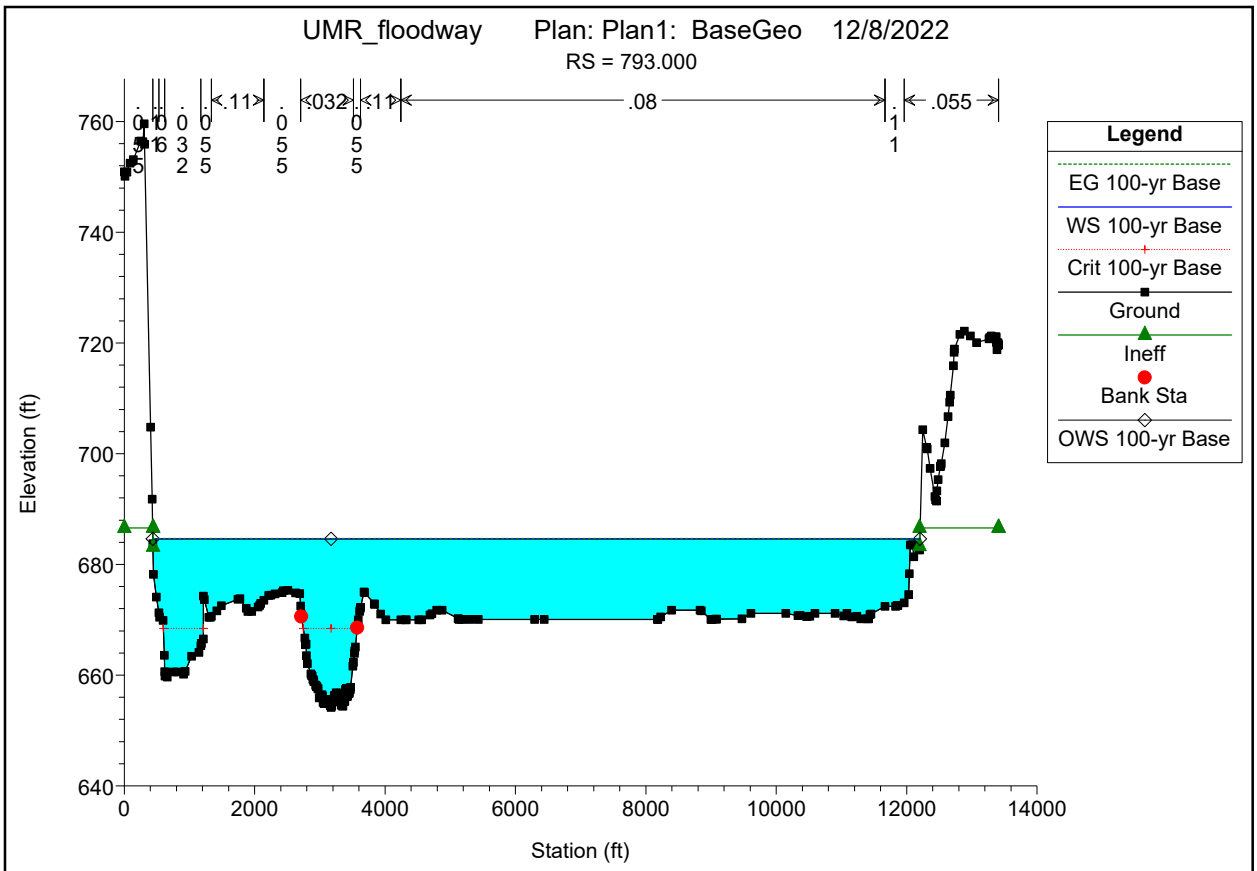

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 796.385
.12
.12
.08
.12
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 796.000
.09
.12
.09
.12
.09
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
600
0
5000
10000
15000
20000
Station (ft)

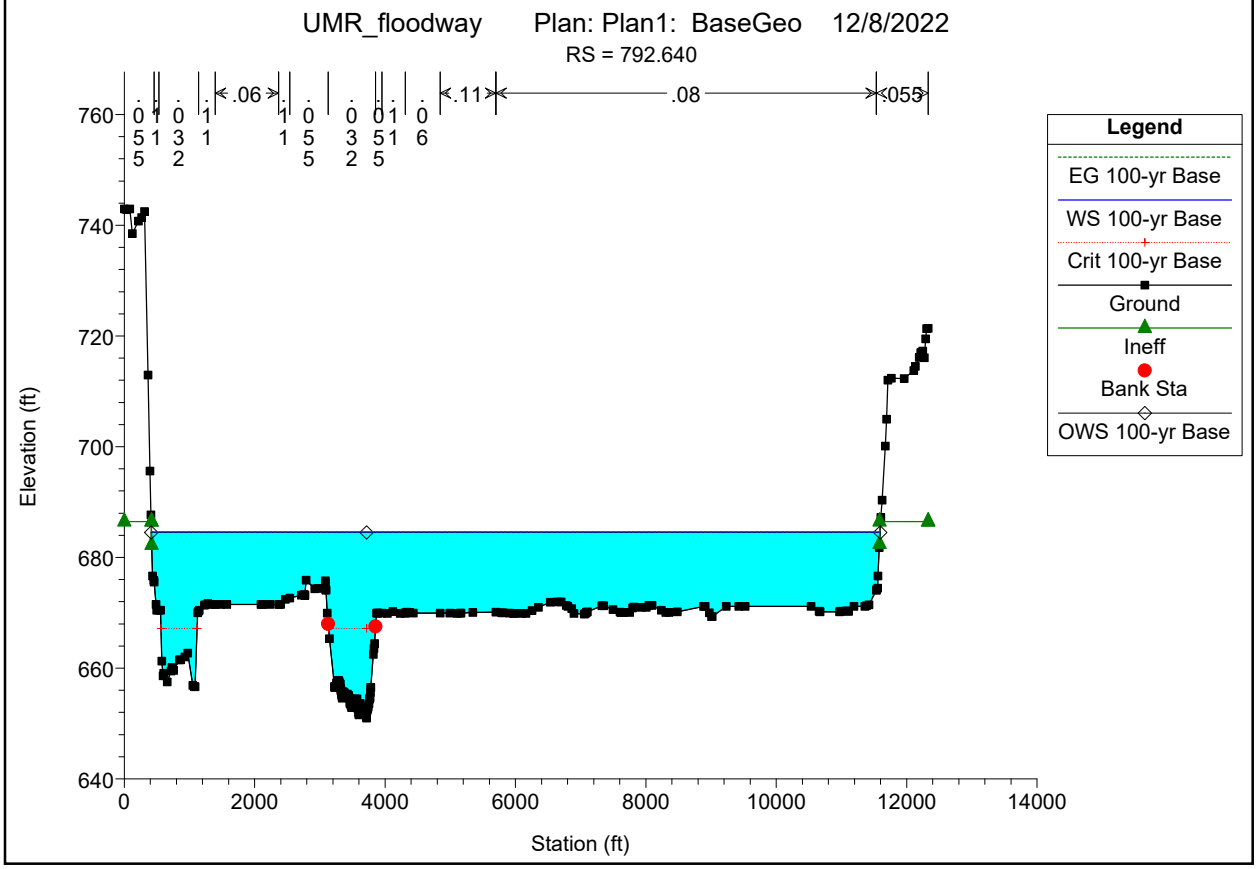

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 795.445
.09
.12
.09
.12
.12
.09
.12
.065
.065
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 795.000
.09
.12
.12
.09
.12
.065
.032
.065
.065
.065
.129
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

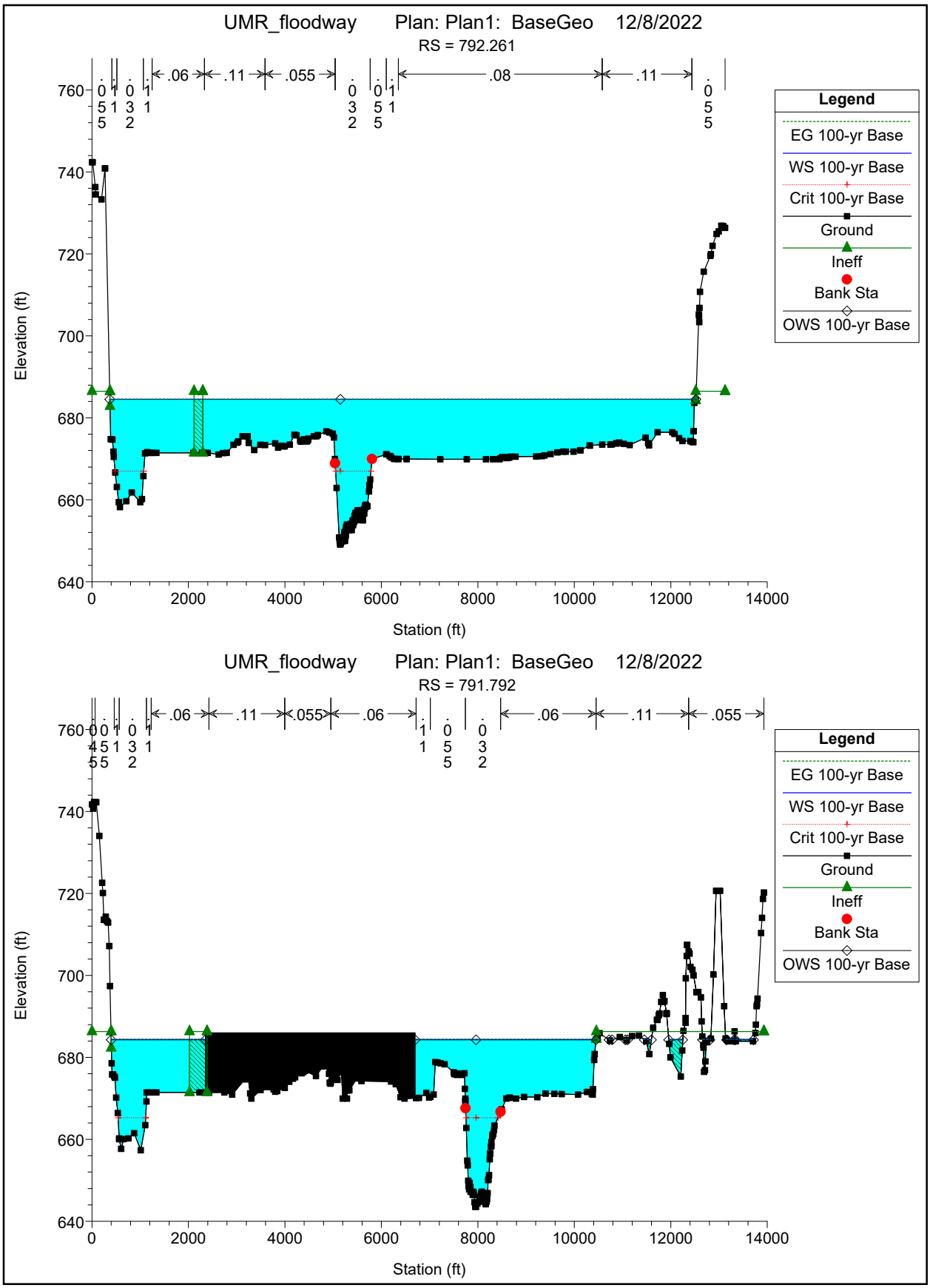

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 794.671
.09
.12
.032
.12
.09
.12
.065
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 794.379
.065
.12
.032
.065
.12
.09
.12
.09
.12
.065
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

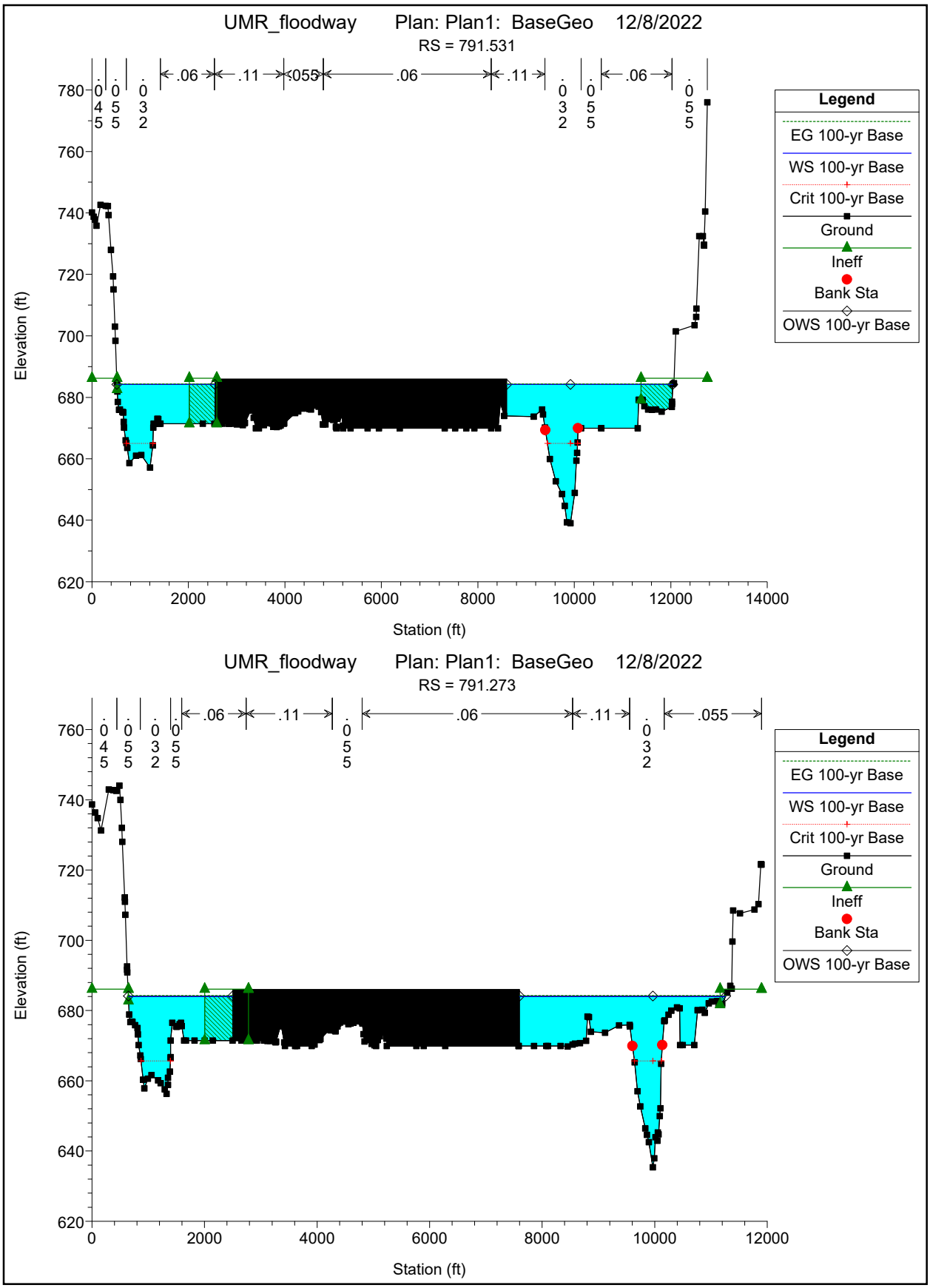

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 794.078
.12
.09
.12
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 793.829
.11
.08
.11
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

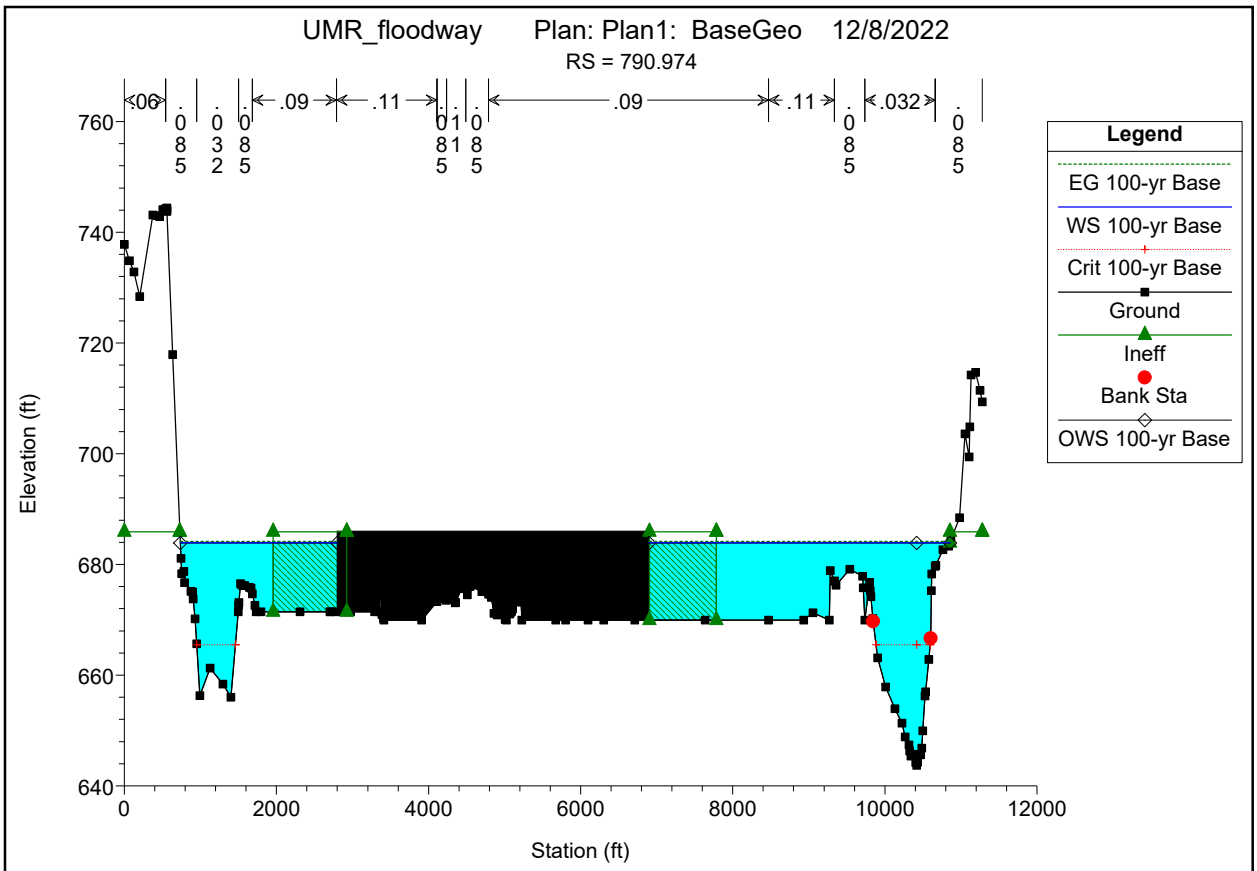

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 793.559
.032
.11
.08
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 793.302
.032
.032
.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000

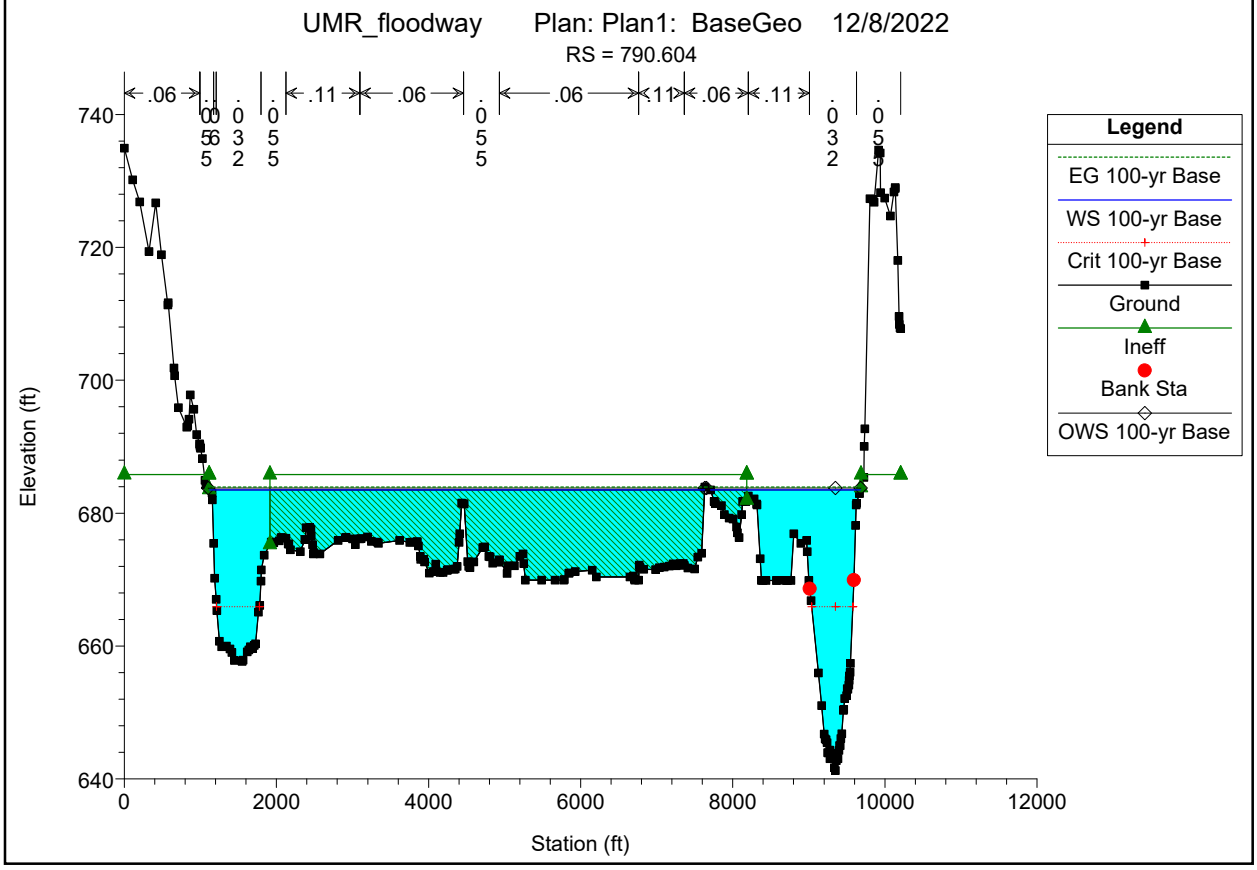

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 793.000
.11
.032
.11
.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

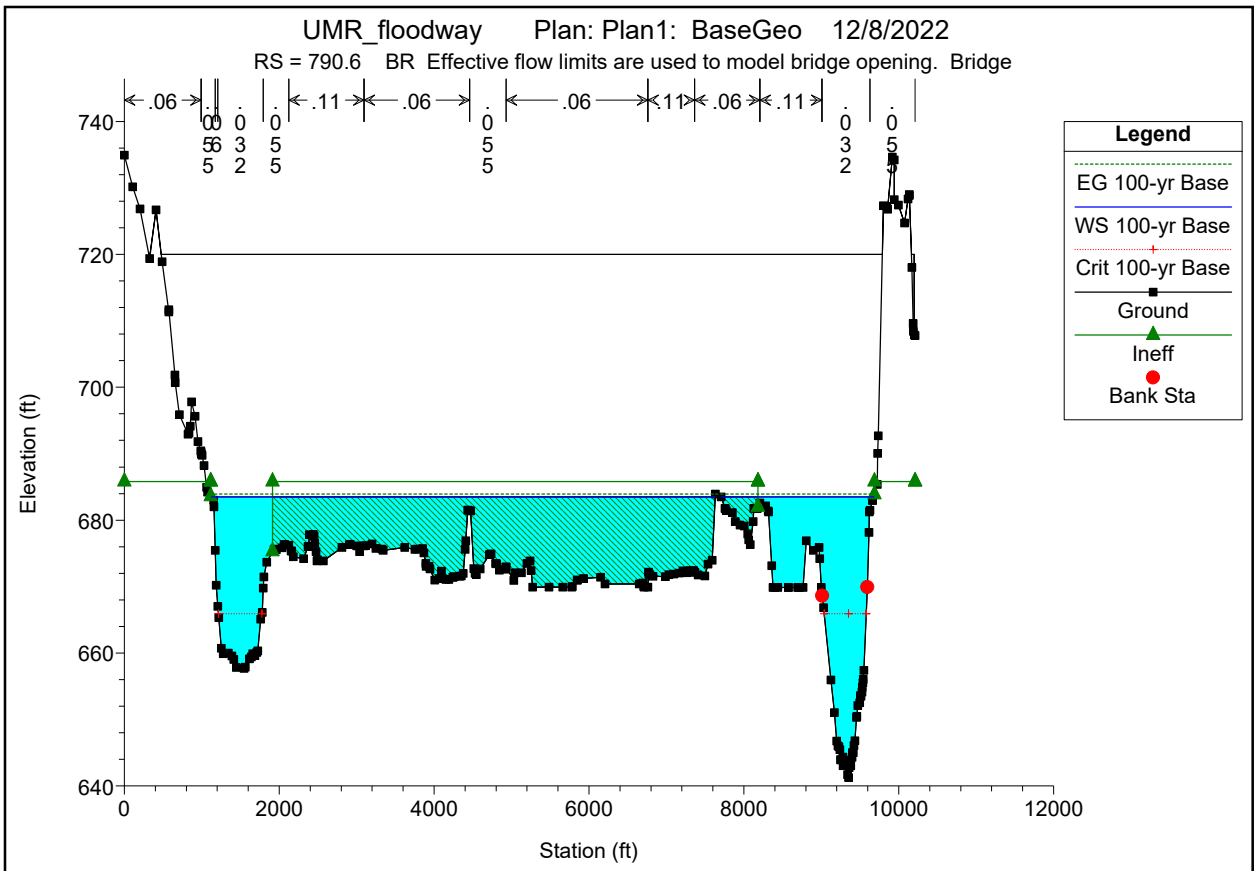

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 792.640
.06
.11
.08
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

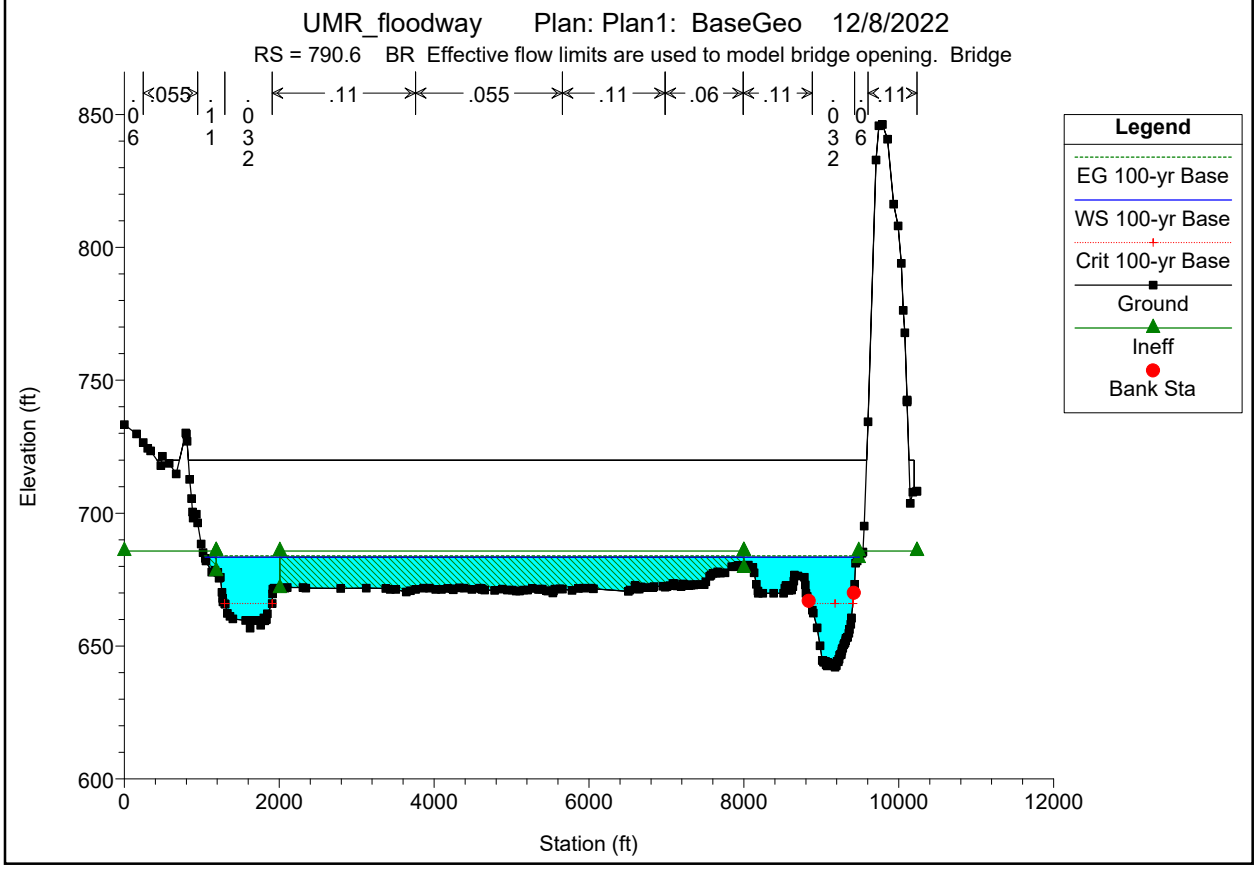

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 792.261
.06
.11
.055
.08
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 791.792
.06
.11
.055
.06
.06
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

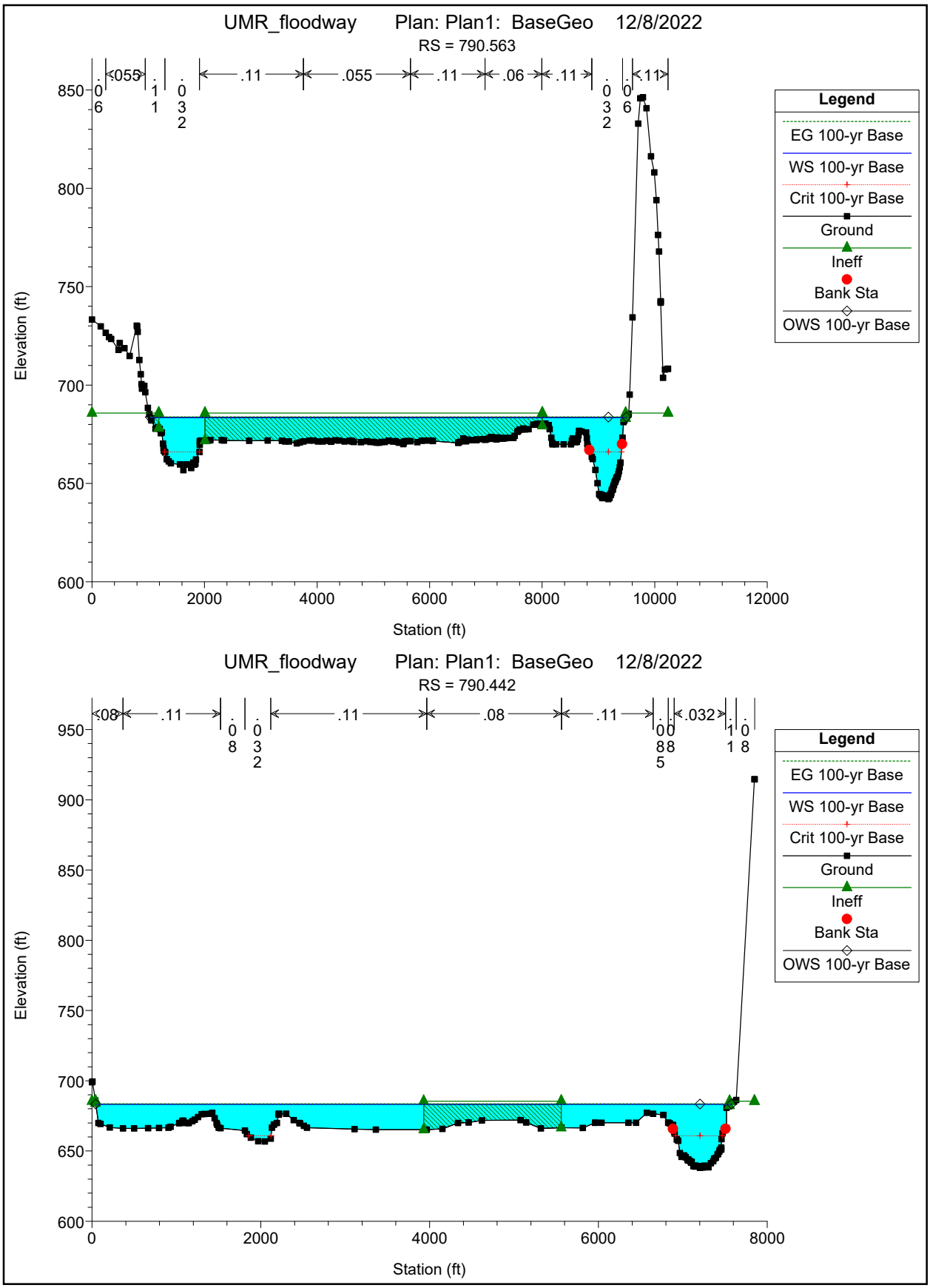

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 791.531
.045 .055 .032 .06 .11 .055 .06 .11 .032 .055 .06 .055
780
760
740
720
700
680
660
640
620
Elevation (ft)
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 791.273
.045 .055 .032 .055 .06 .11 .055 .06 .11 .032 .055
760
740
720
700
680
660
640
620
Elevation (ft)
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

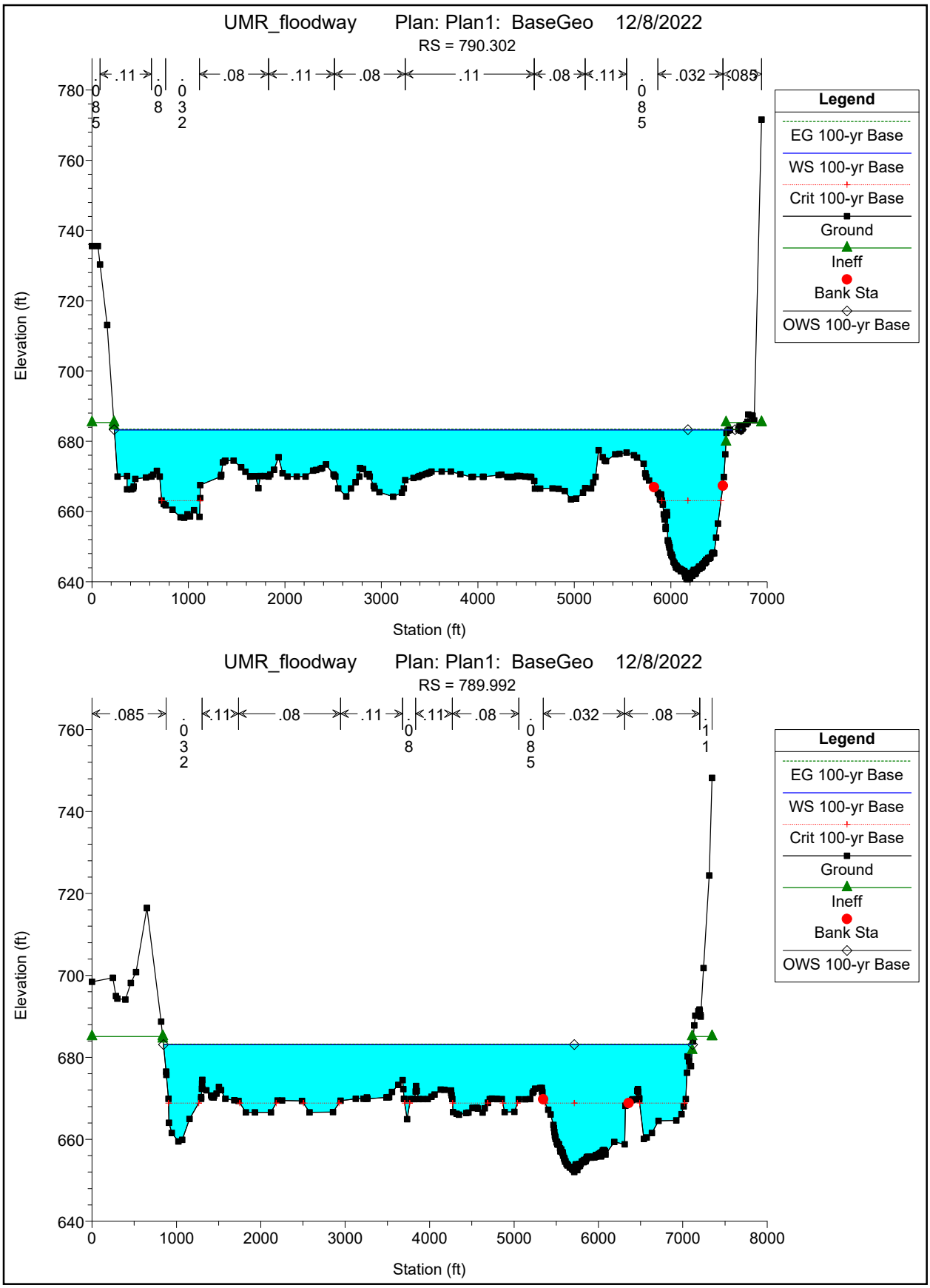

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.974
.06
.09
.11
.09
.11
.032
.085
.032
.085
.015
.085
.085
.085
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)

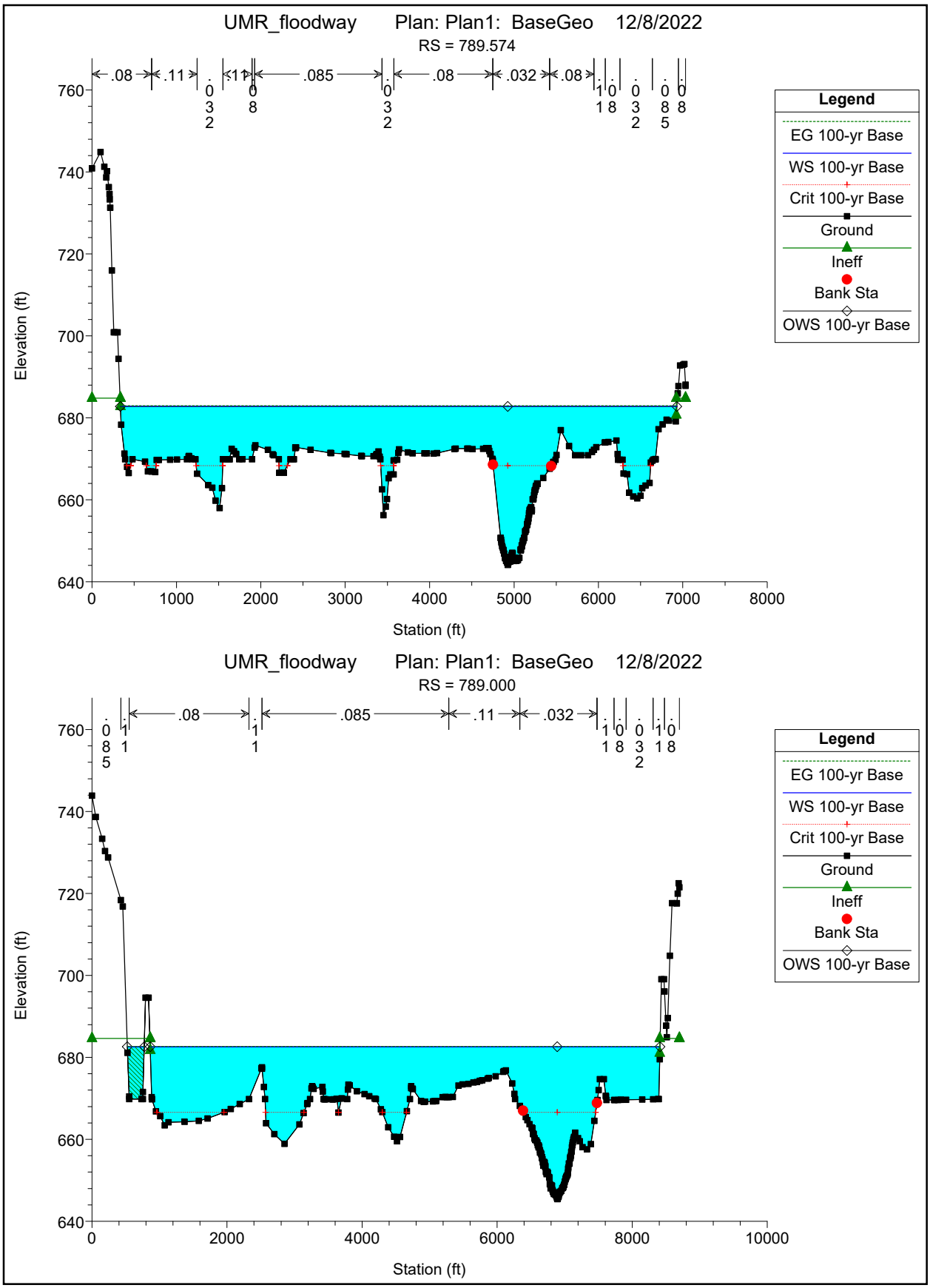

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.604
.06
.11
.06
.06
.11
.06
.11
.055
.032
.055
.055
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)

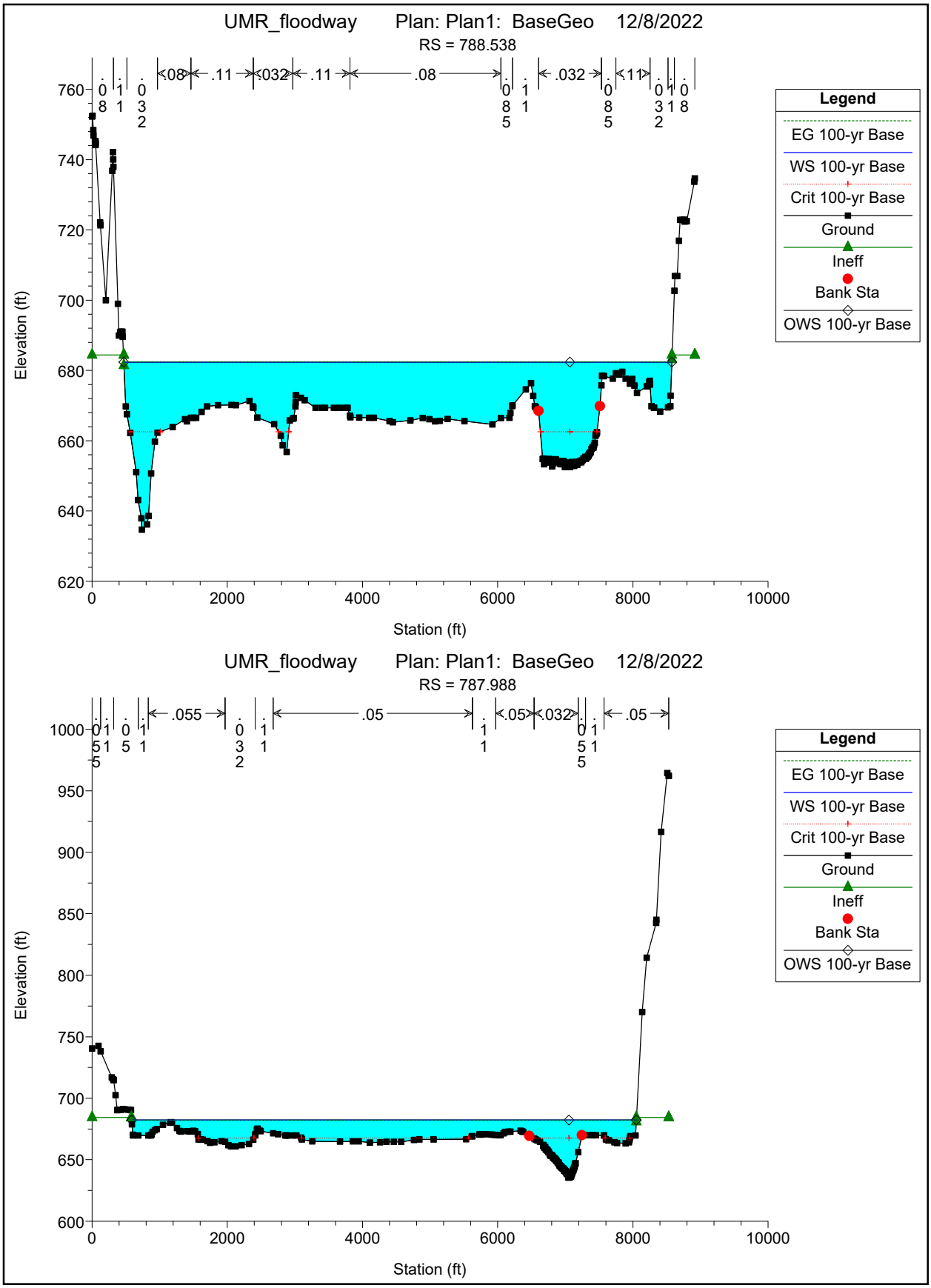

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.032
.055
.11
.06
.055
.06
.11
.06
.11
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)

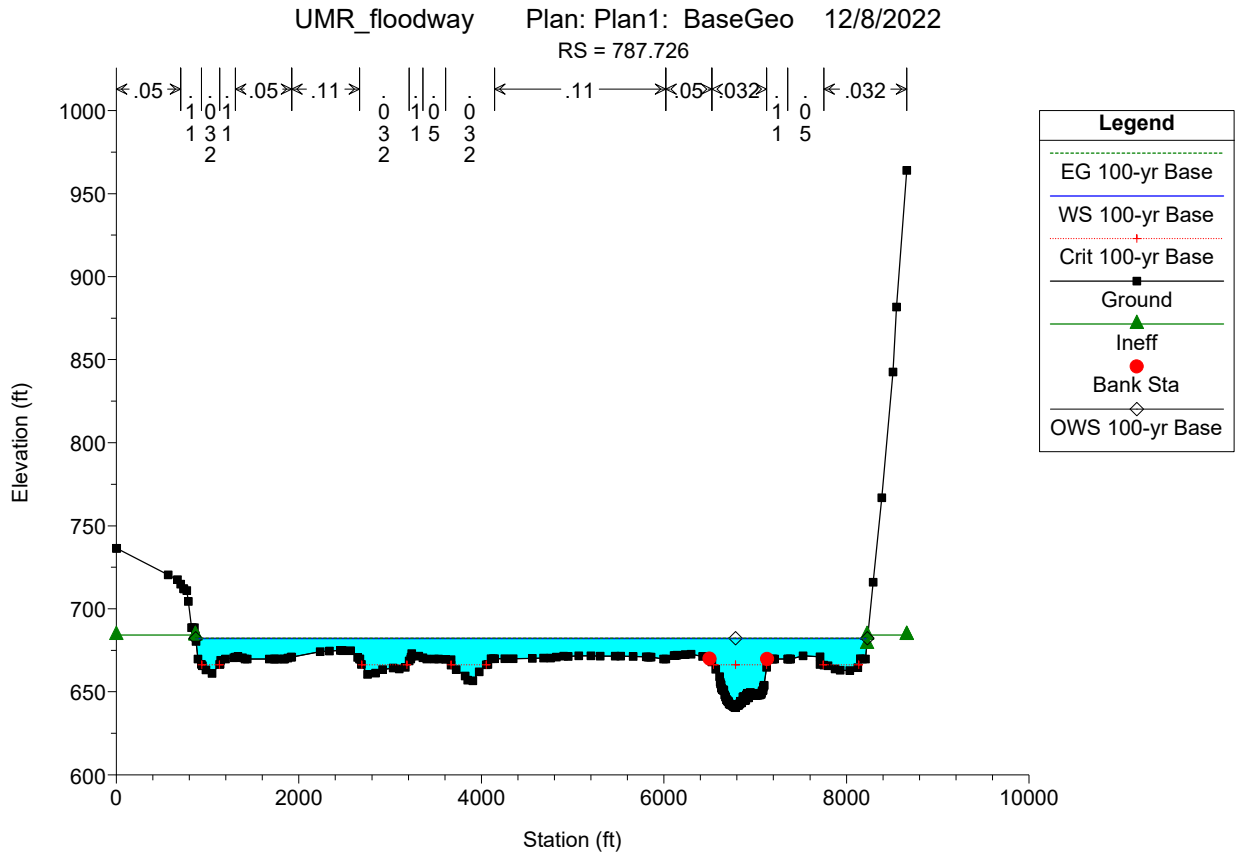

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.11
.032
.11
.055
.11
.06
.11
.032
.06
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
Station (ft)

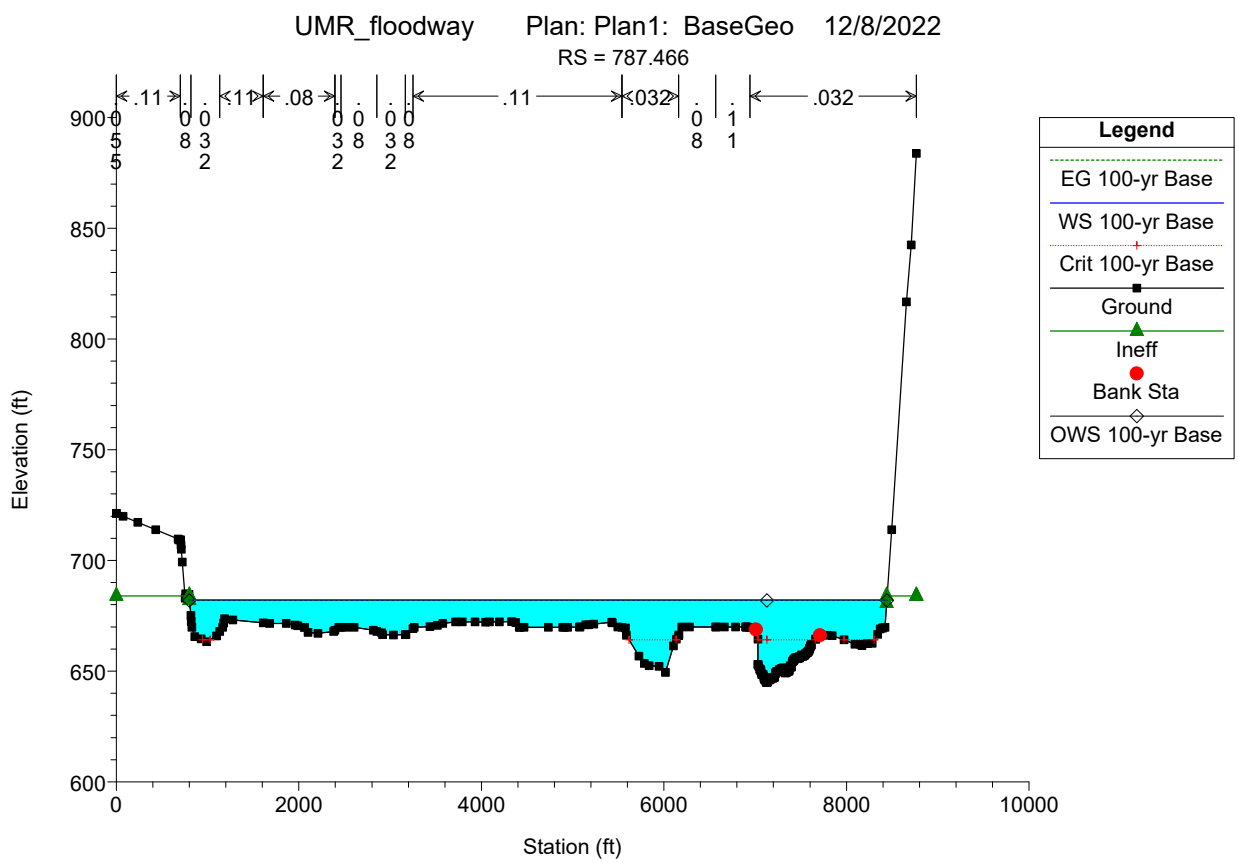

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.563
.06
.055
.11
.032
.055
.11
.06
.11
.032
.06
.11
Elevation (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.442
.08
.11
.08
.11
.032
.08
.032
.0885
.18
Elevation (ft)
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

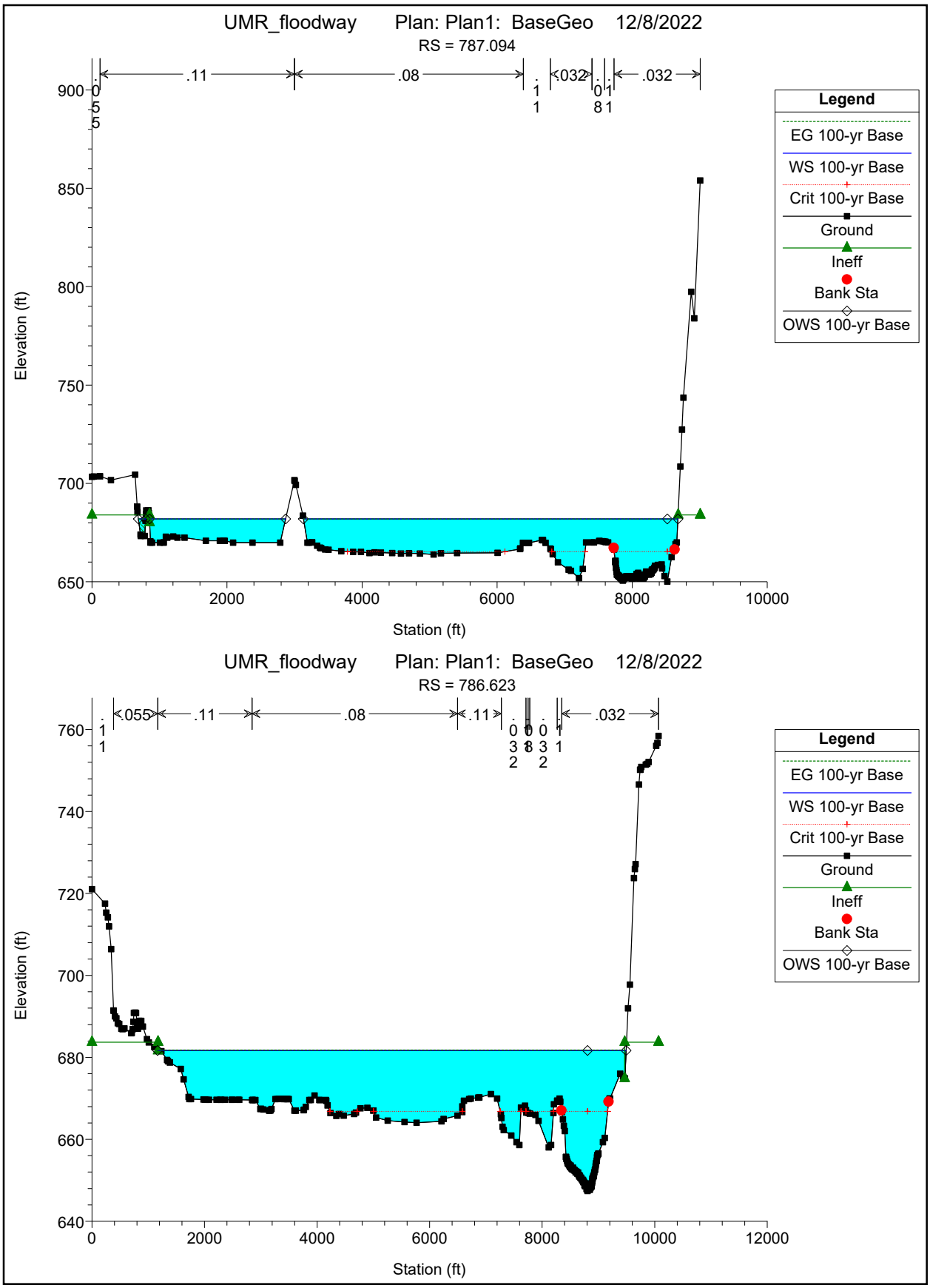

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 790.302
.085
.11
.08
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 789.992
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

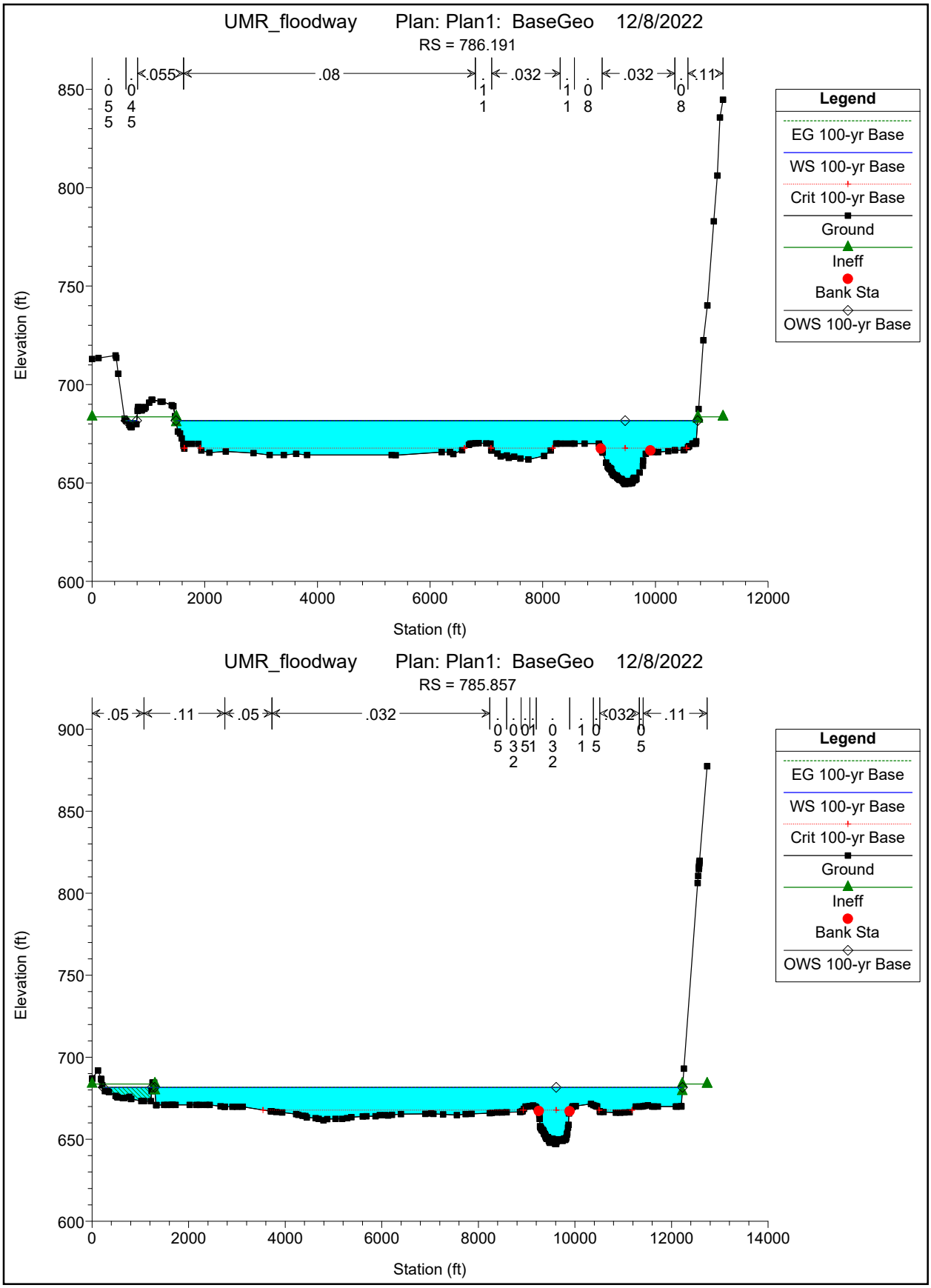

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 789.574
.08
.11
.032
.11
.08
.085
.08
.032
.08
Elevation (ft)
760
740
720
700
680
660
640
0
1000
2000
3000
4000
5000
6000
7000
8000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 789.000
.085
.08
.11
.085
.11
.032
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

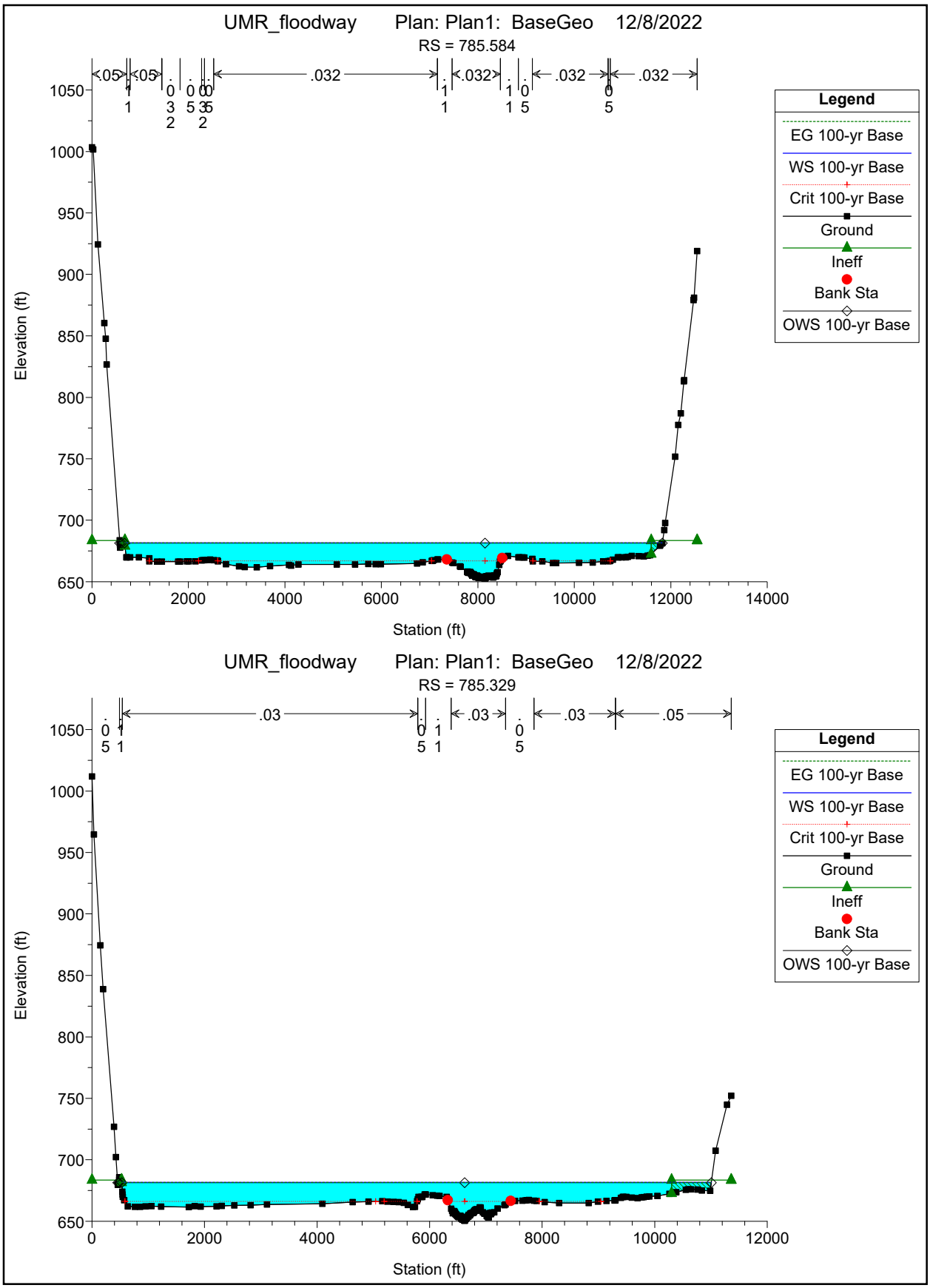

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 788.538
.08
.11
.032
.11
.08
.032
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 787.988
.055
.05
.05
.032
.05
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

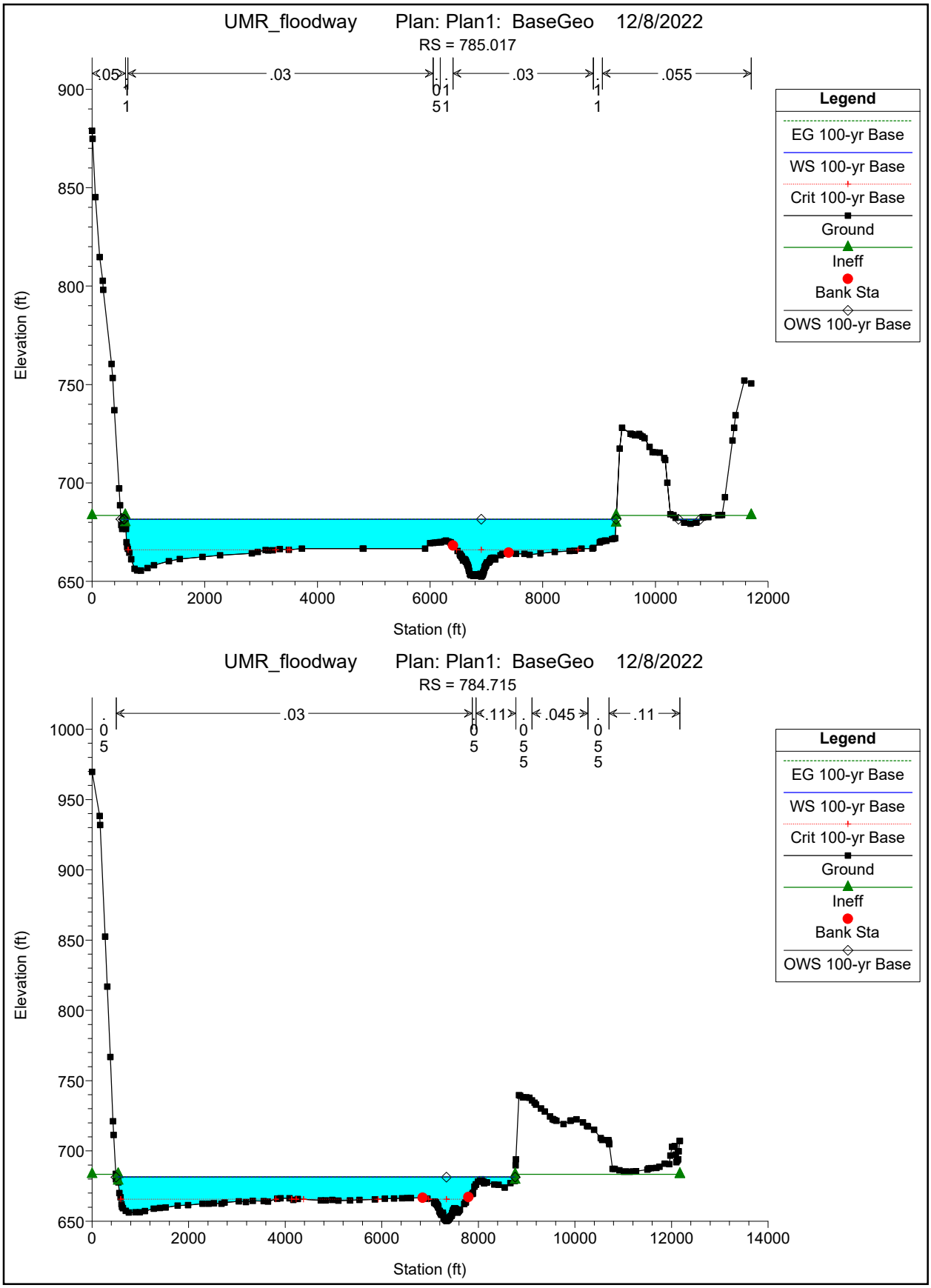

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 787.726
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

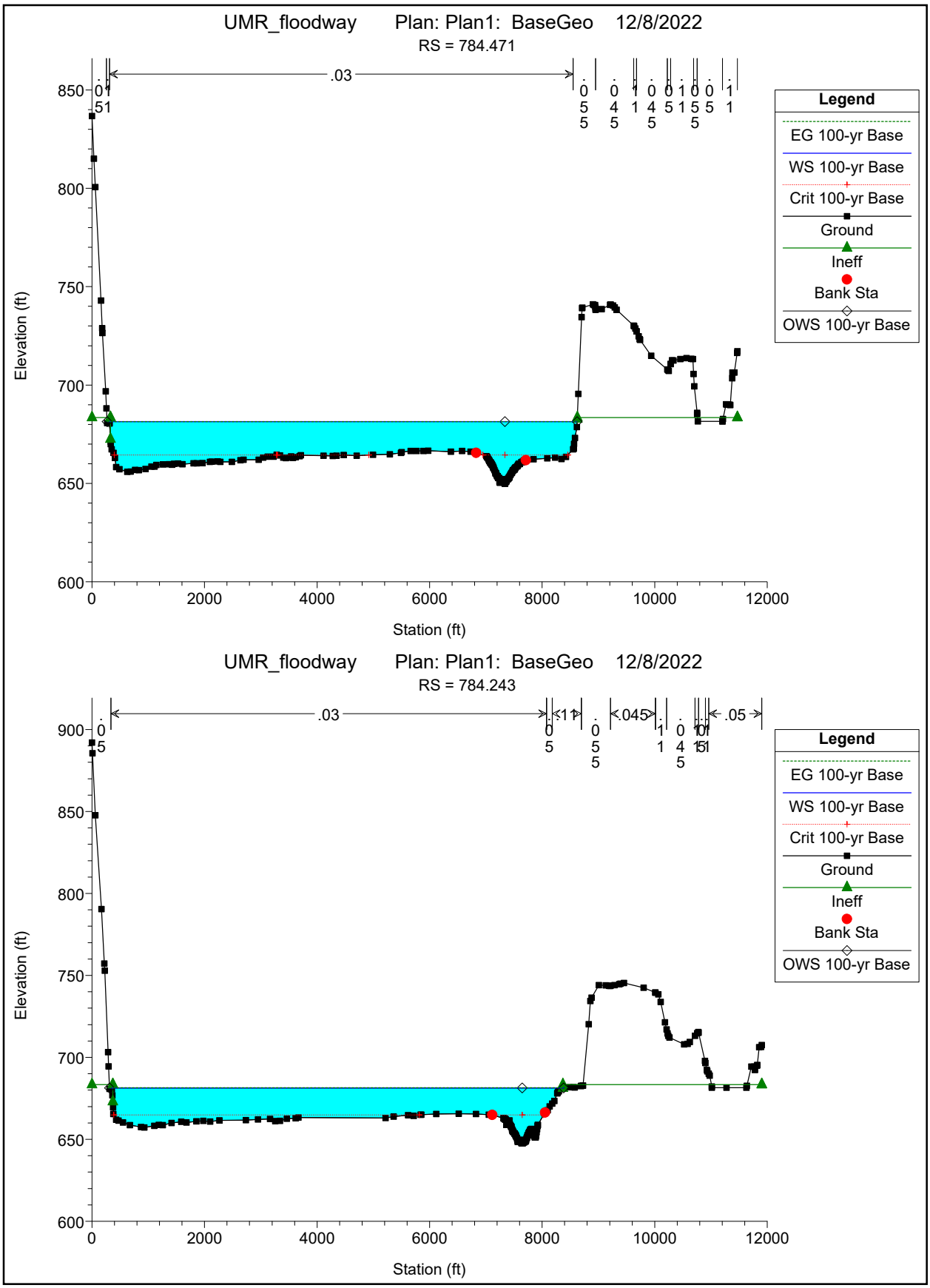

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 787.466
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

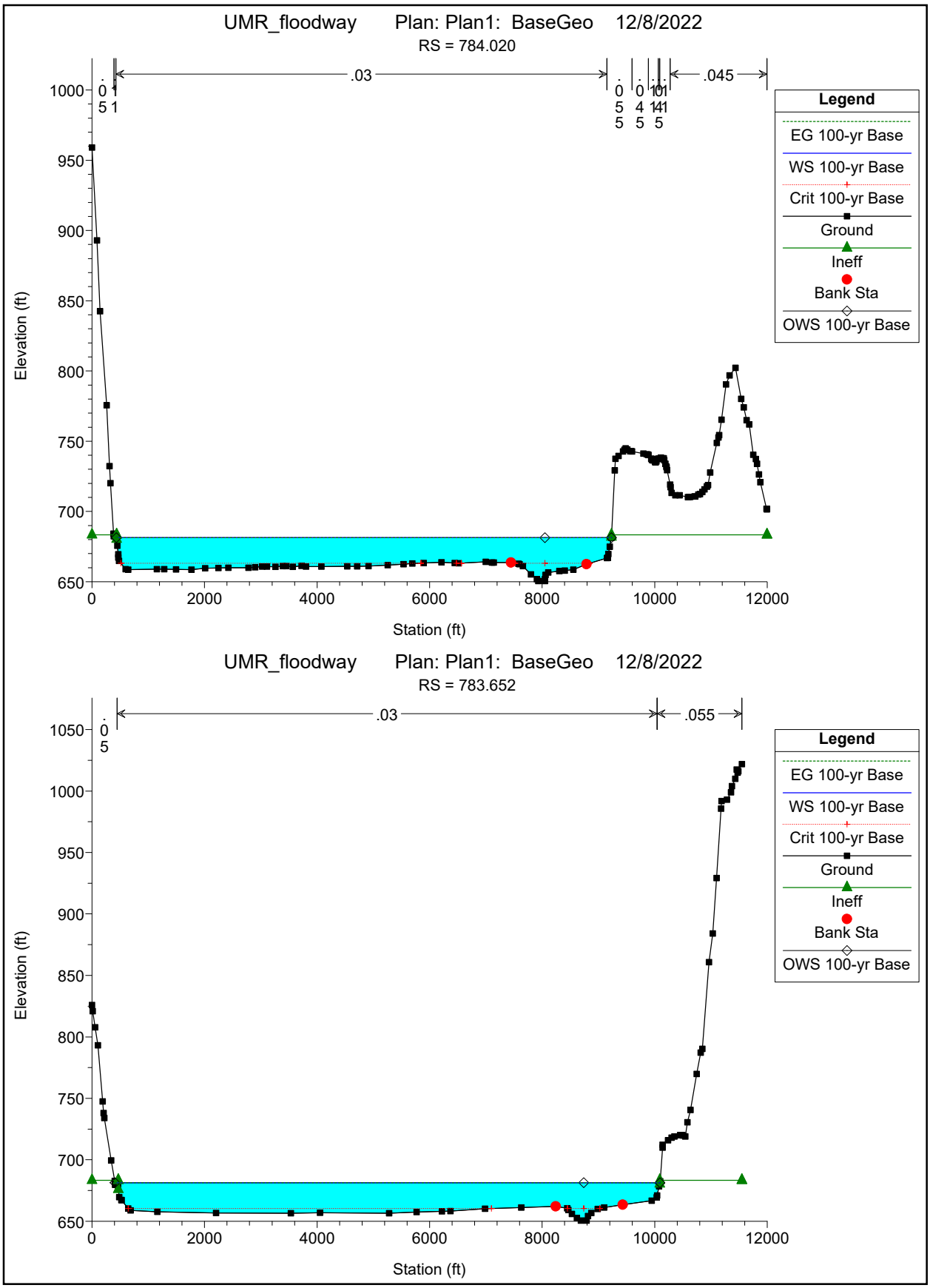

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 787.094
.055
.11
.08
.11
.032
.011
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
0
2000
4000
6000
8000
10000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 786.623
.11
.055
.11
.08
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)

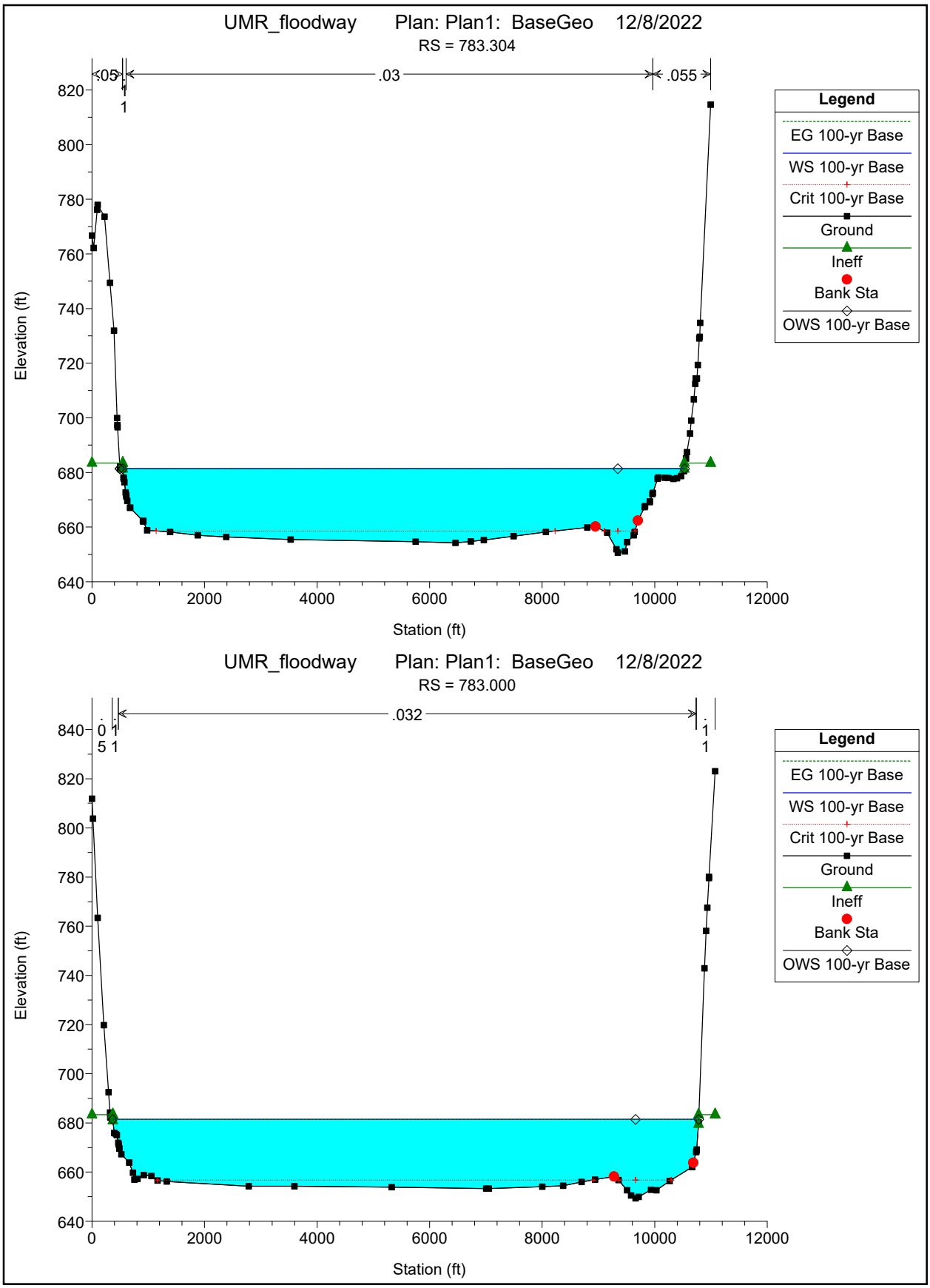

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 786.191
.055
.08
.032
.032
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 785.857
.05
.11
.05
.032
.032
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

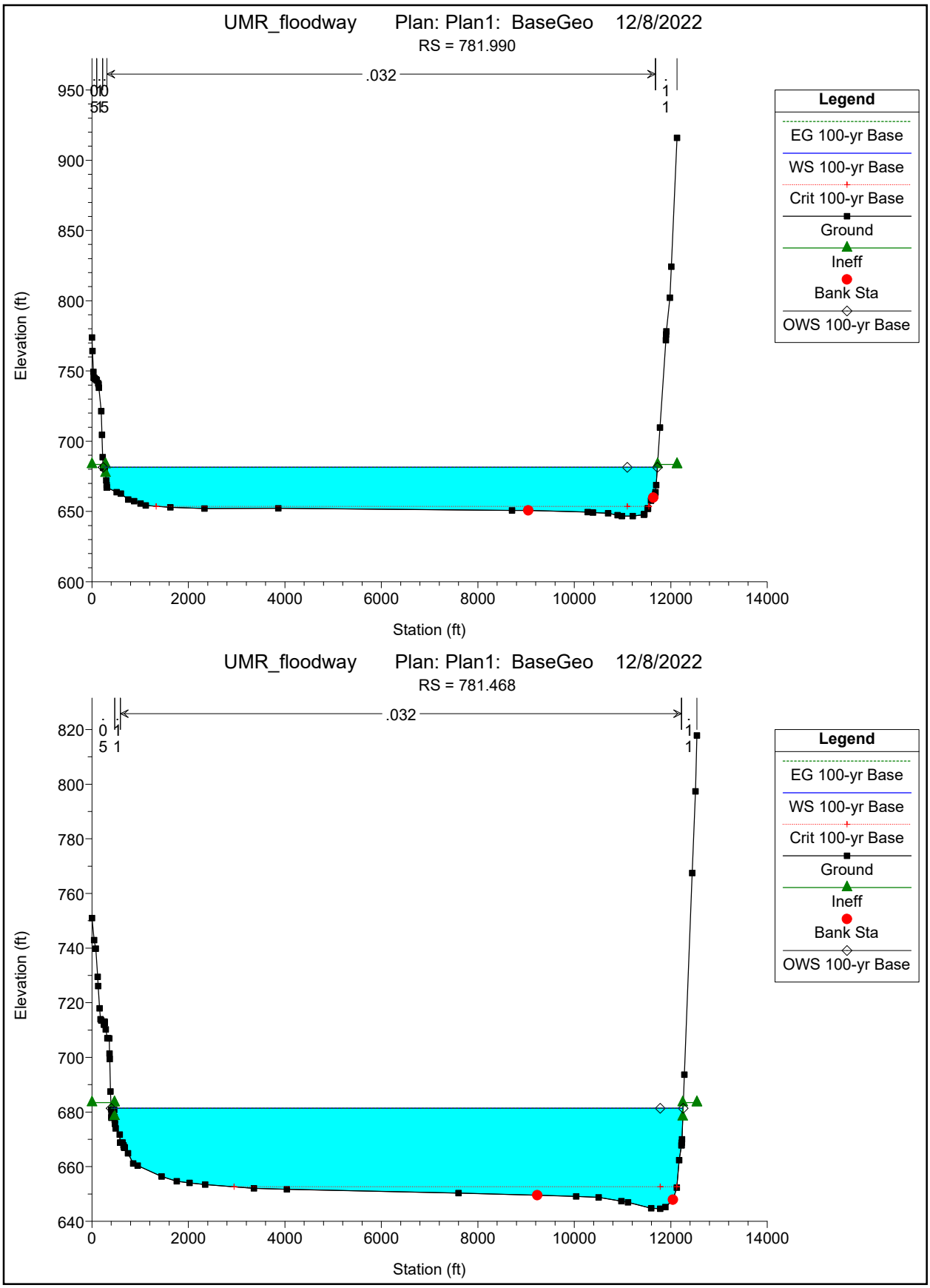

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 785.584
.05
.05
.032
.032
.032
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 785.329
.03
.03
.03
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

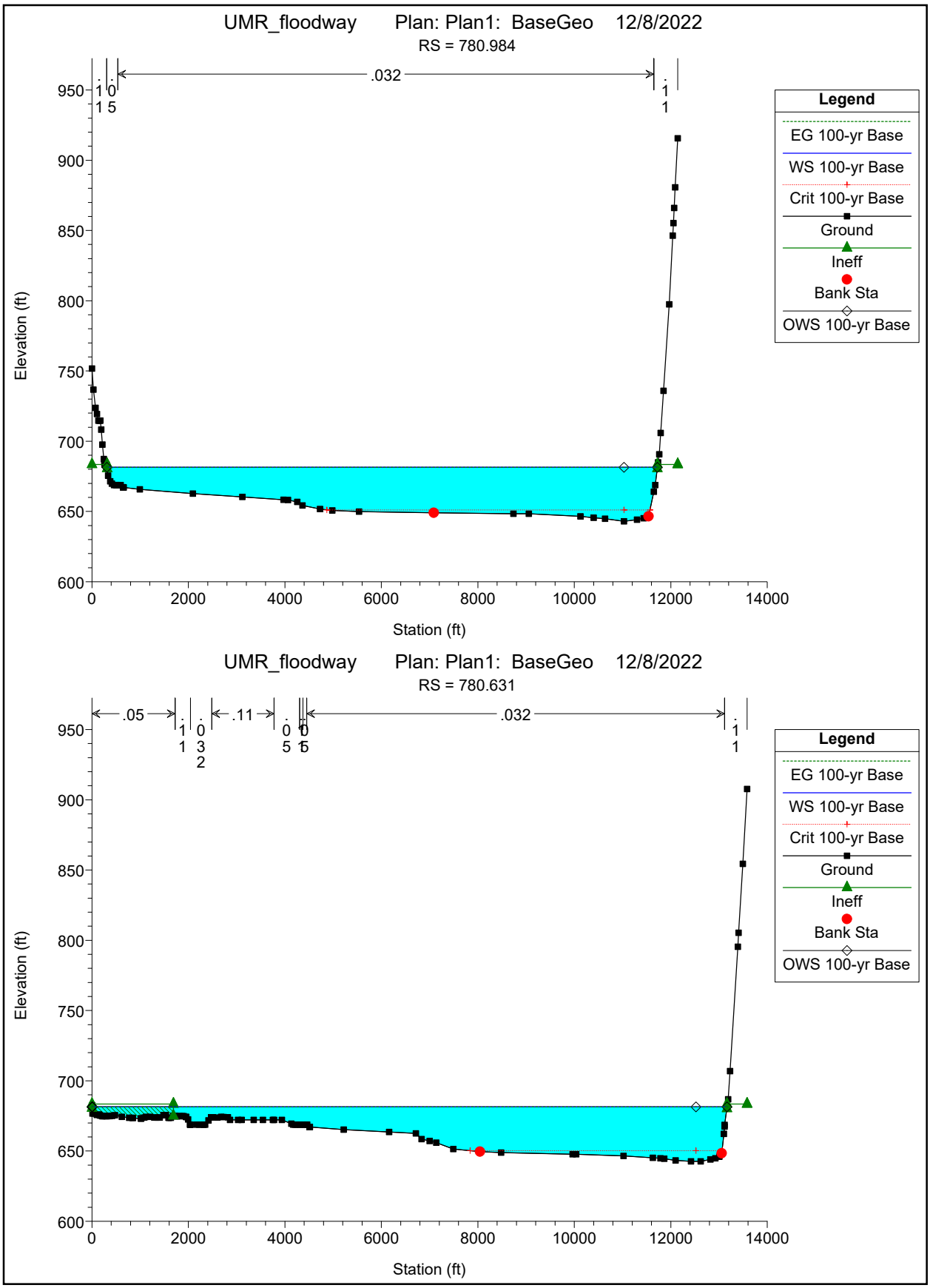

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 785.017
.05
.03
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 784.715
.03
.11
.045
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

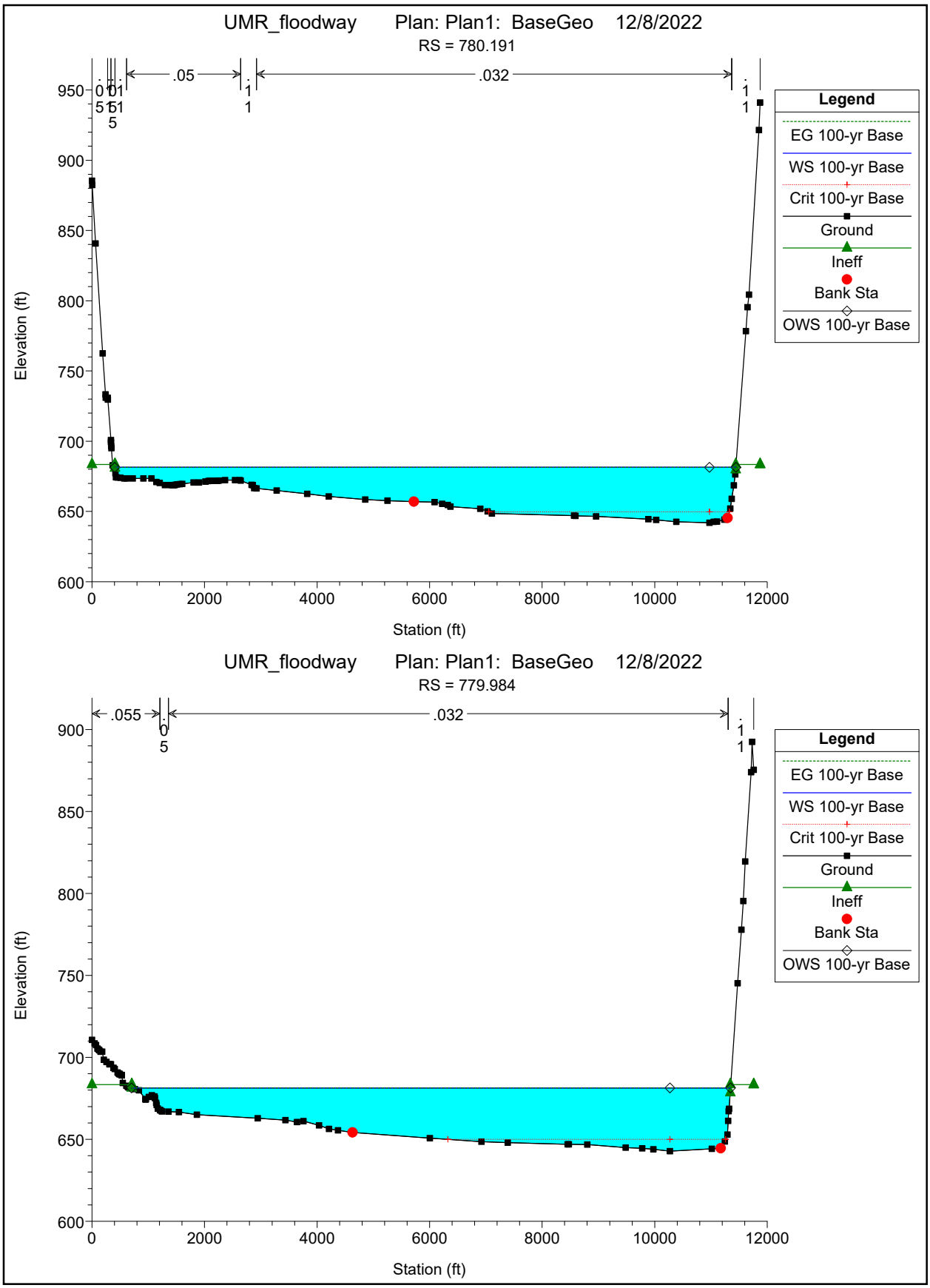

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 784.471
.03
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 784.243
.03
.045
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000

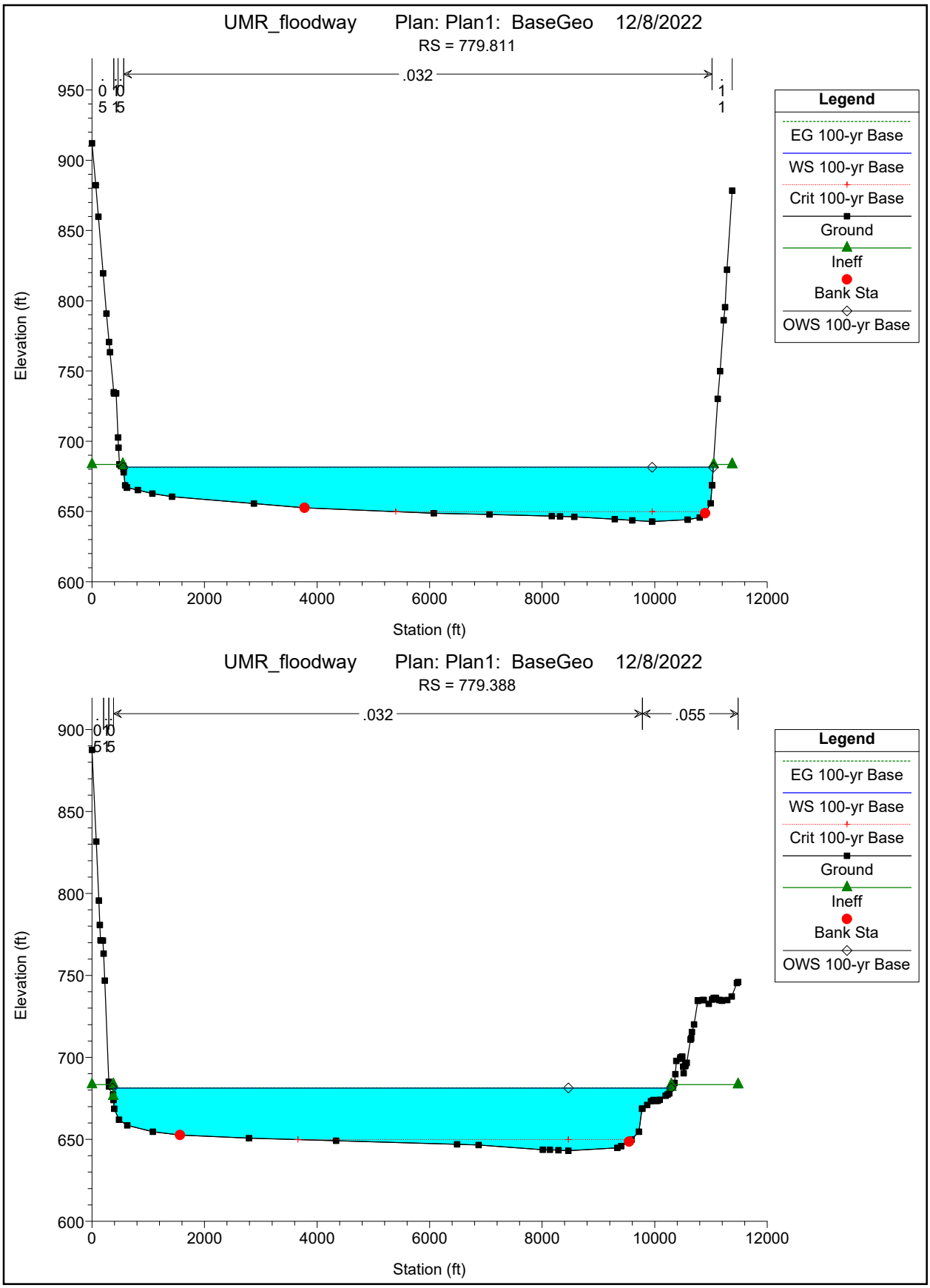

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 784.020
.03
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 783.652
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

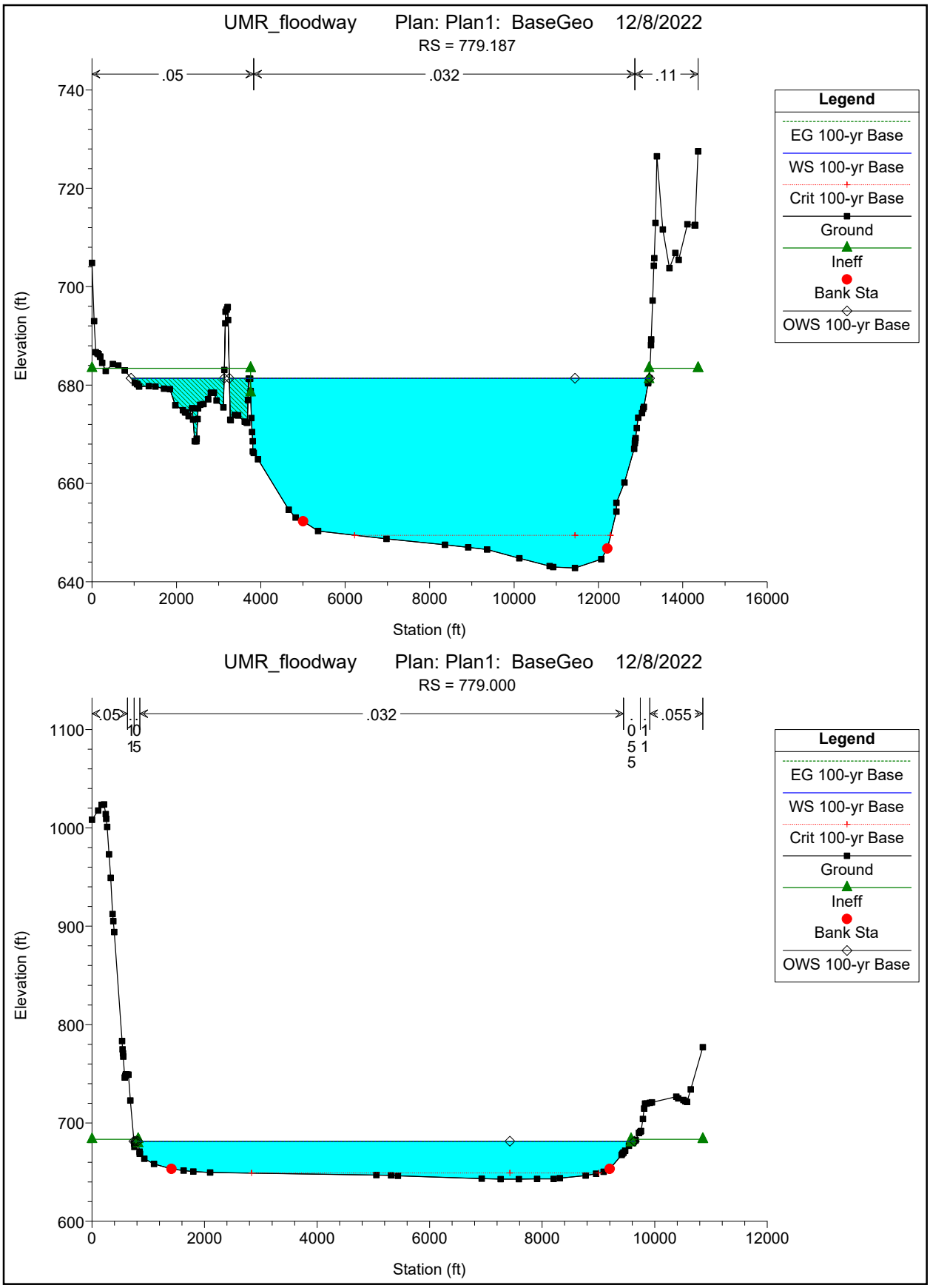

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 783.304
.05
.03
.055
1
1
Elevation (ft)
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 783.000
.032
0
5
1
1
1
1
Elevation (ft)
840
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

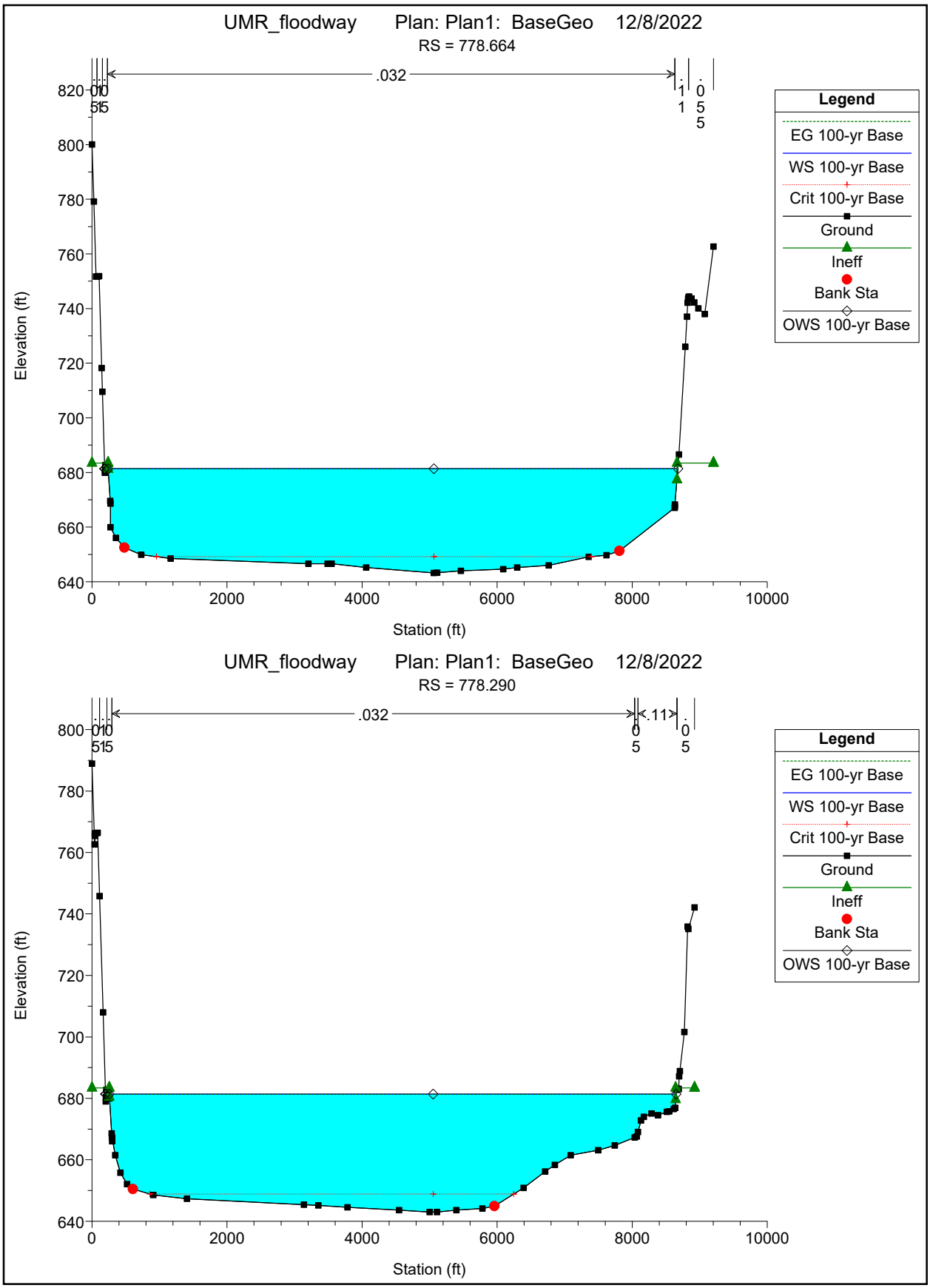

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 781.990
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 781.468
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

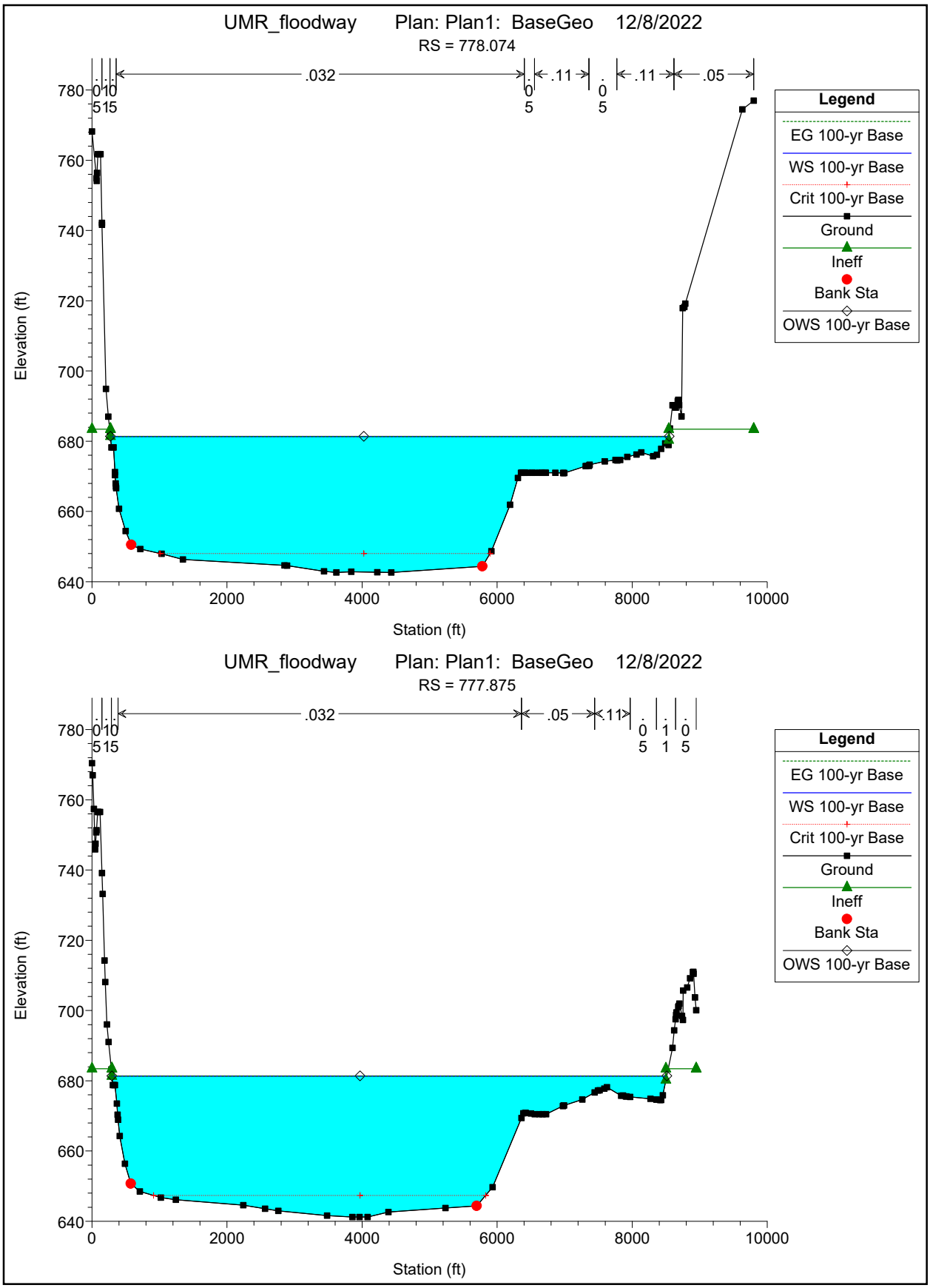

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 780.984
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 780.631
.05
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

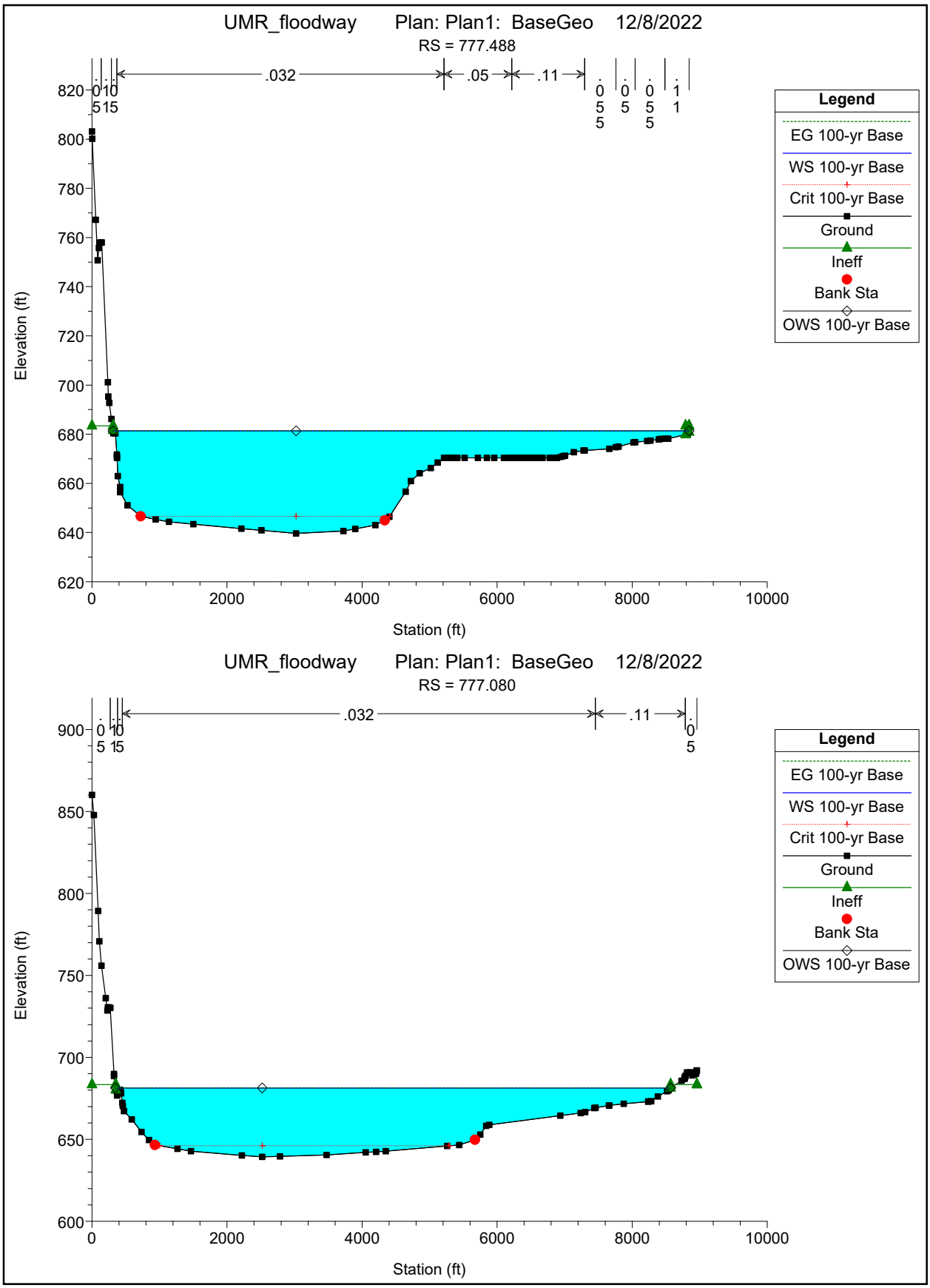

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 780.191
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 779.984
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000

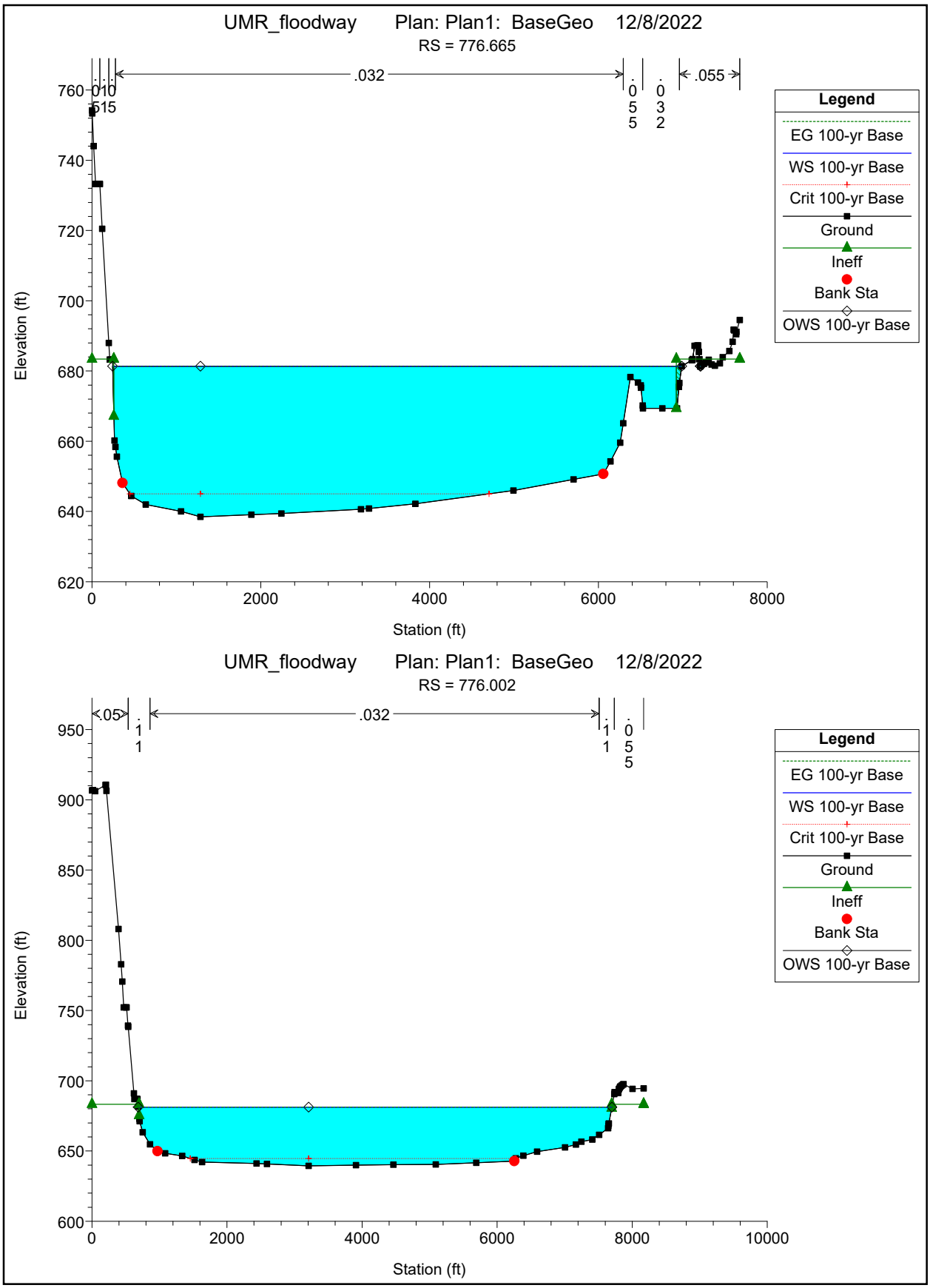

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 779.811
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 779.388
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

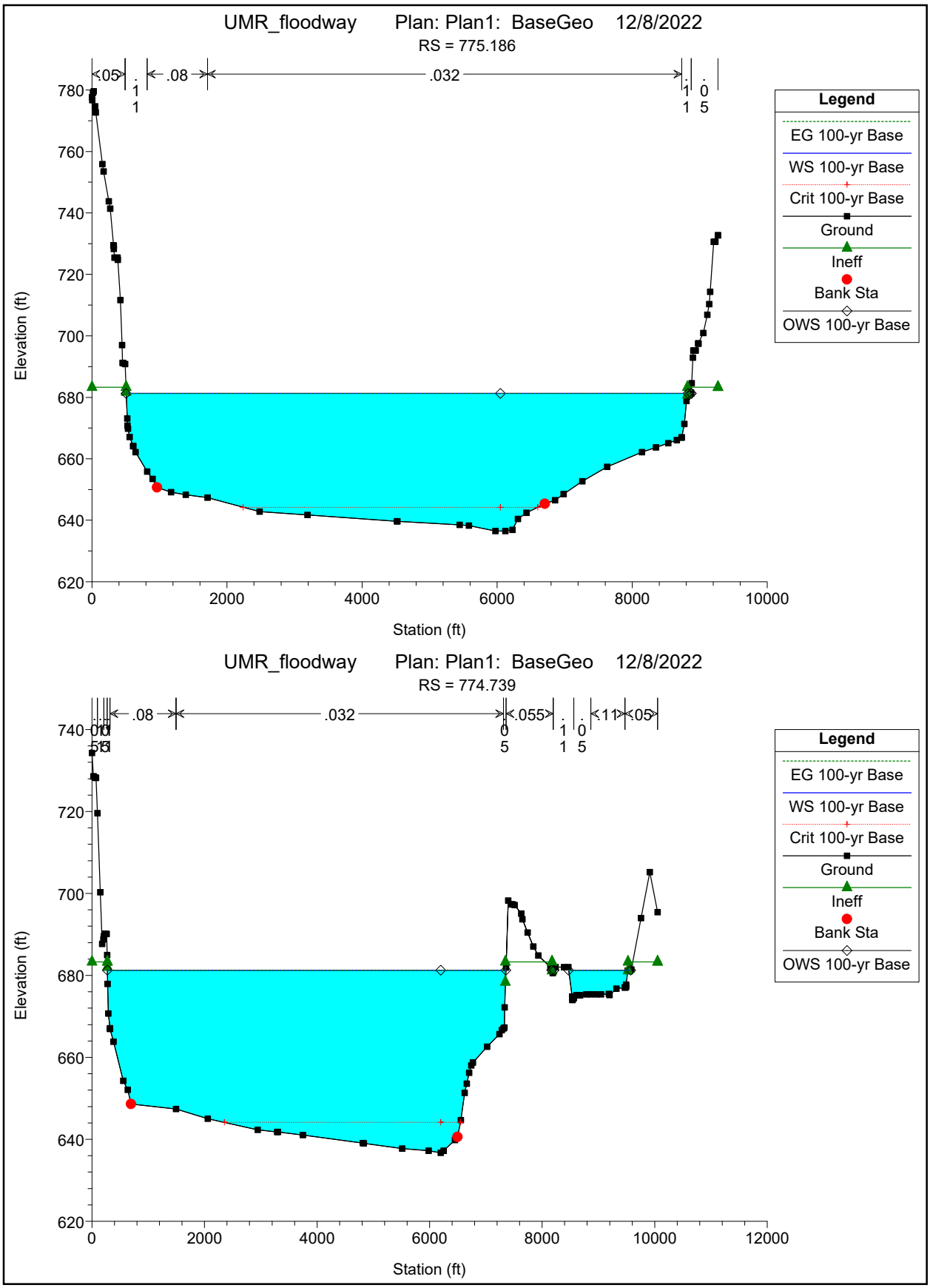

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 779.187
.05
.032
.11
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 779.000
.05
.032
.055
Elevation (ft)
1100
1000
900
800
700
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

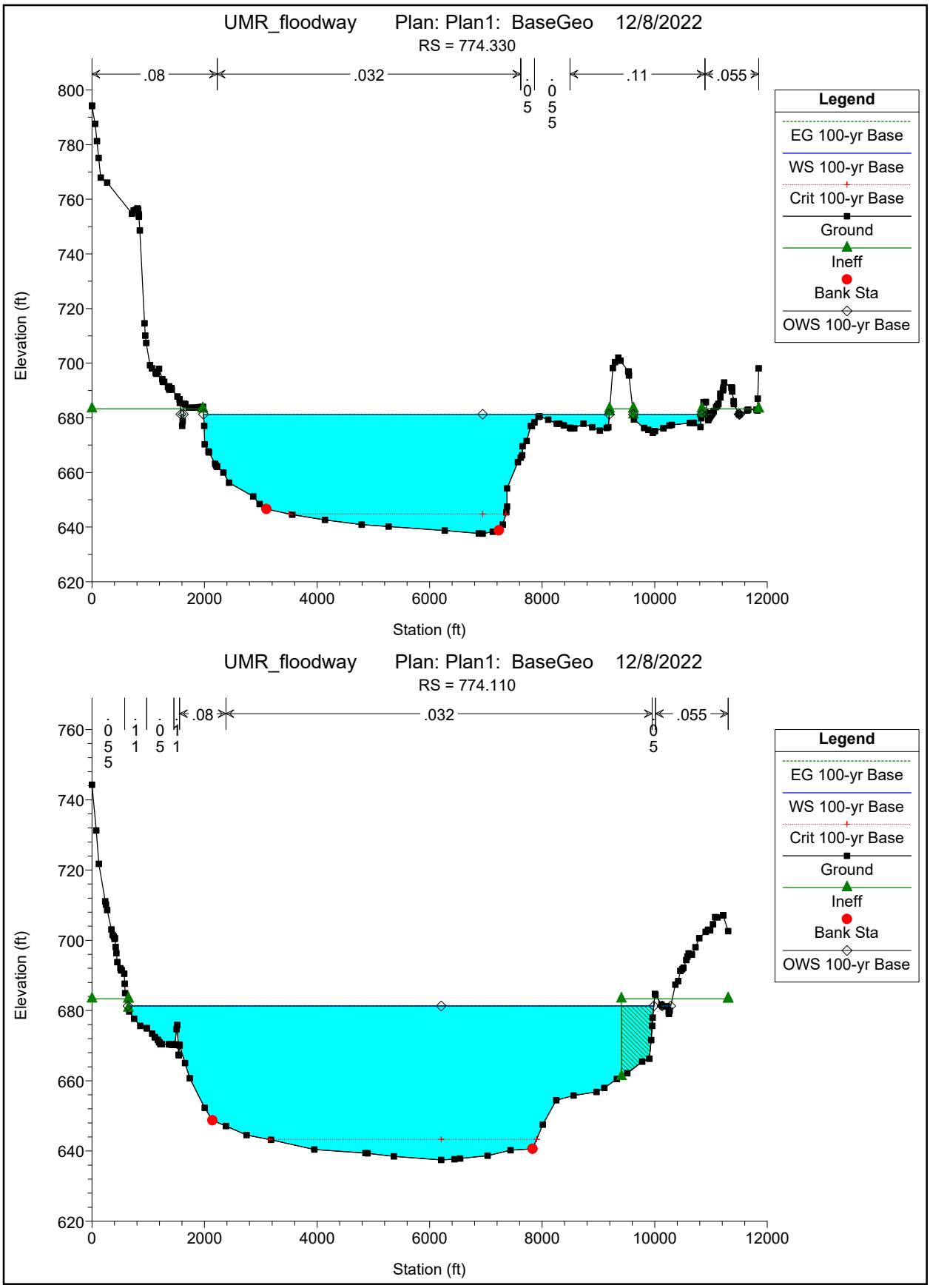

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 778.664
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 778.290
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000

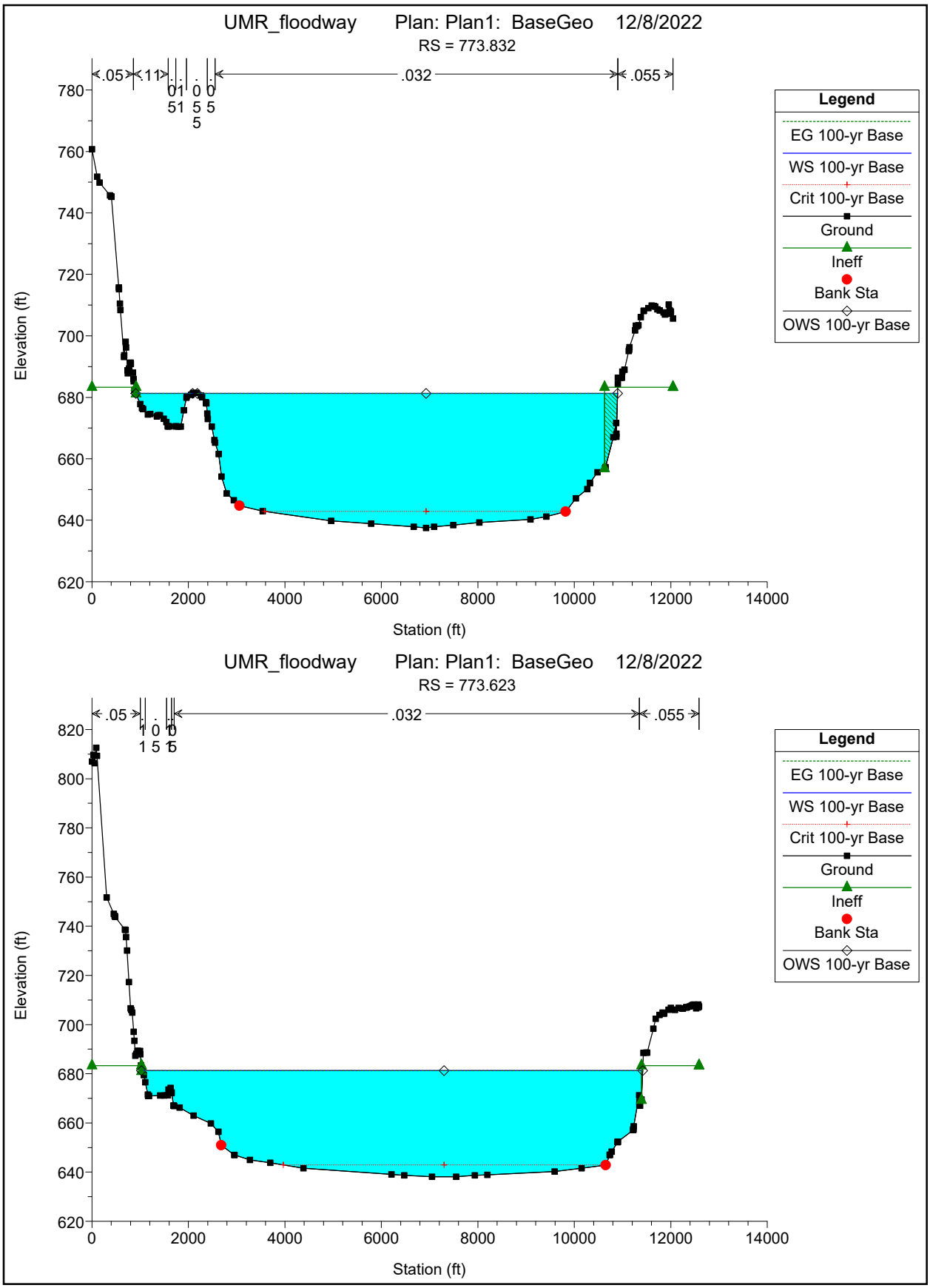

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 778.074
.032
.11
.11
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 777.875
.032
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

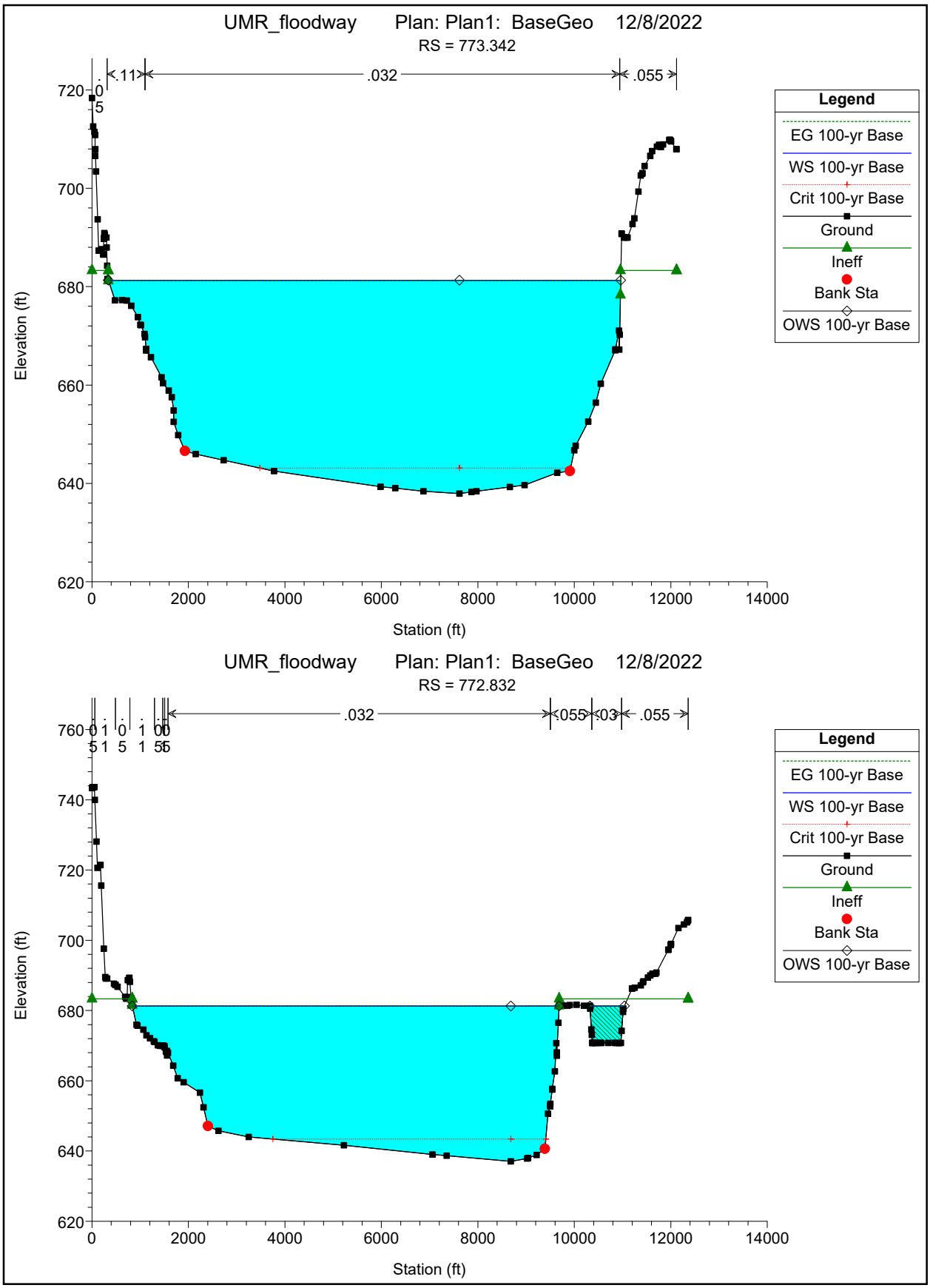

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 777.488
.032
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
820
800
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 777.080
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000

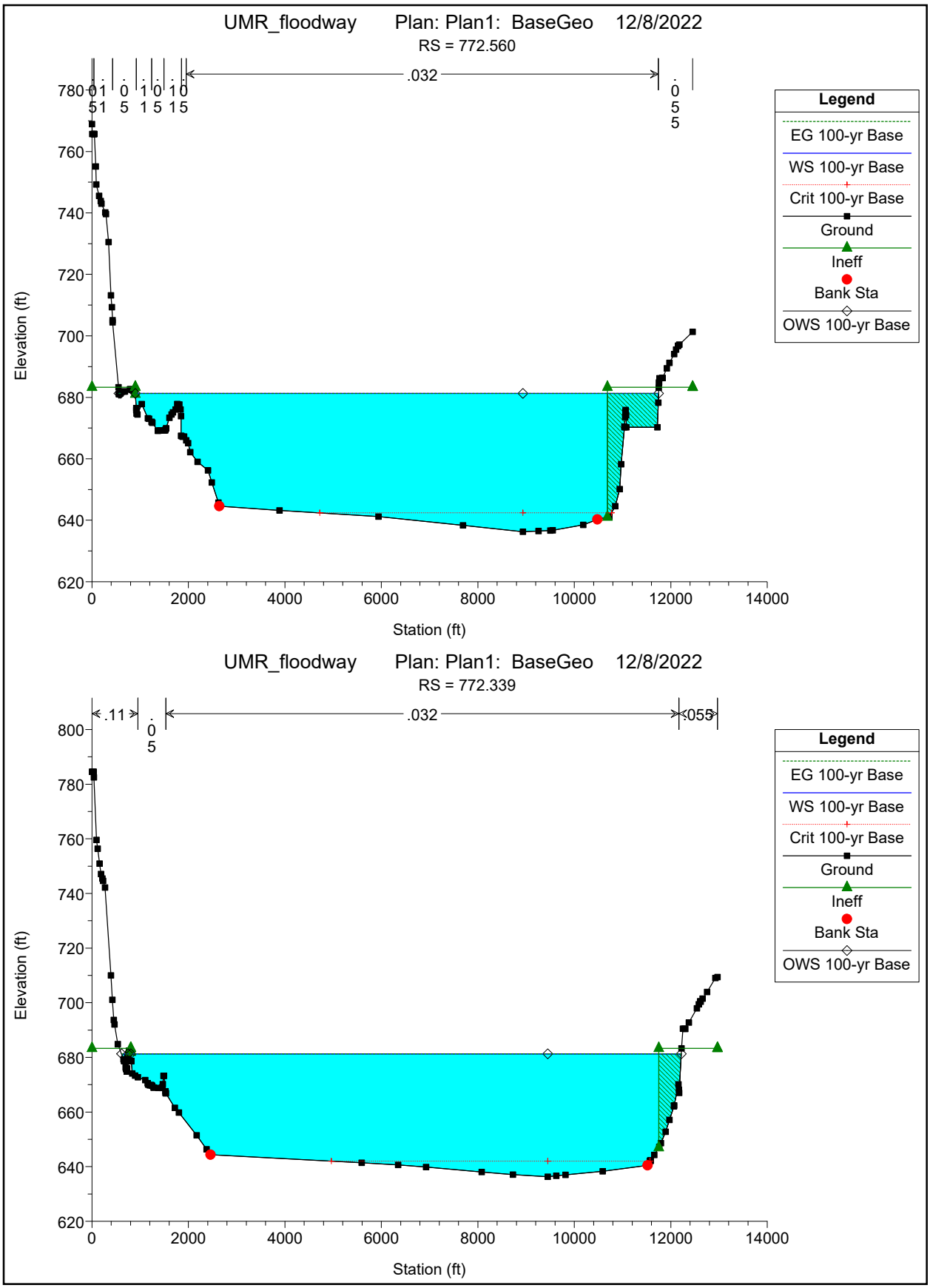

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 776.665
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 776.002
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000

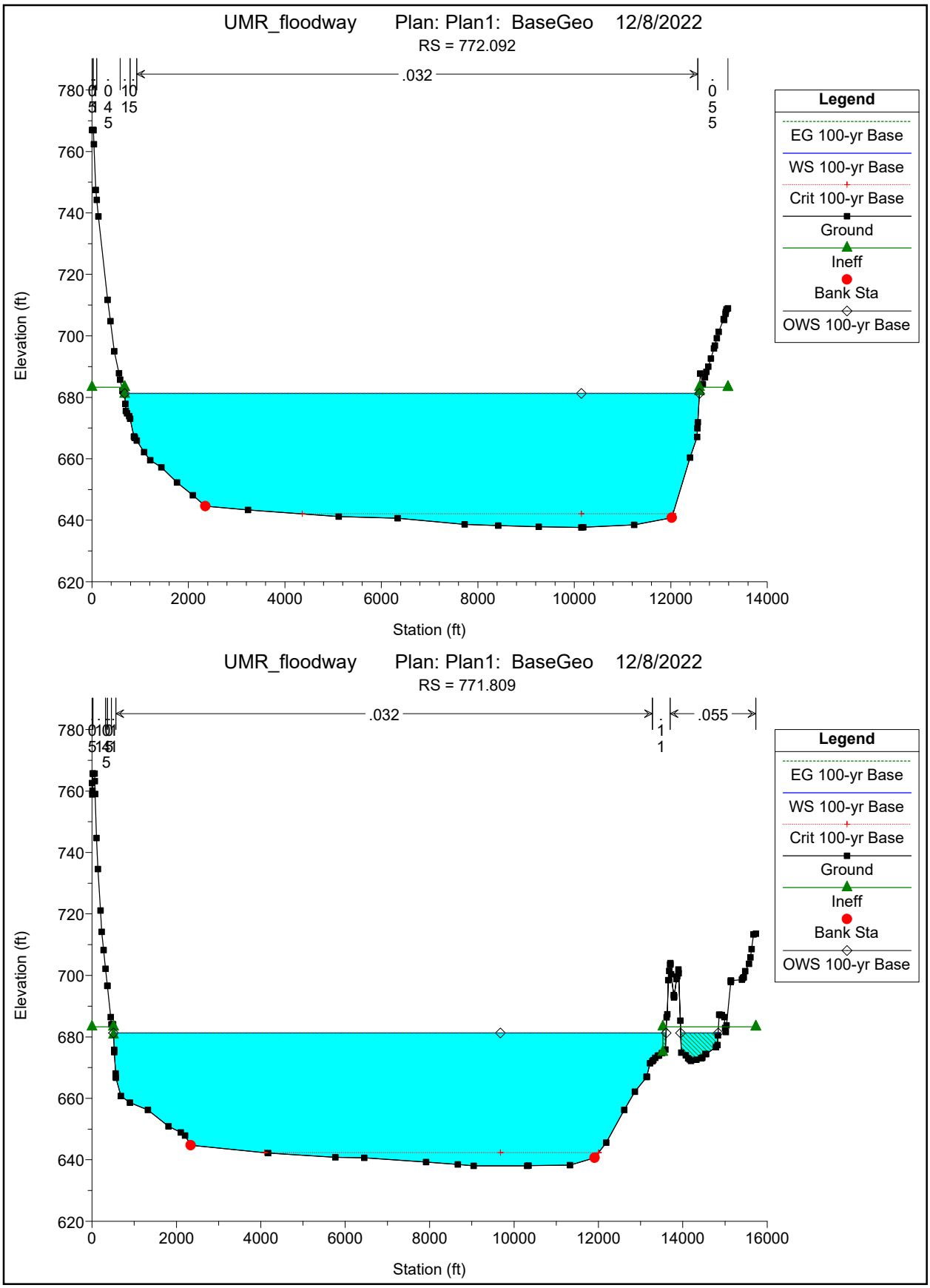

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 775.186
.05
.08
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 774.739
.08
.032
.055
.11
.05
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

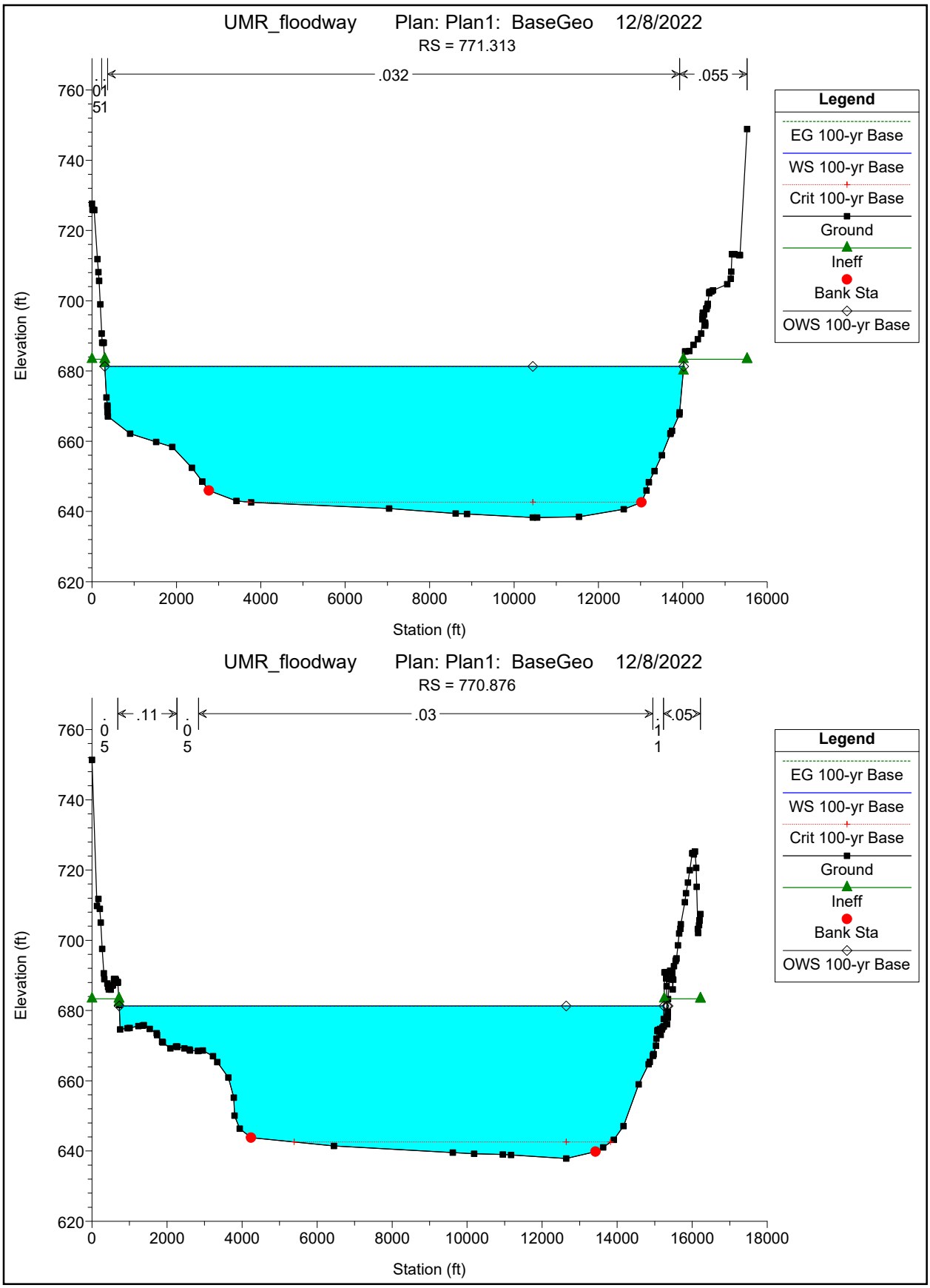

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 774.330
.08
.032
.055
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 774.110
.08
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

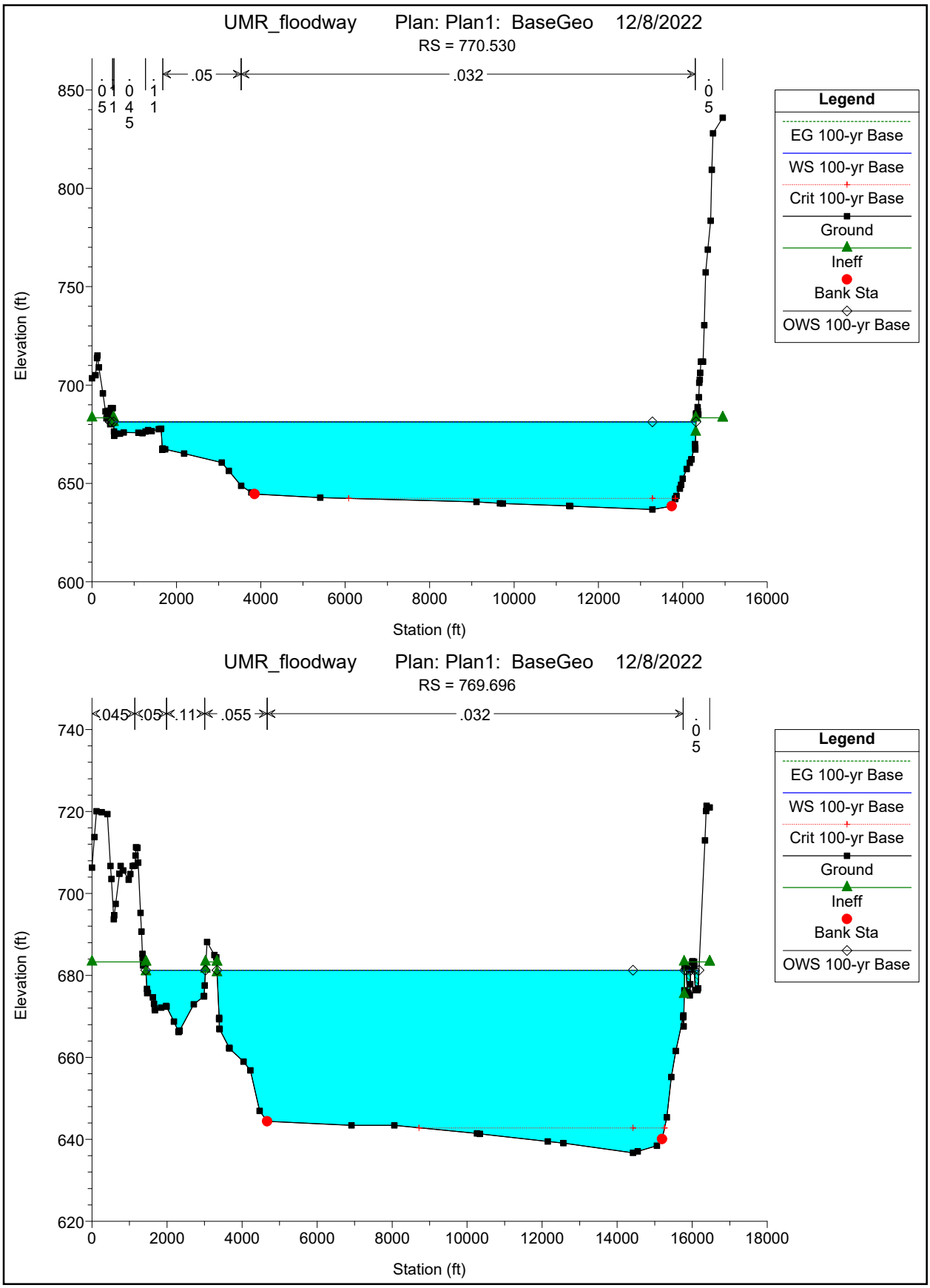

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 773.832
.05
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 773.623
.05
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

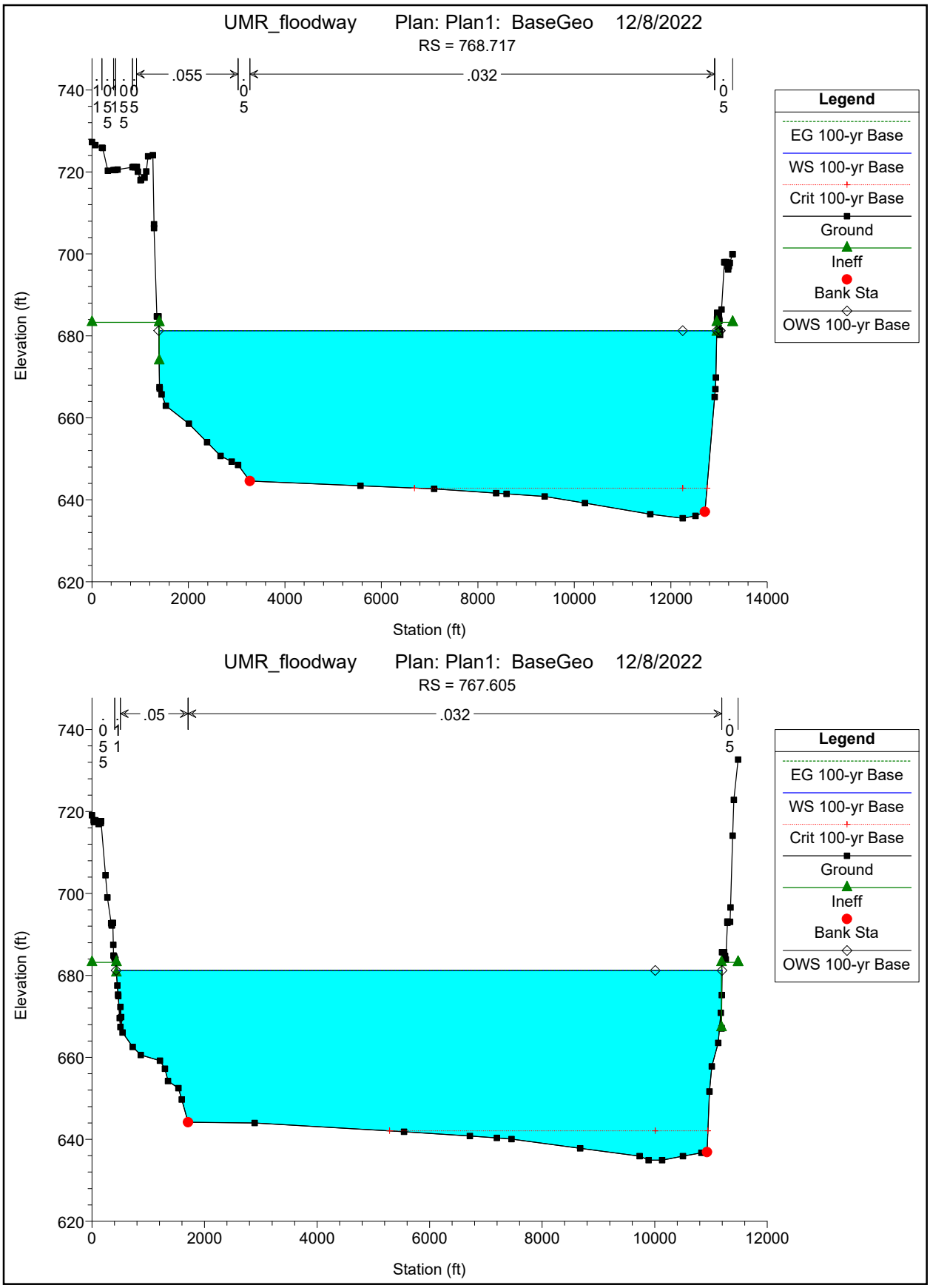

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 773.342
.11
.032
.055
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 772.832
.032
.055
.03
.055
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

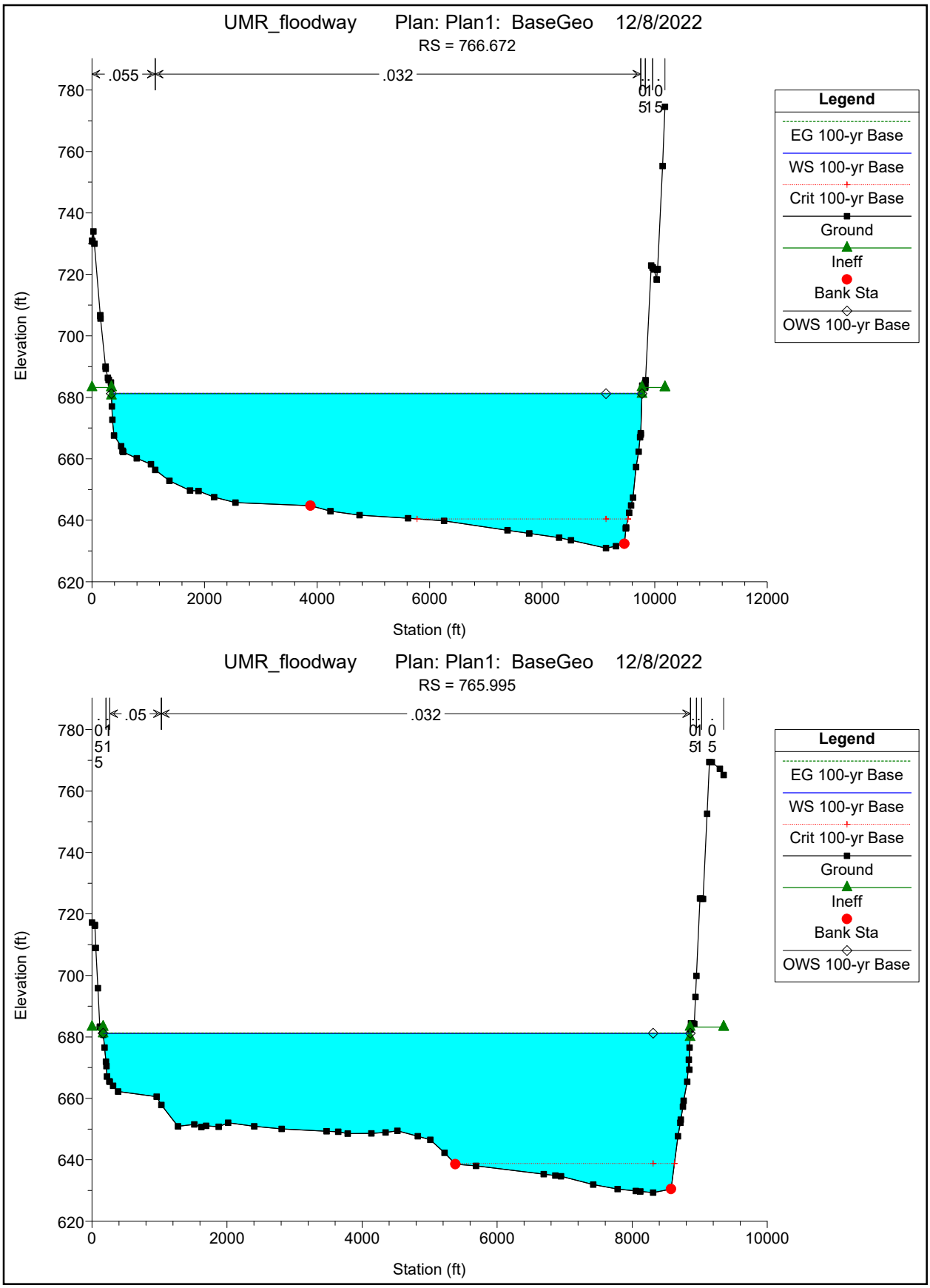

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 772.560
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 772.339
.11
.032
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

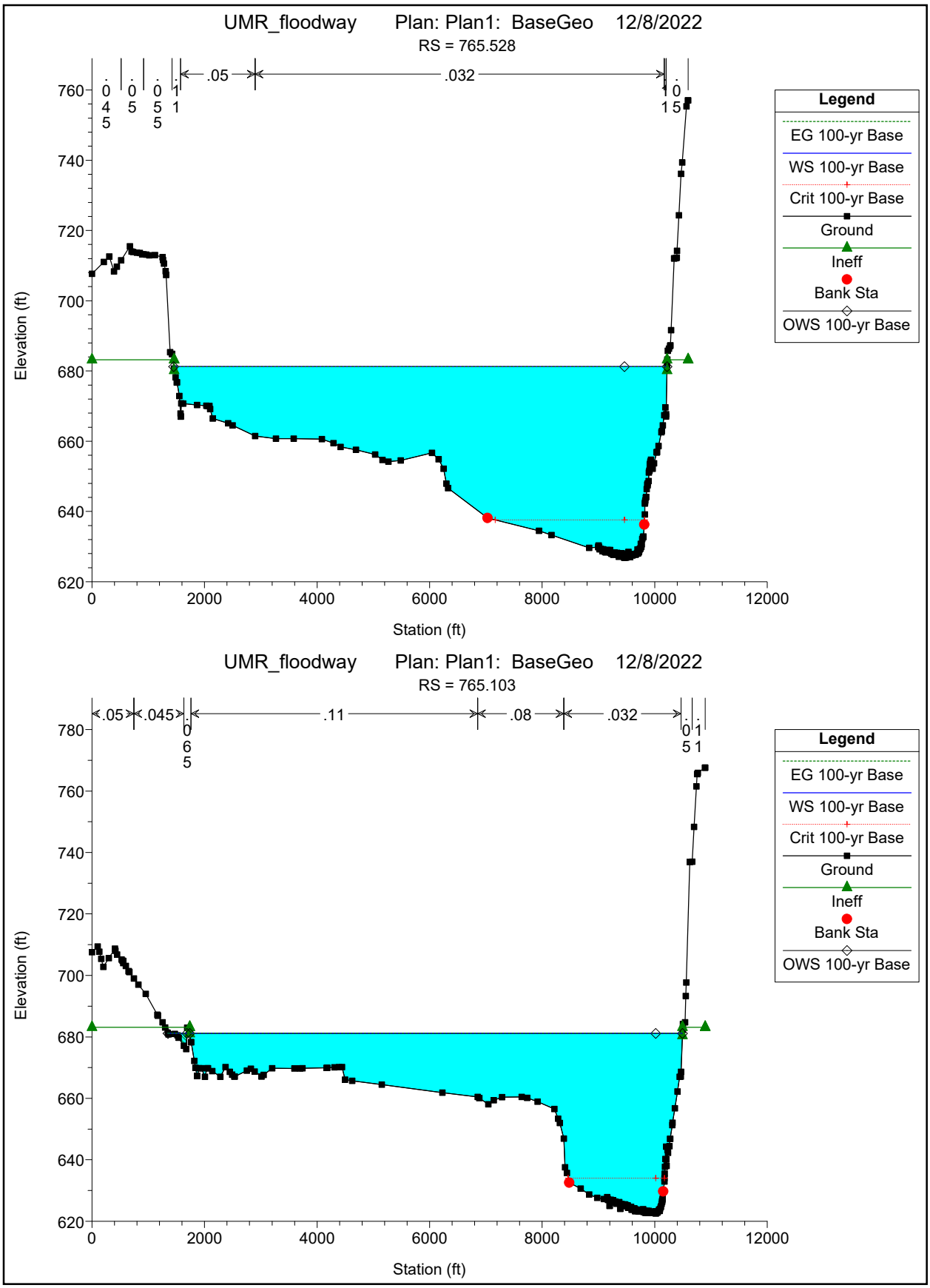

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 772.092
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 771.809
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

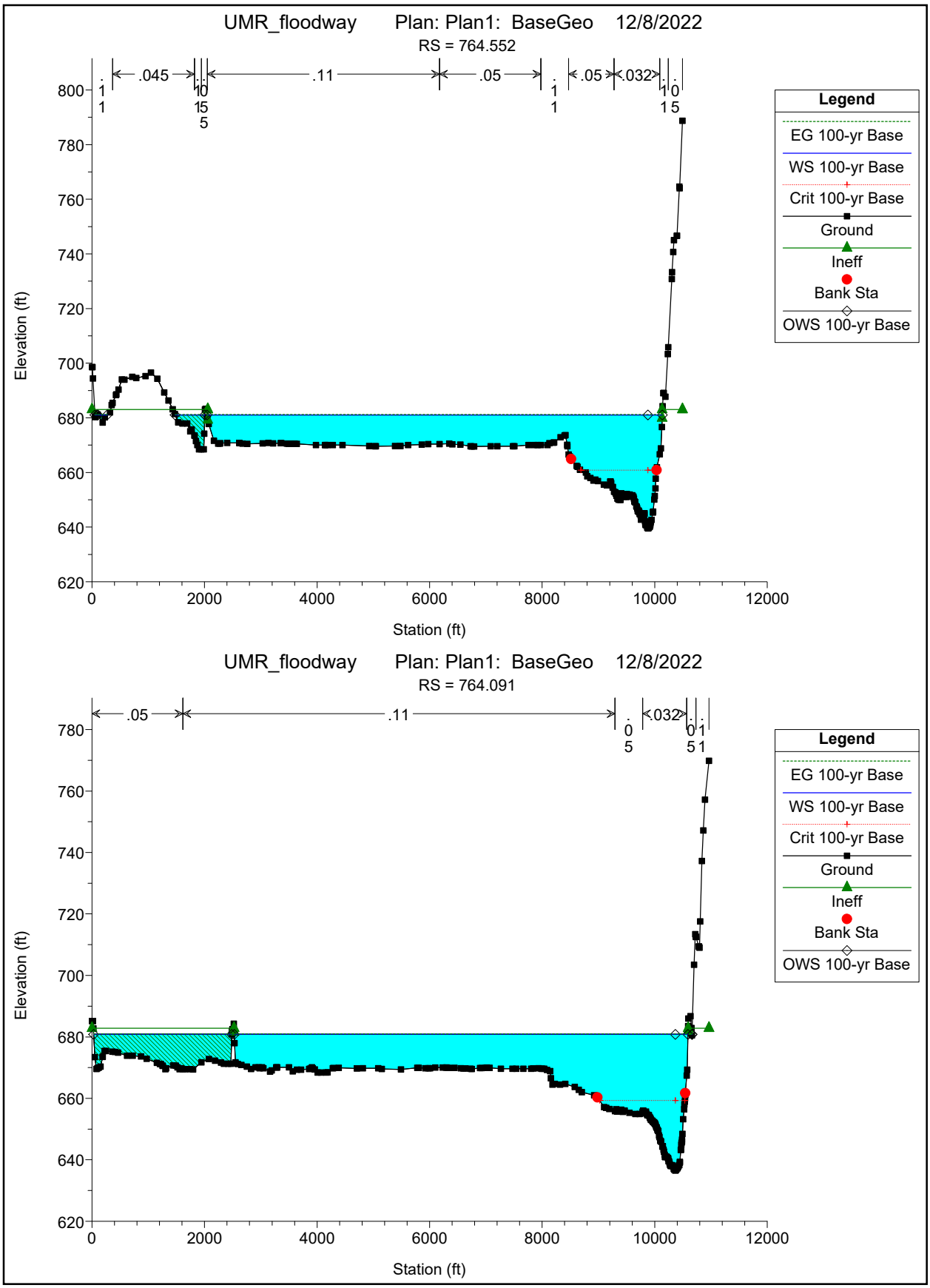

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 771.313
.032
.055
.01
51
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 770.876
.11
.03
.05
.05
.1
1
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)

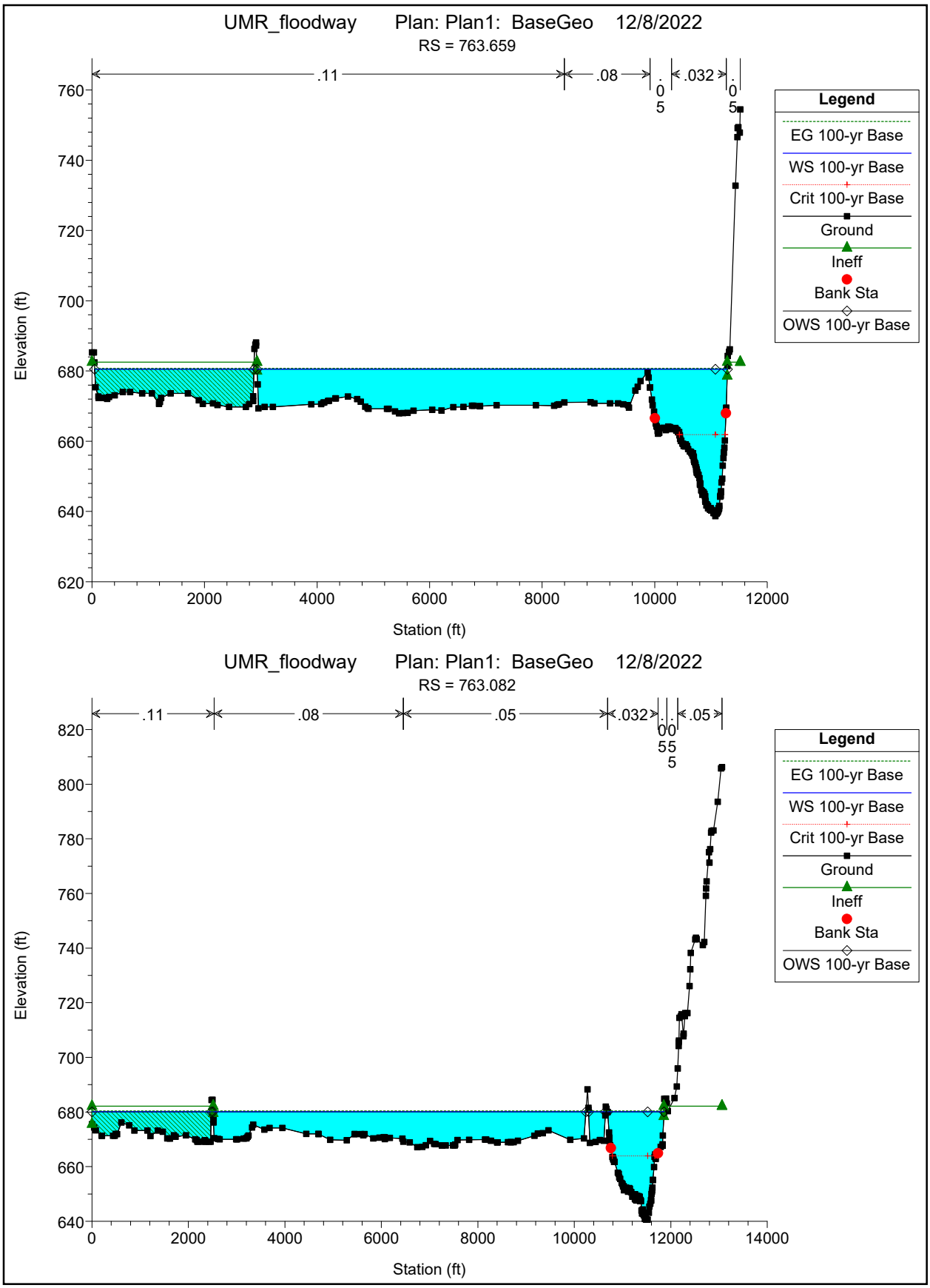

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 770.530
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 769.696
.045
.05
.11
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

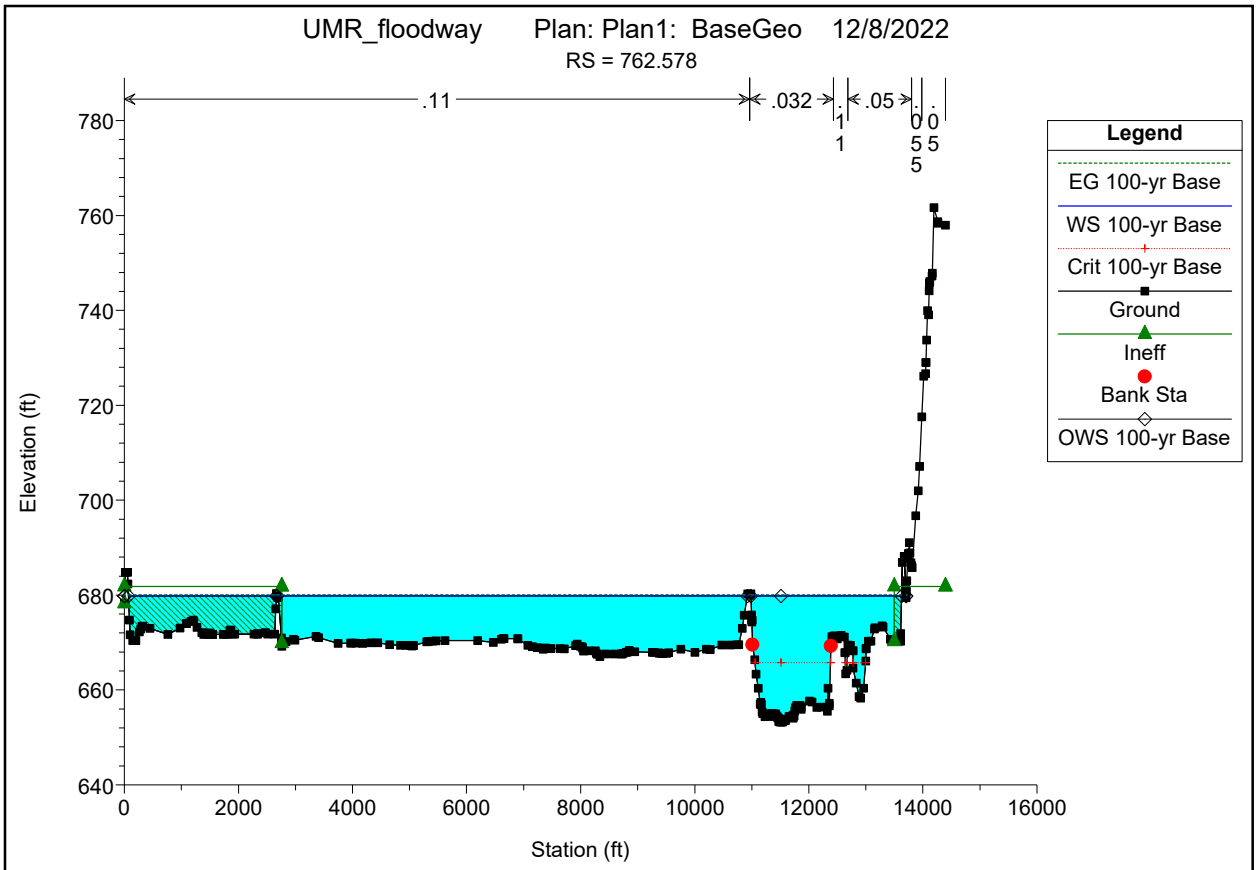

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 768.717
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 767.605
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000

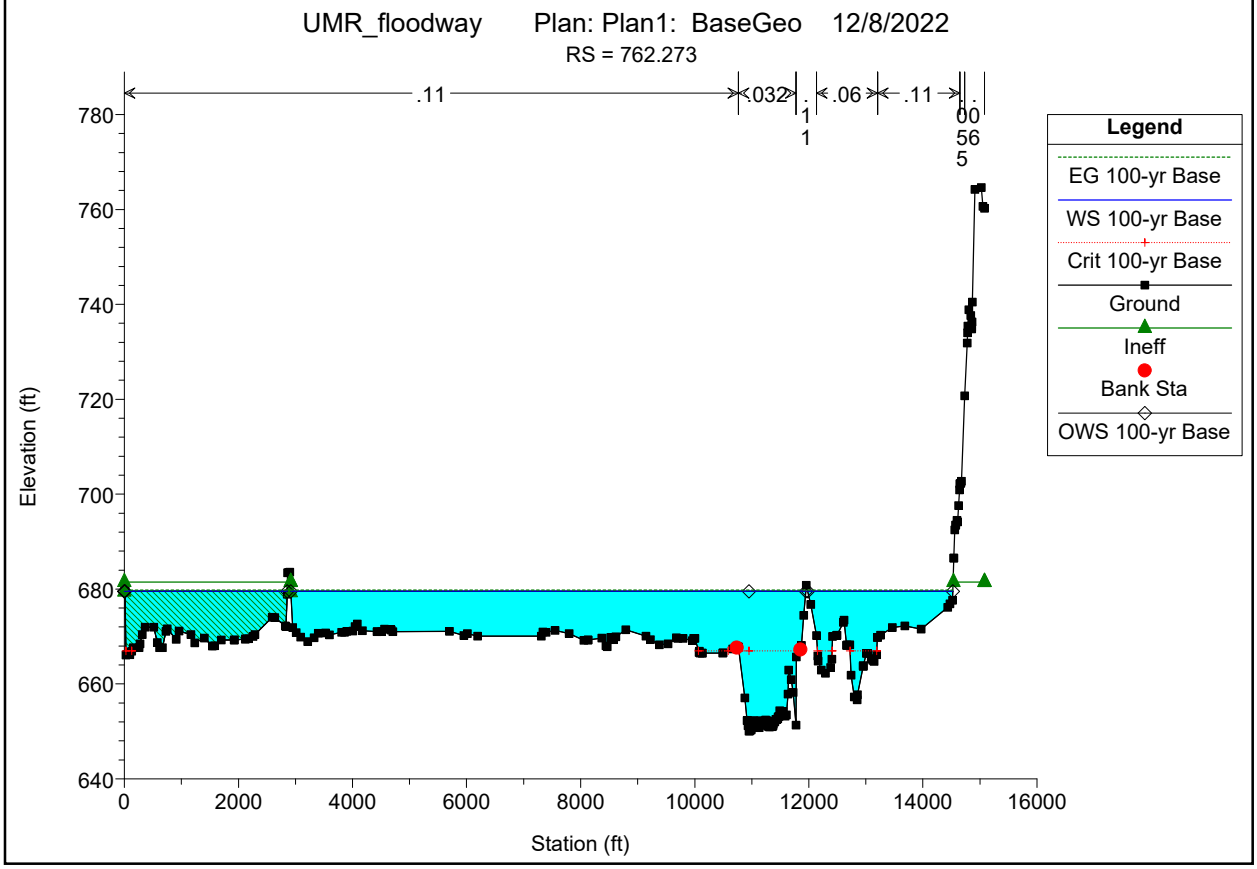

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 766.672
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 765.995
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

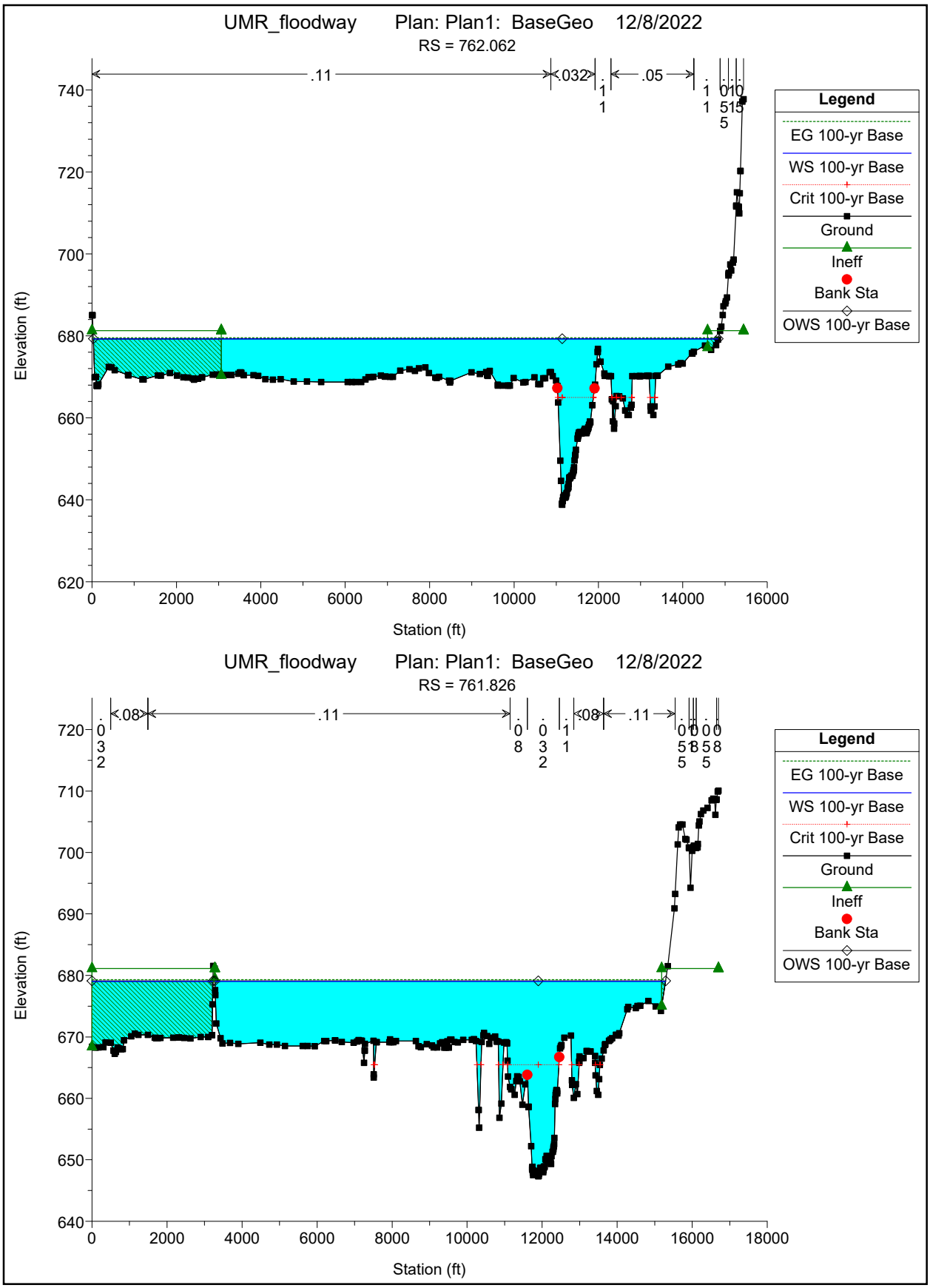

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 765.528
.045
.05
.055
.11
.05
.032
.015
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 765.103
.05
.045
.065
.11
.08
.032
.015
.11
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

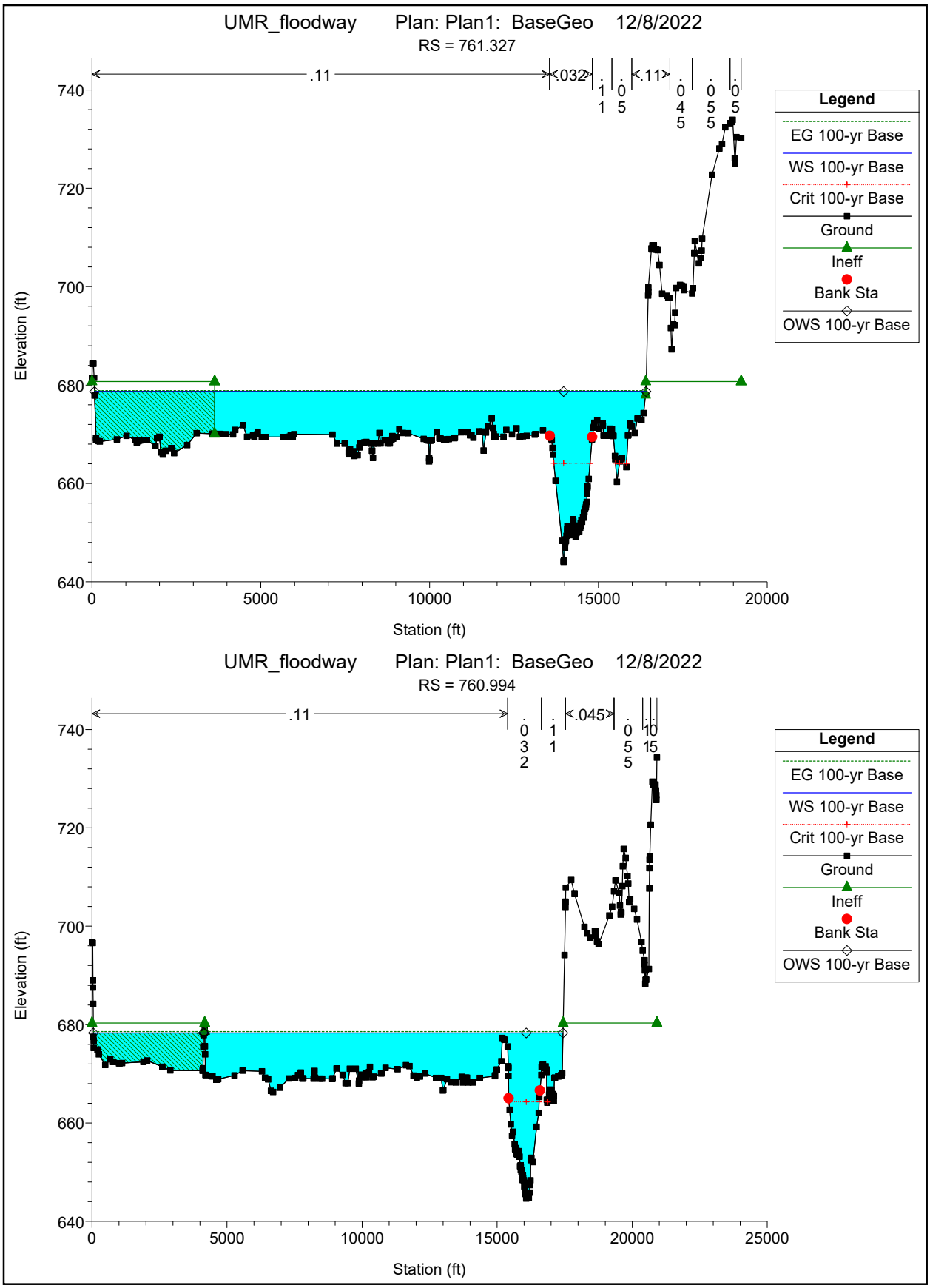

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 764.552
.045
.11
.05
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 764.091
.05
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

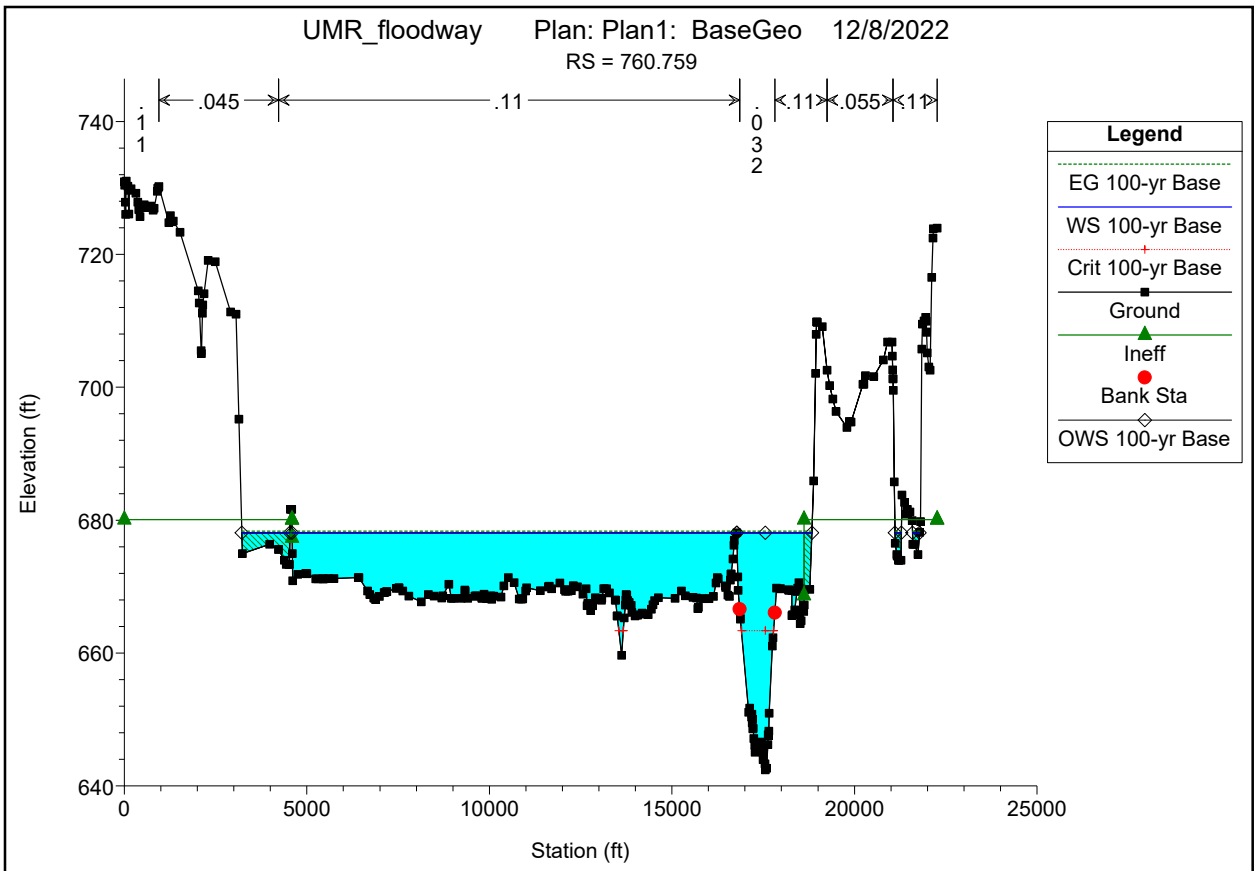

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 763.659
.11
.08
.05
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 763.082
.11
.08
.05
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

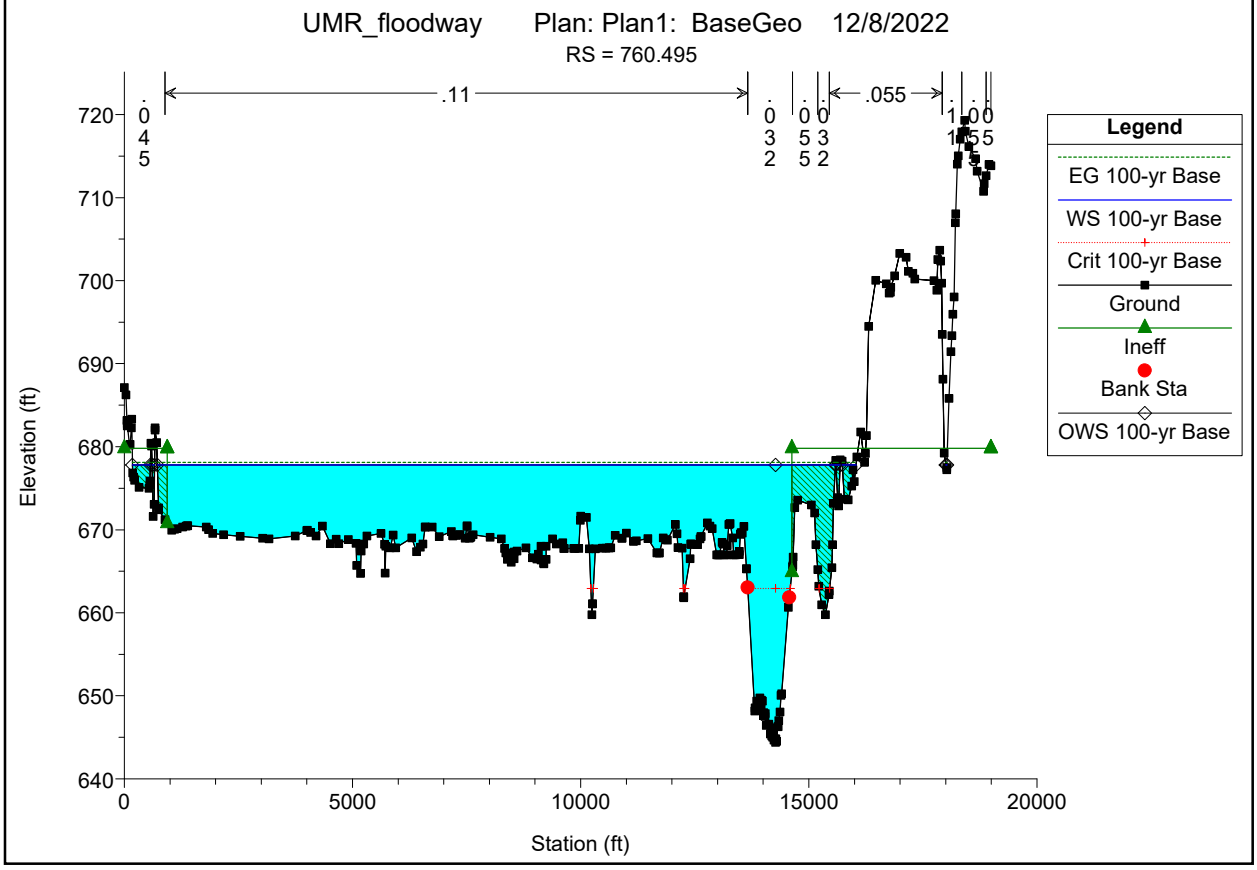

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 762.578
.11
.032
.05
.1
1
.0
5
.0
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)

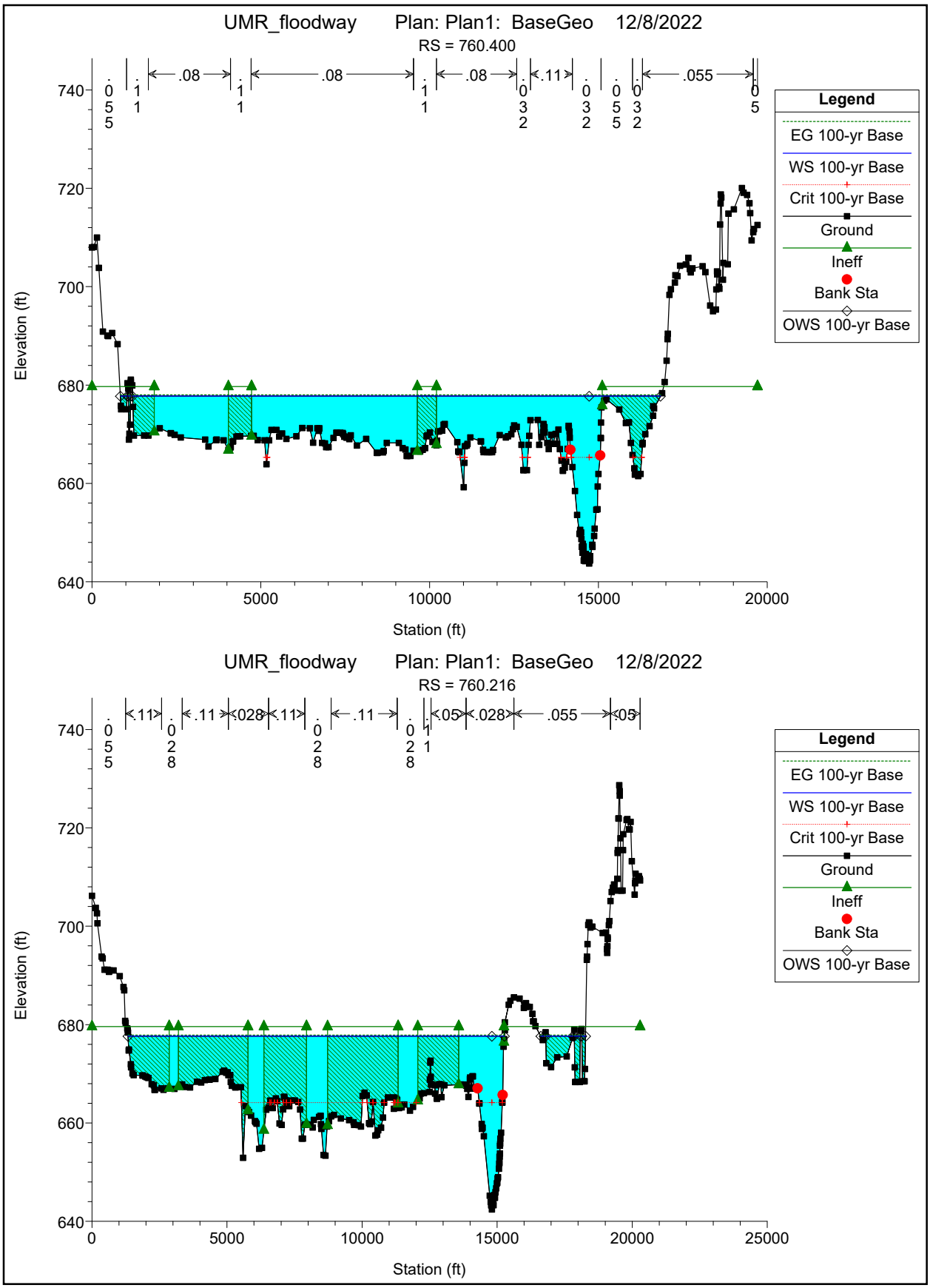

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 762.273
.11
.032
.06
.11
.1
1
.0
56
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)

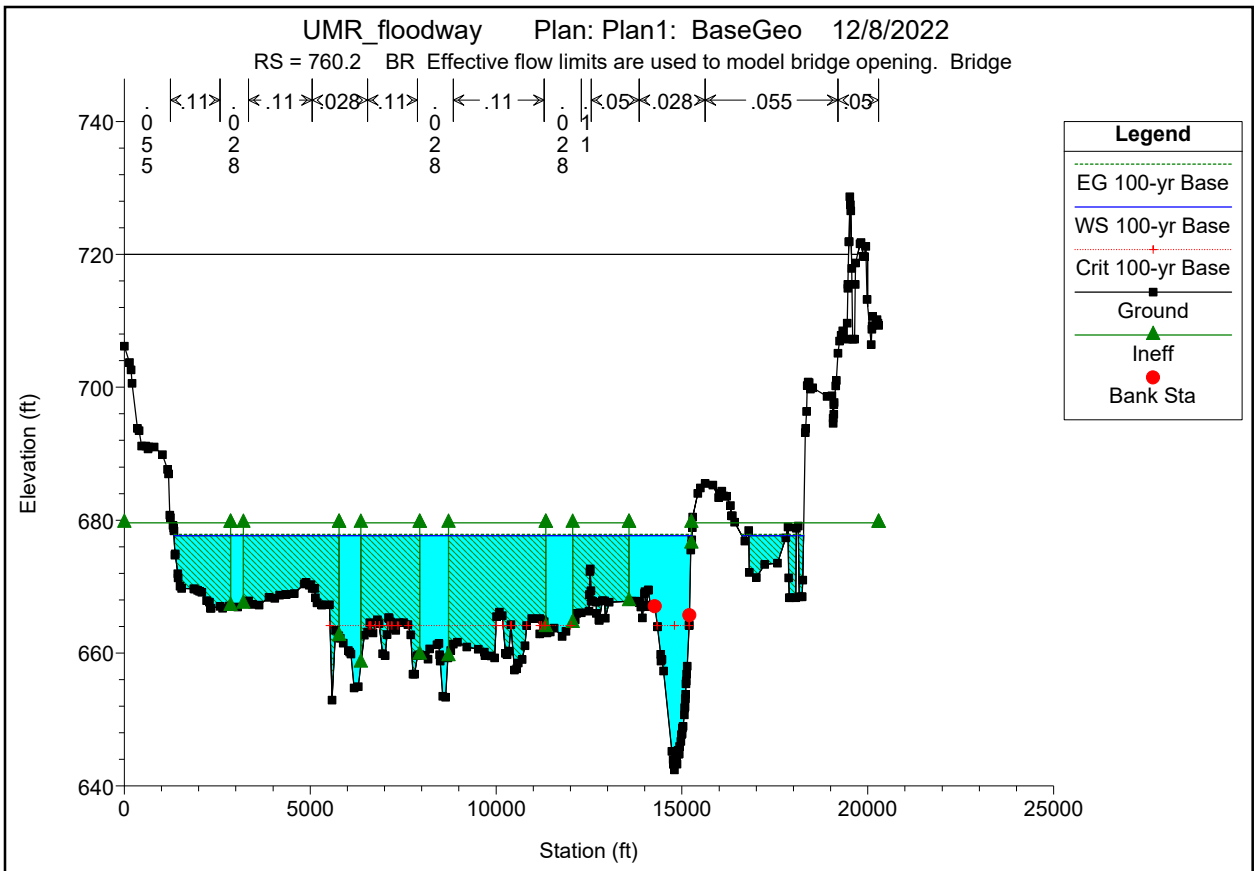

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 762.062
.11
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 761.826
.08
.11
.08
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

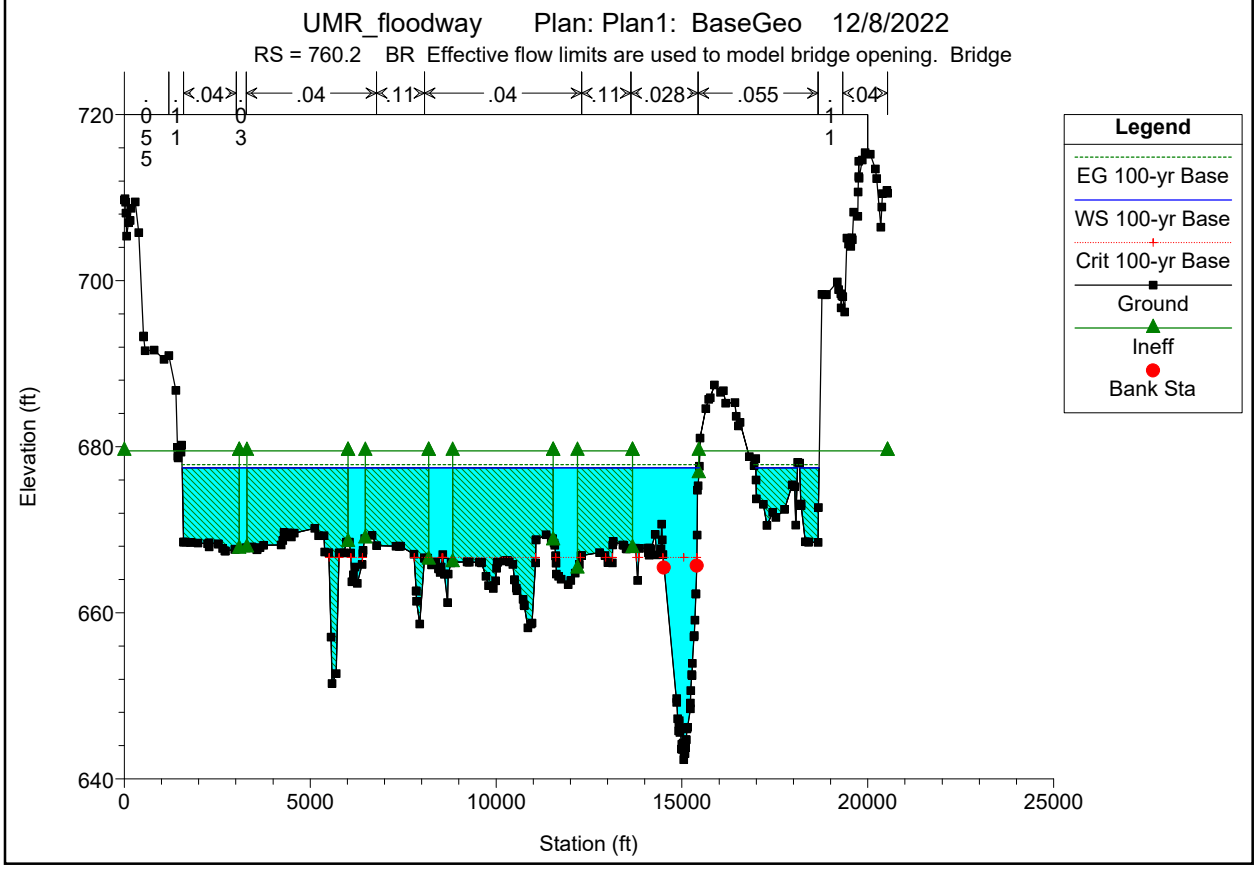

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 761.327
.11
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.994
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)

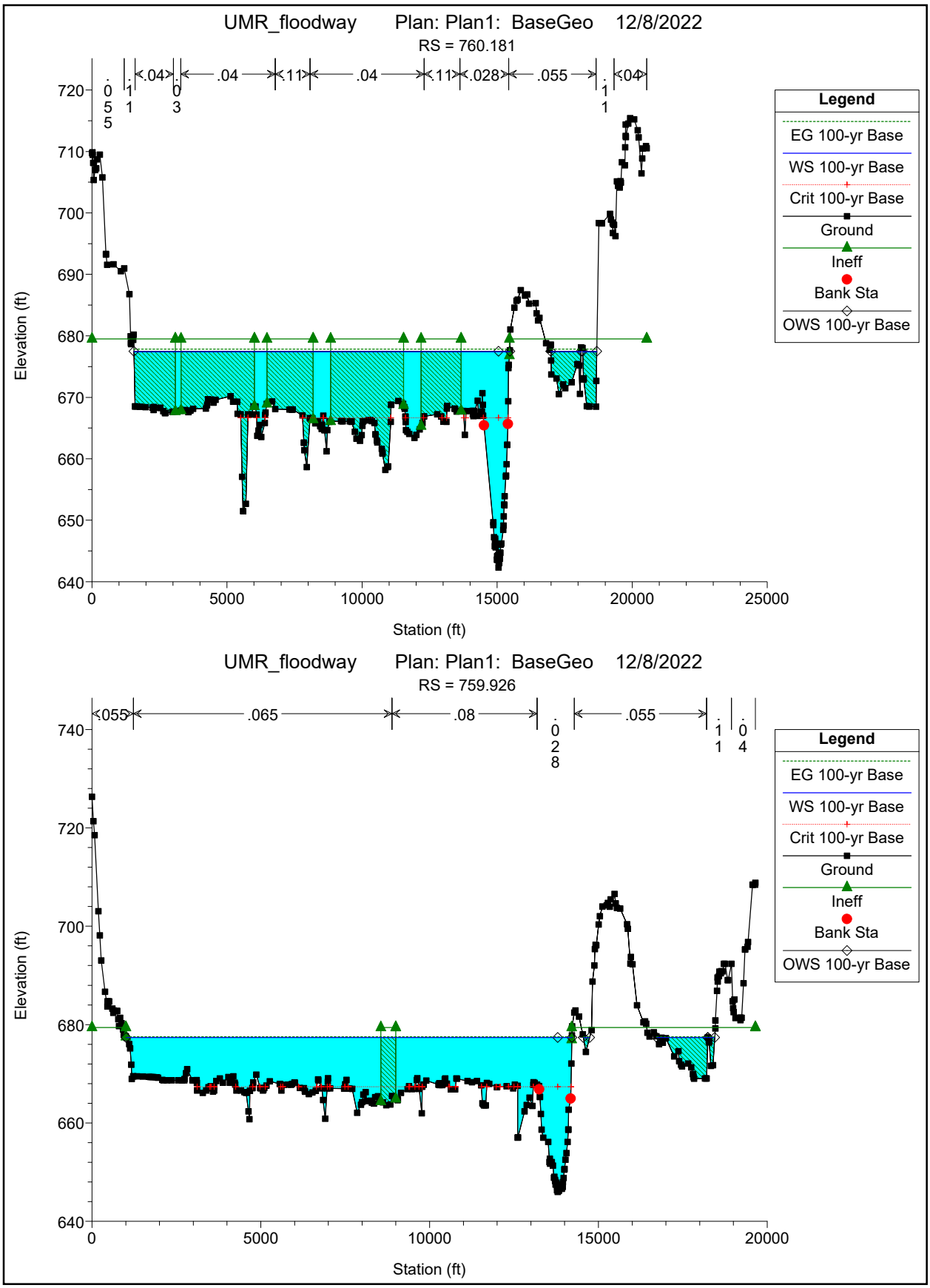

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.759
.045
.11
.11
.055
.11
.11
.032
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

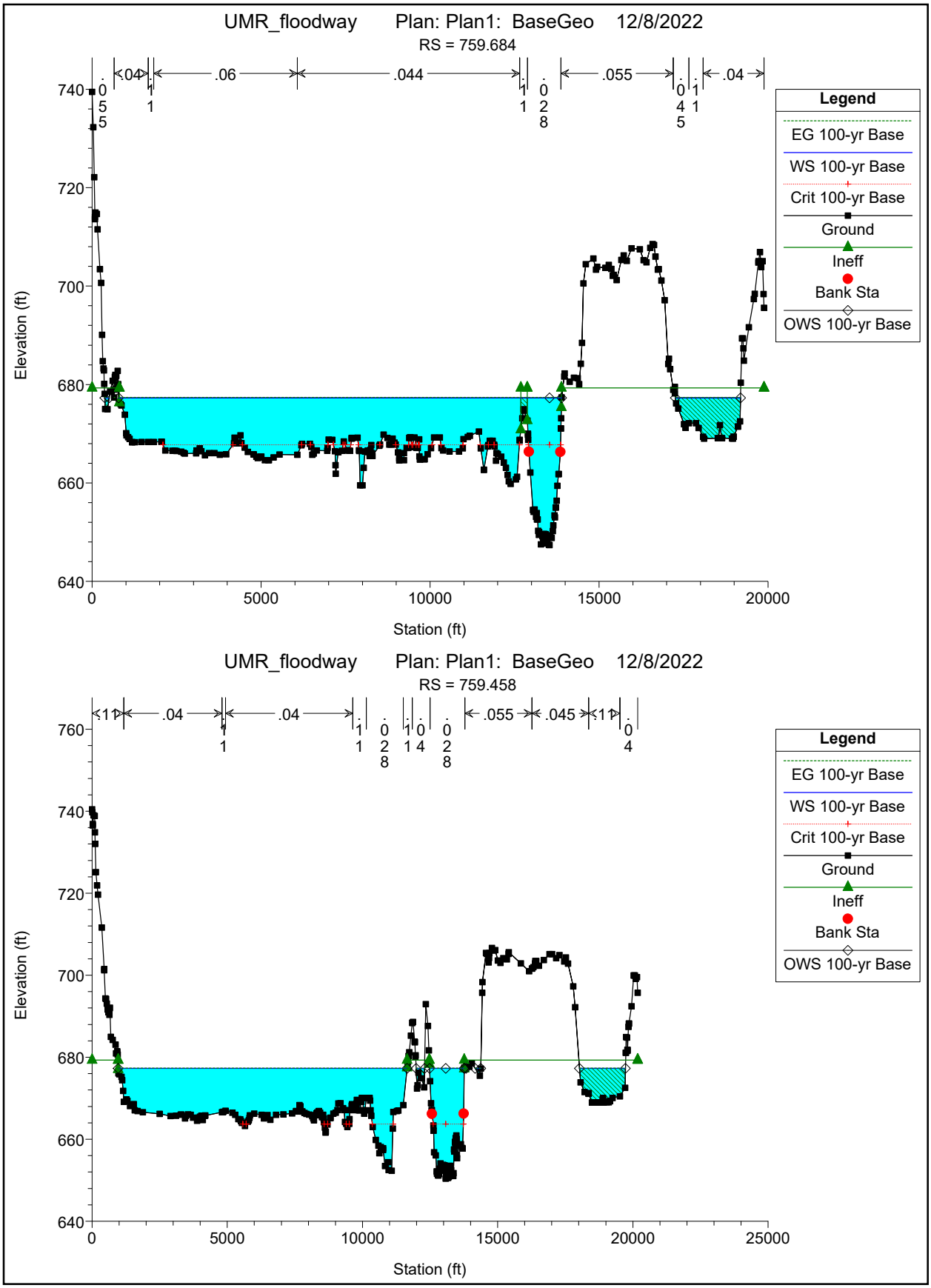

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.495
.045
.11
.032
.055
.055
.032
.100
.155
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

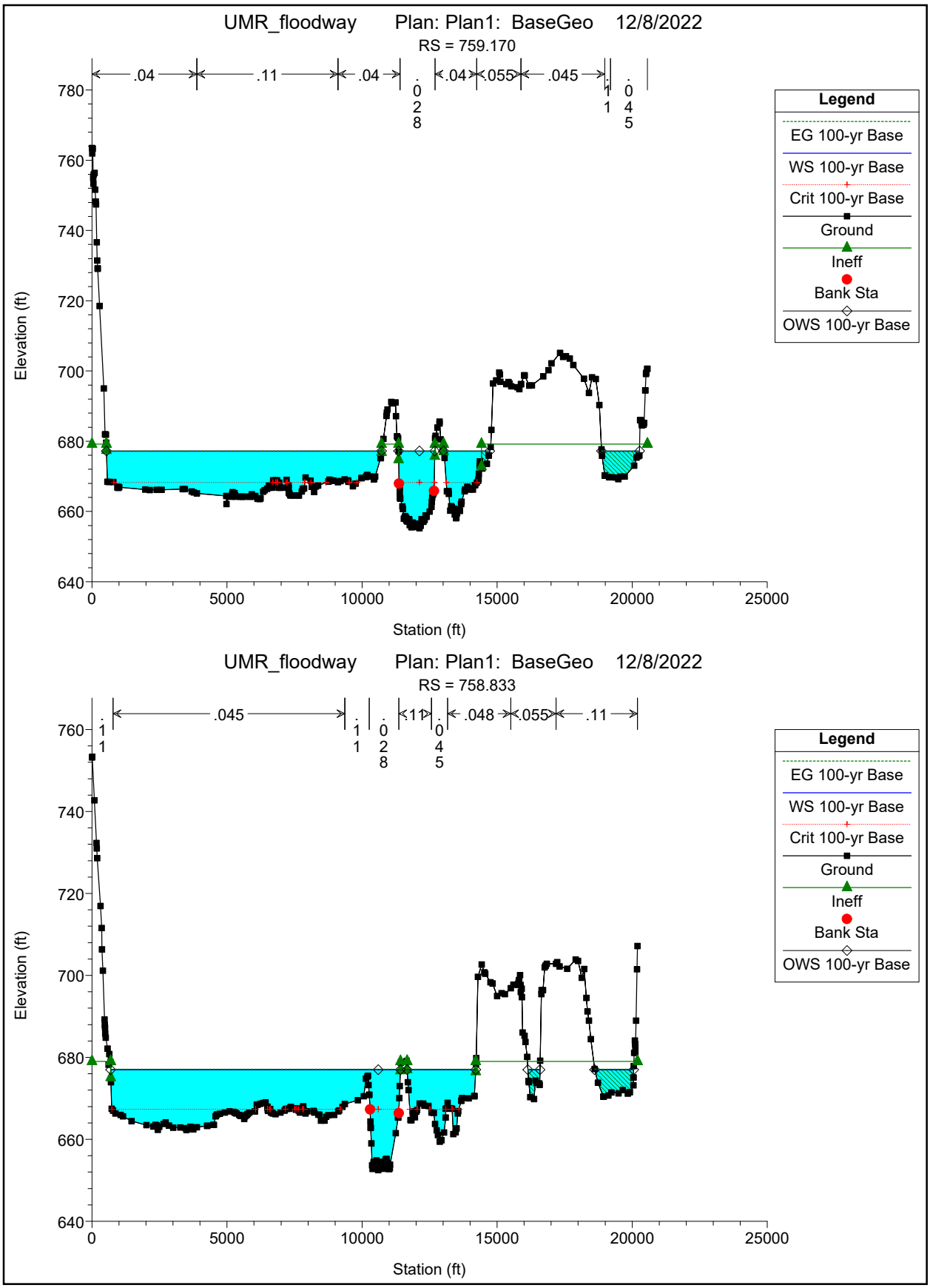

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.400
.055 .11 .08 .11 .08 .11 .08 .032 .11 .032 .055 .032 .055
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.216
.055 .11 .028 .11 .028 .11 .028 .11 .05 .028 .055 .05
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055
.11
.028
.11
.028
.11
.028
.11
.05
.028
.055
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055
.11
.04
.03
.04
.11
.04
.11
.028
.055
.11
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
720
700
680
660
640
0
5000
10000
15000
20000
25000


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 760.181
.055
.11
.04
.03
.04
.11
.04
.11
.028
.055
.11
.04
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 759.926
.055
.065
.08
.028
.055
.11
.04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 759.684
.055
.04
.06
.044
.04
.055
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 759.458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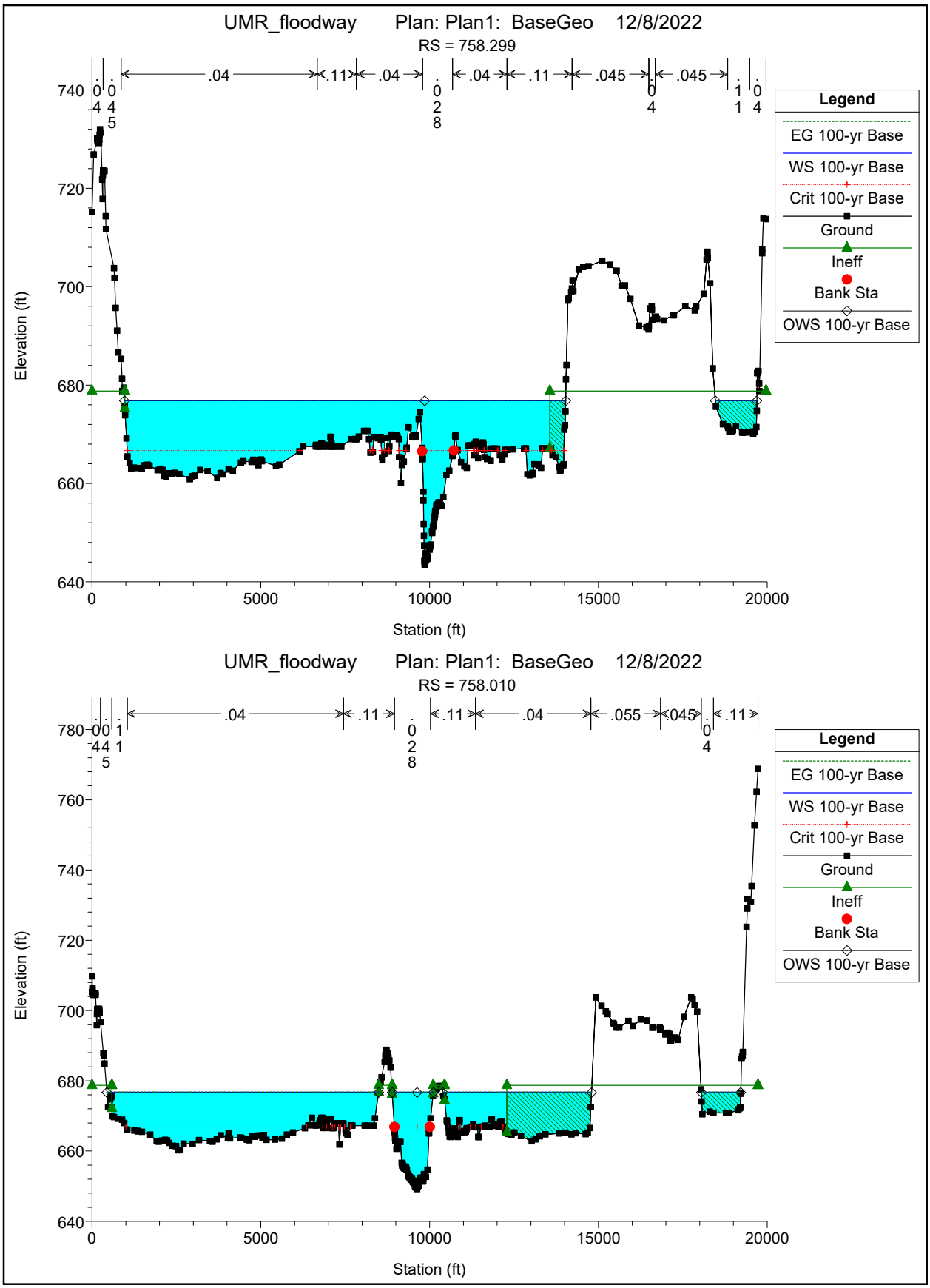
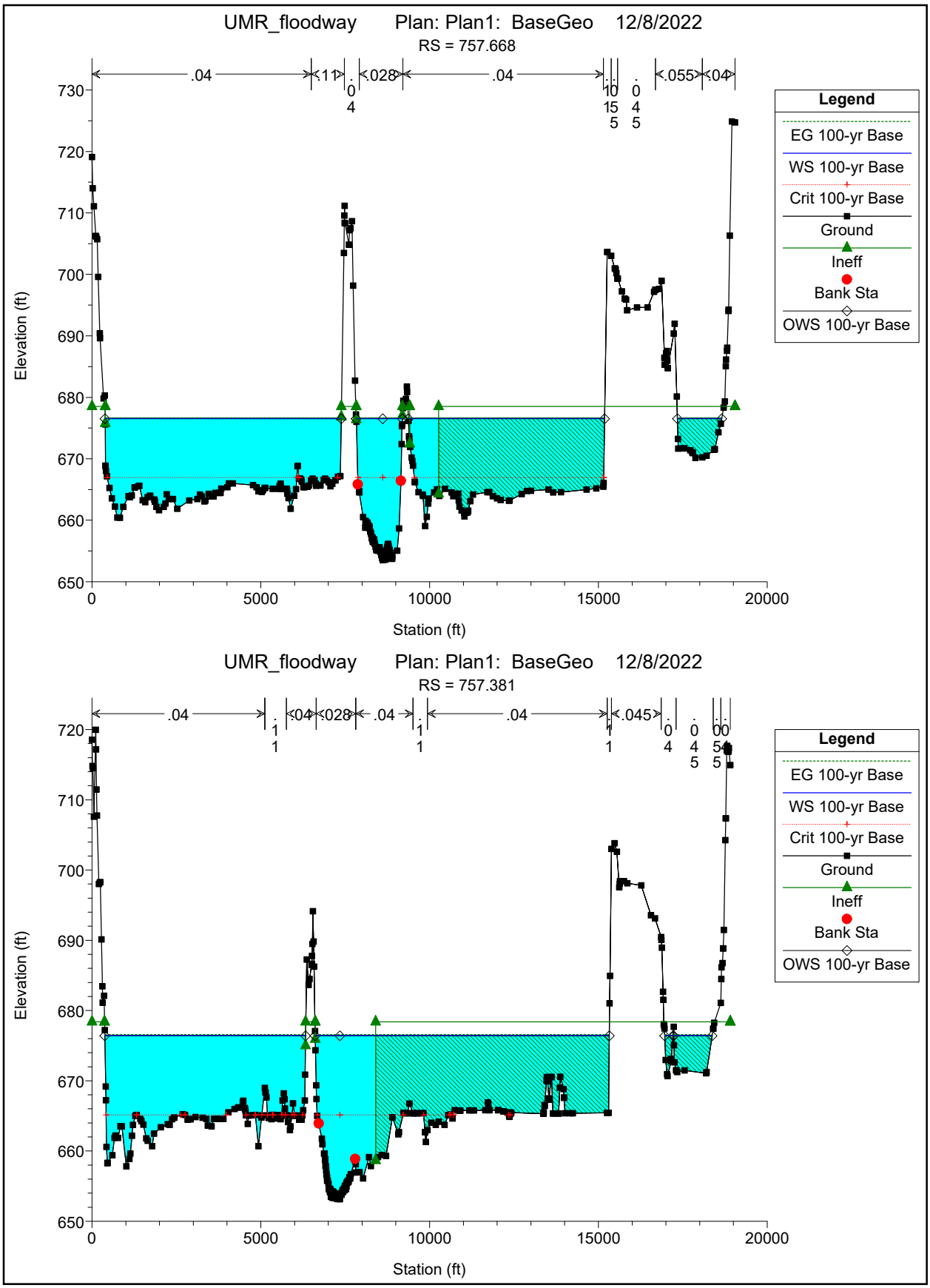
RS = 759.170
.04
.11
.04
.028
.04
.055
.045
.045
Elevation (ft)
780
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 758.833
.11
.045
.11
.028
.11
.048
.055
.11
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 758.299
.04
.11
.04
.04
.11
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 758.010
.04
.11
.11
.04
.055
.045
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)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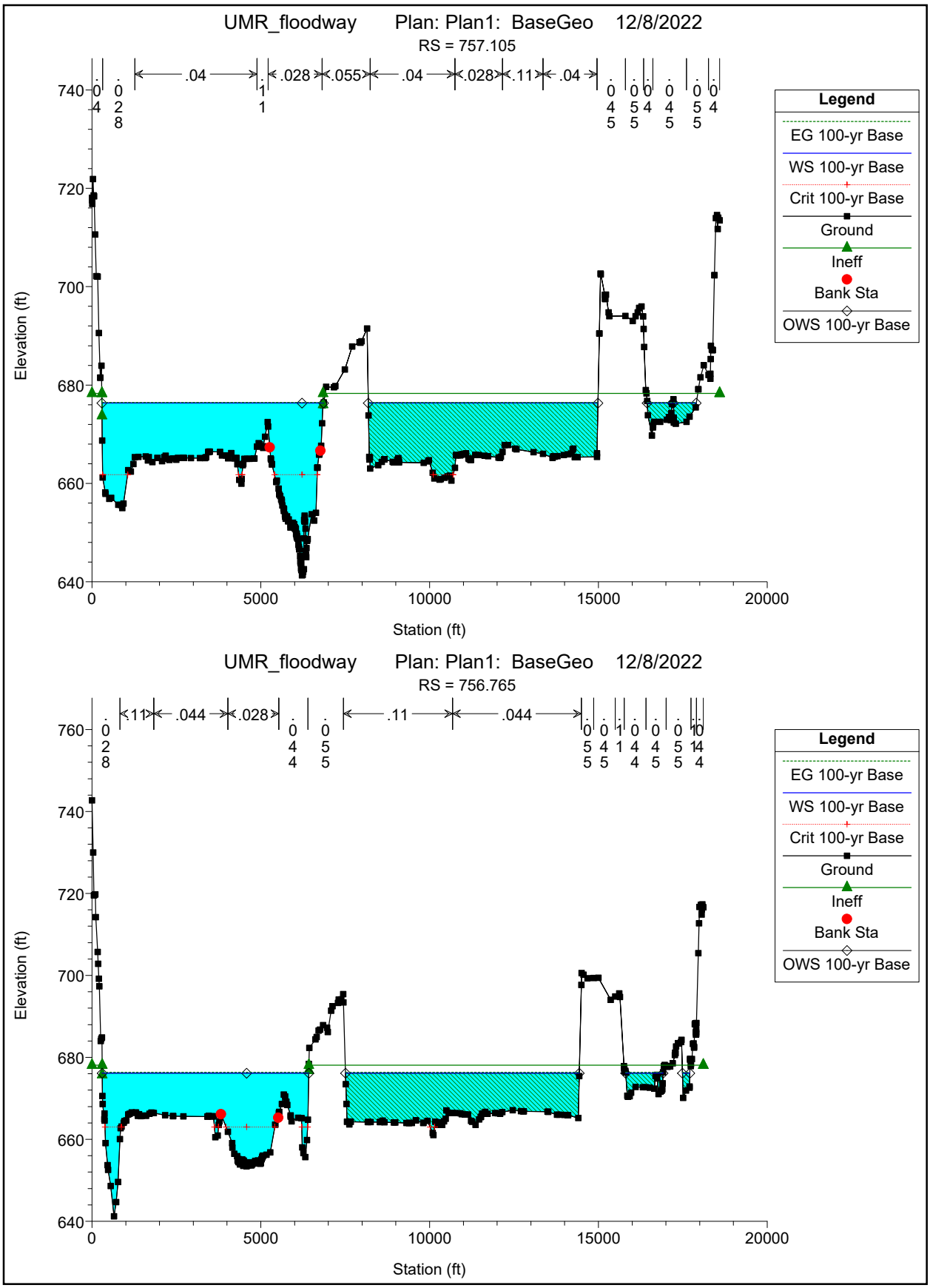
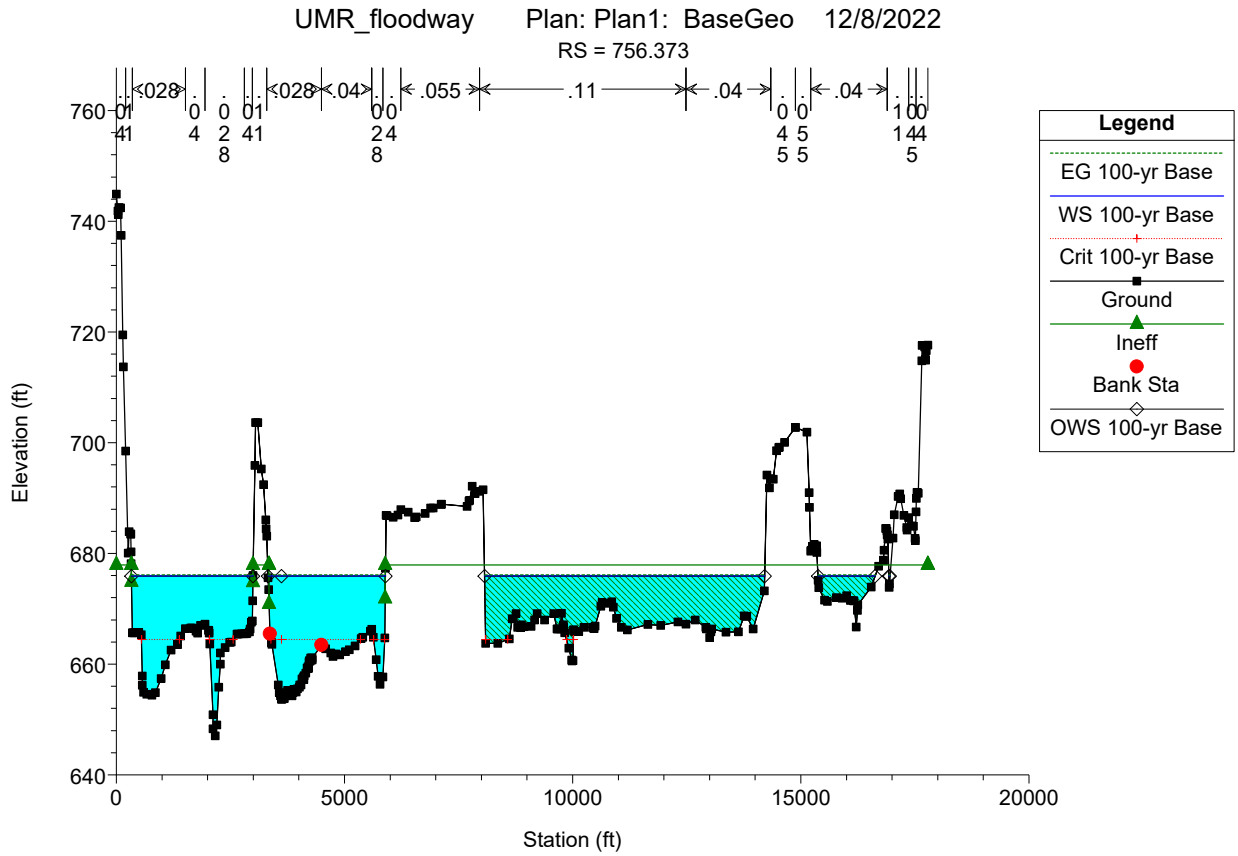
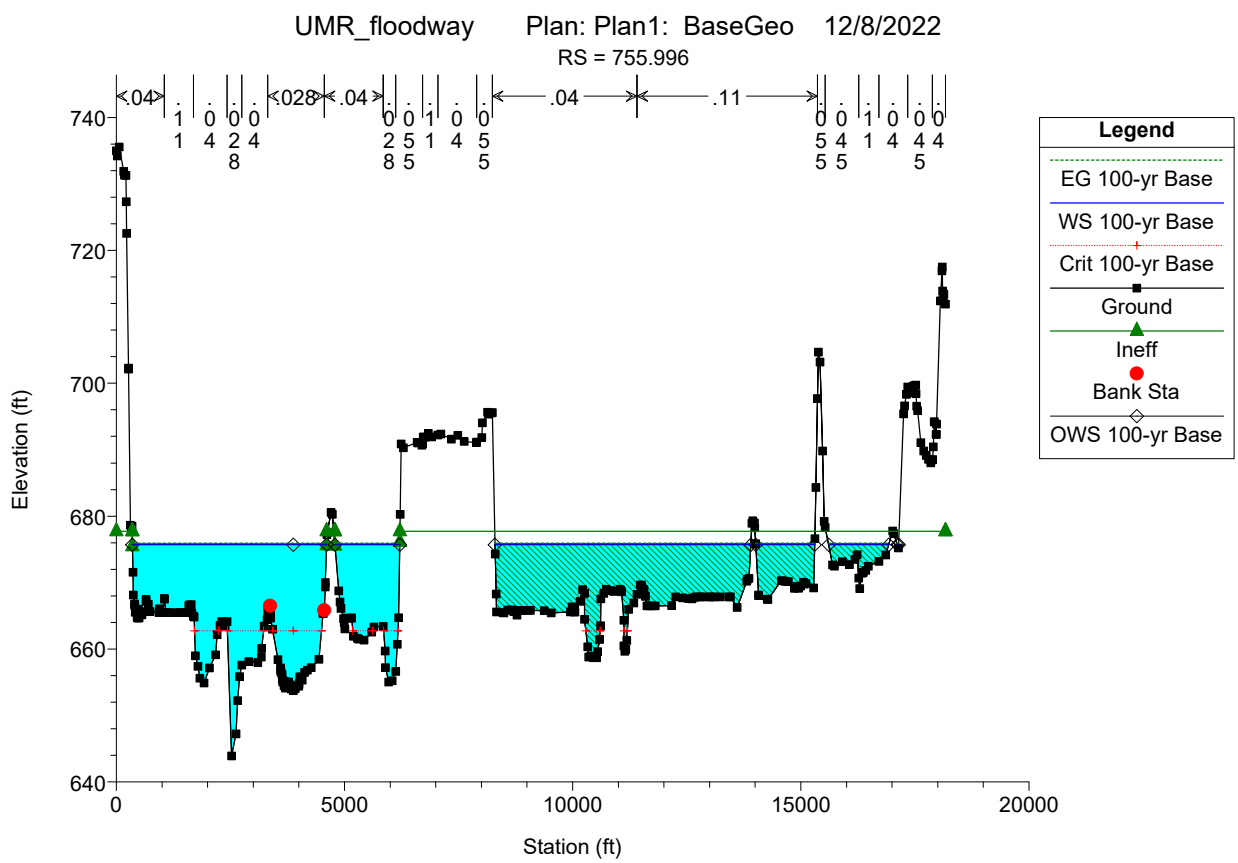
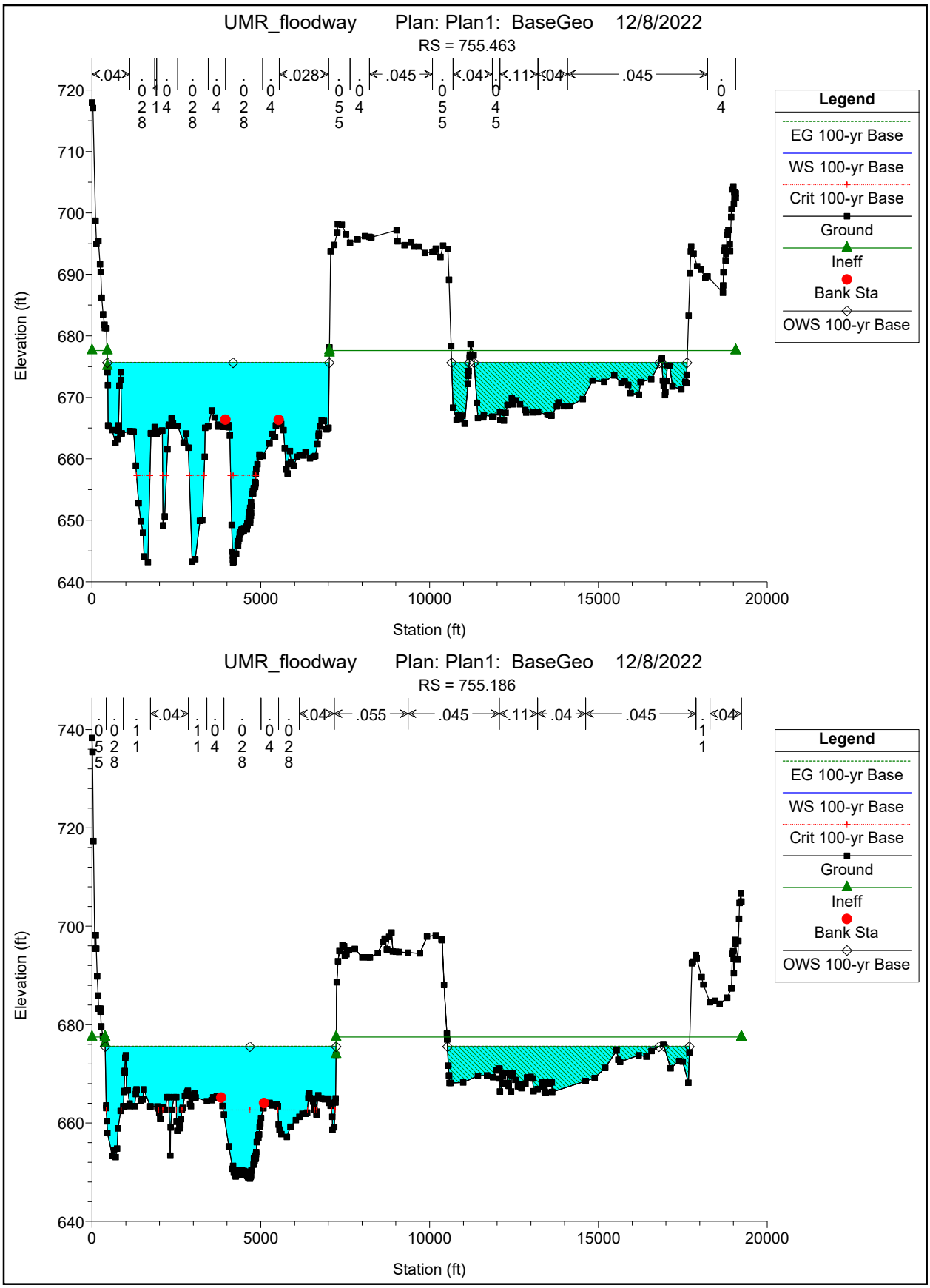
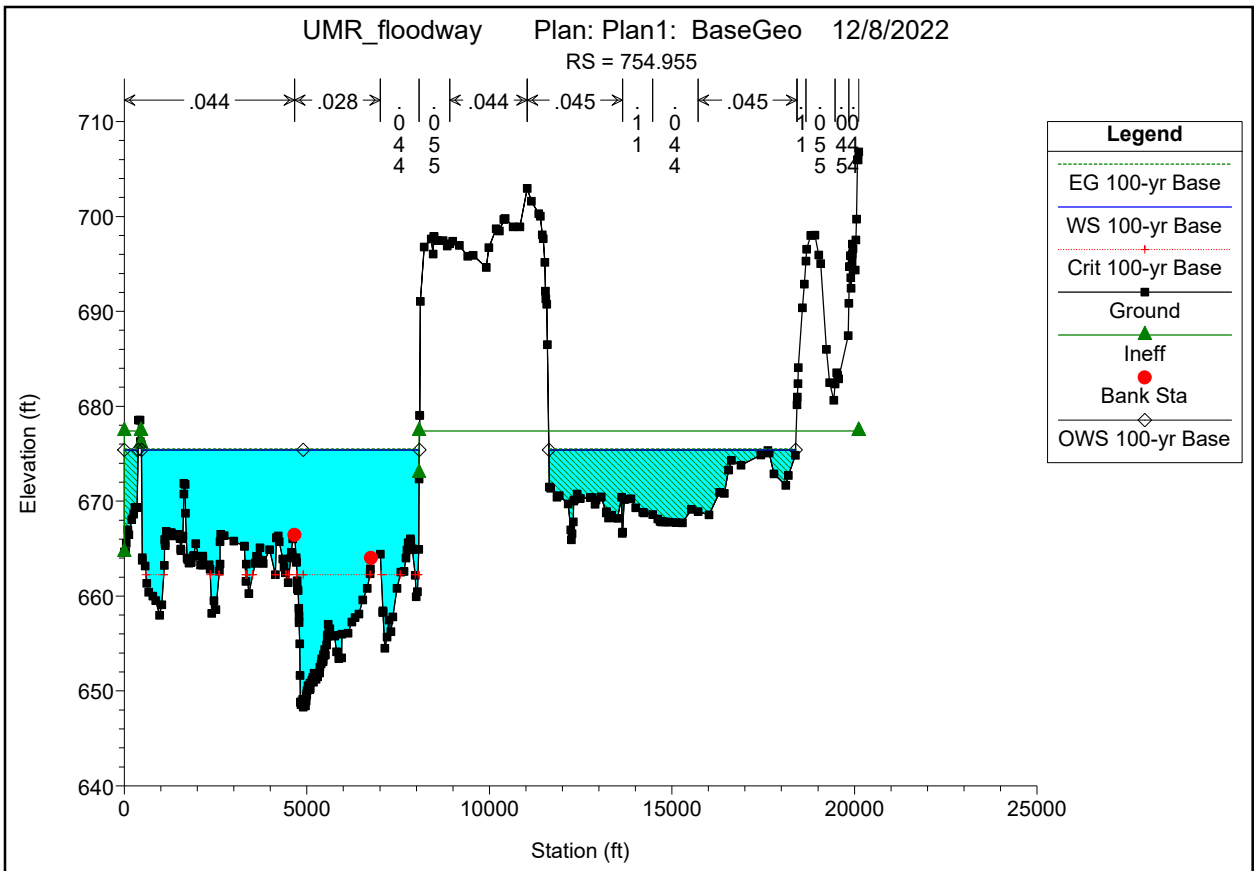
RS = 757.668
.04
.11
.028
.04
.055
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 757.381
.04
.04
.028
.04
.04
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

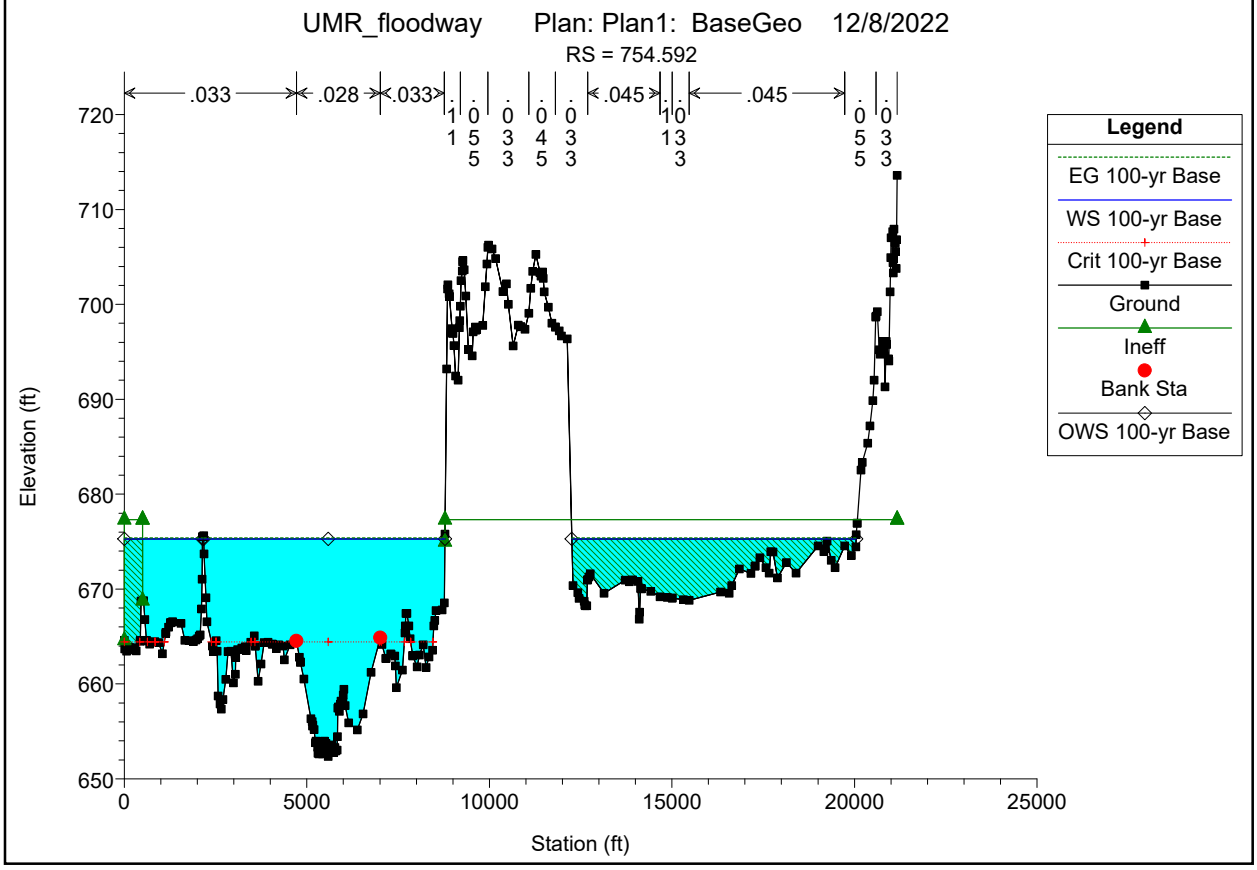

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 757.105
.04
.028
.055
.04
.028
.11
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 756.765
.11
.044
.028
.11
.044
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)

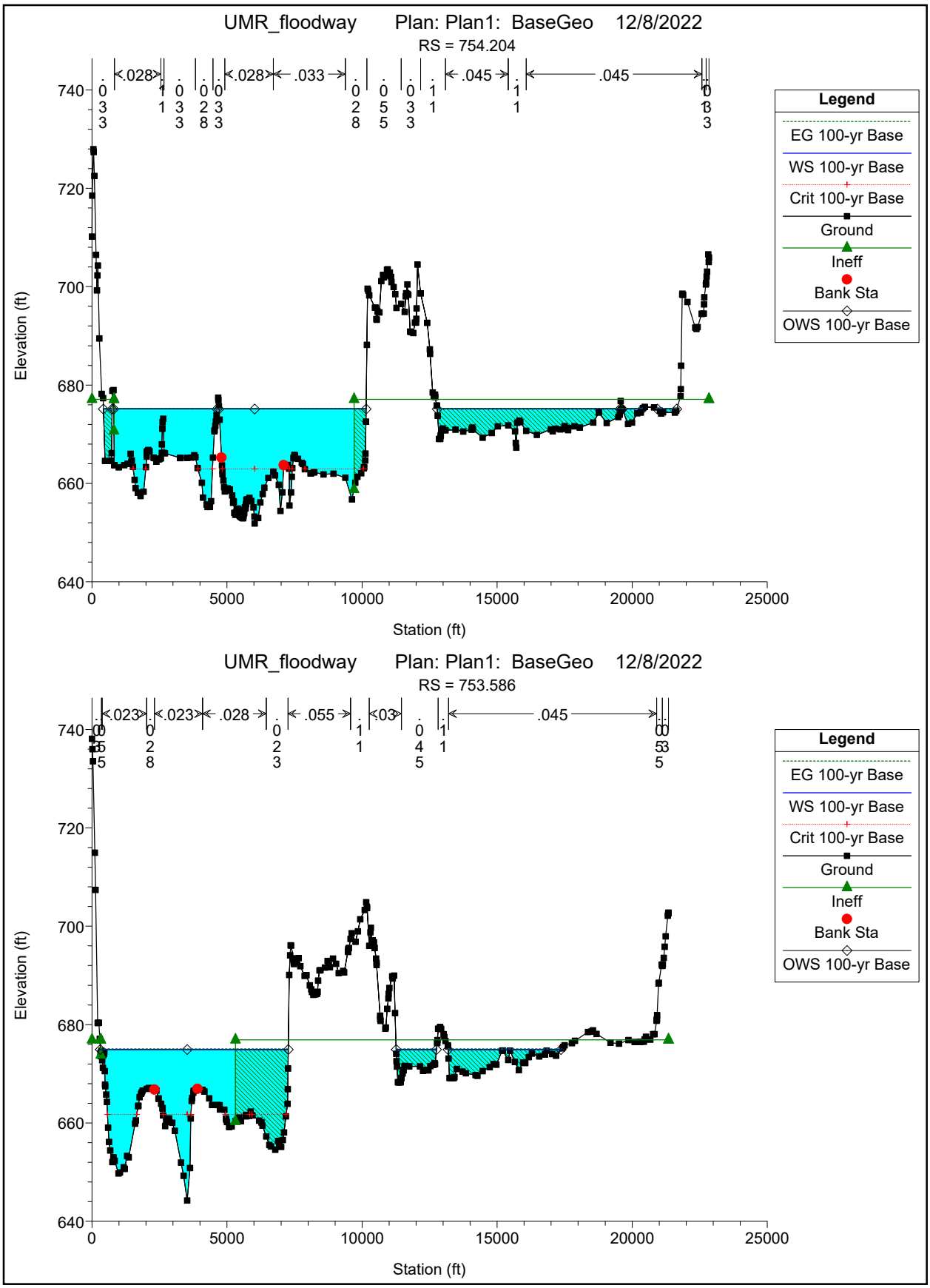

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 756.373
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

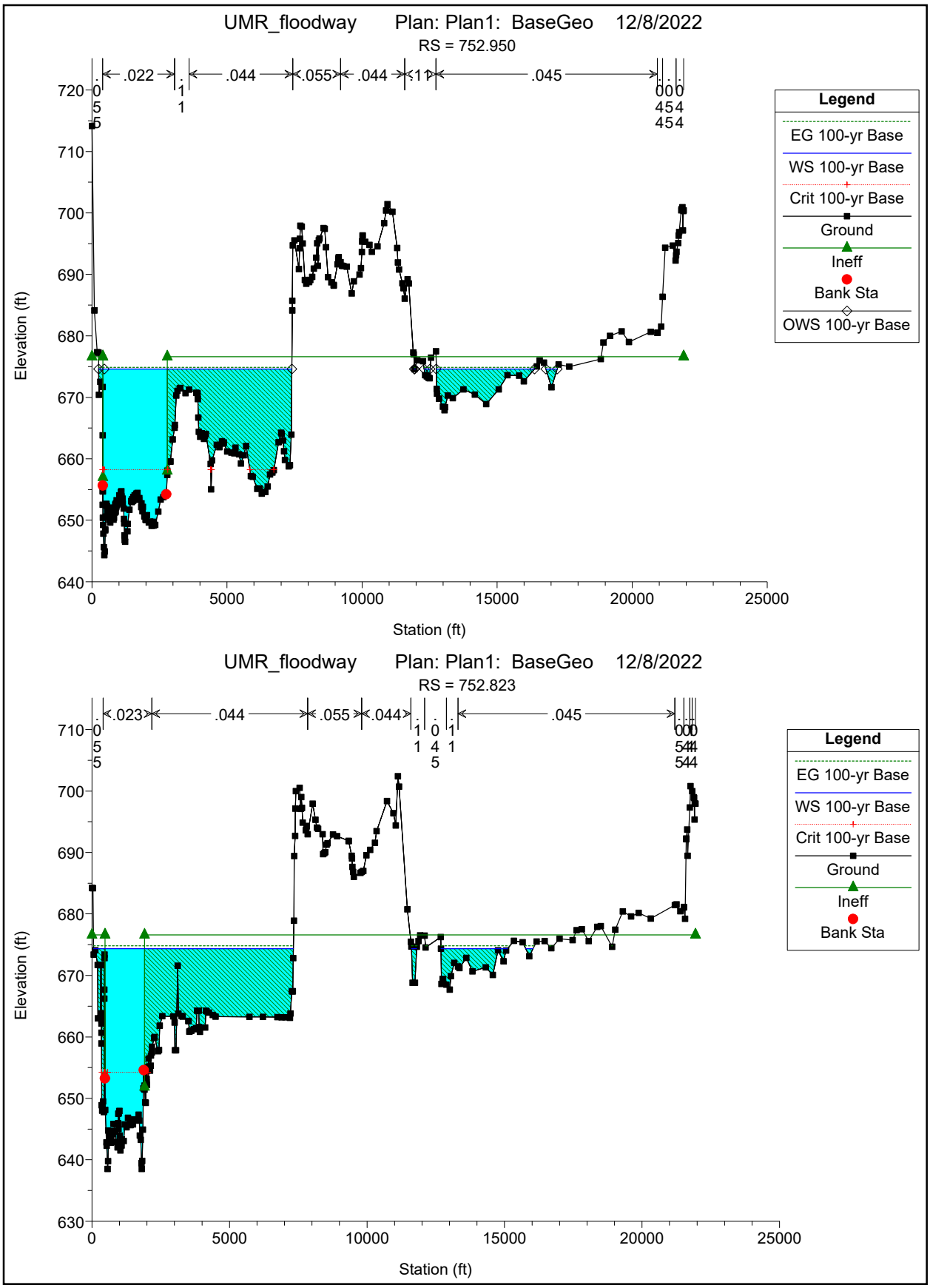

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 755.996
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

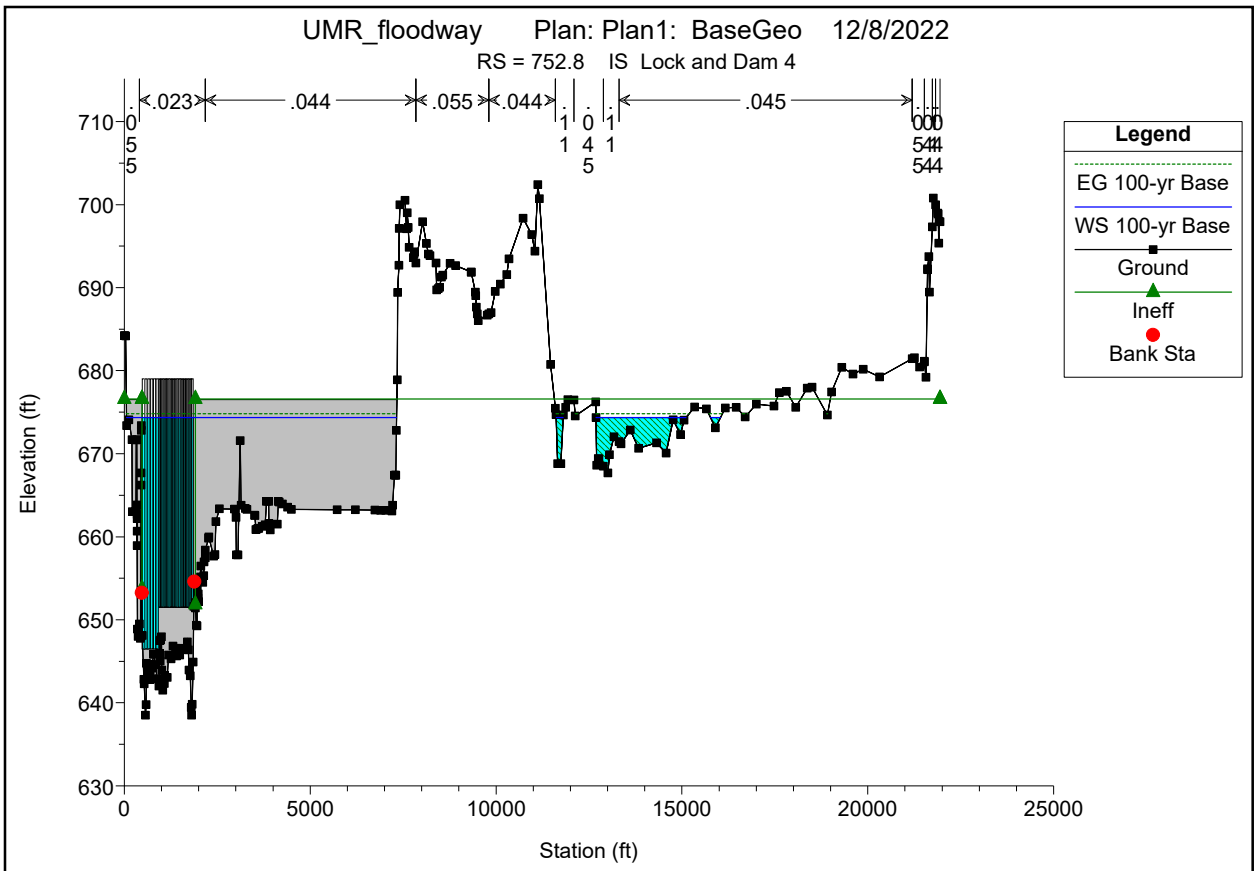

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 755.463
.04 .028 .045 .04 .11 .04 .045
.028 .014 .028 .04 .028 .04 .055 .04 .055 .045 .04
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 755.186
.055 .028 .11 .04 .11 .04 .055 .045 .11 .04 .045 .11 .04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

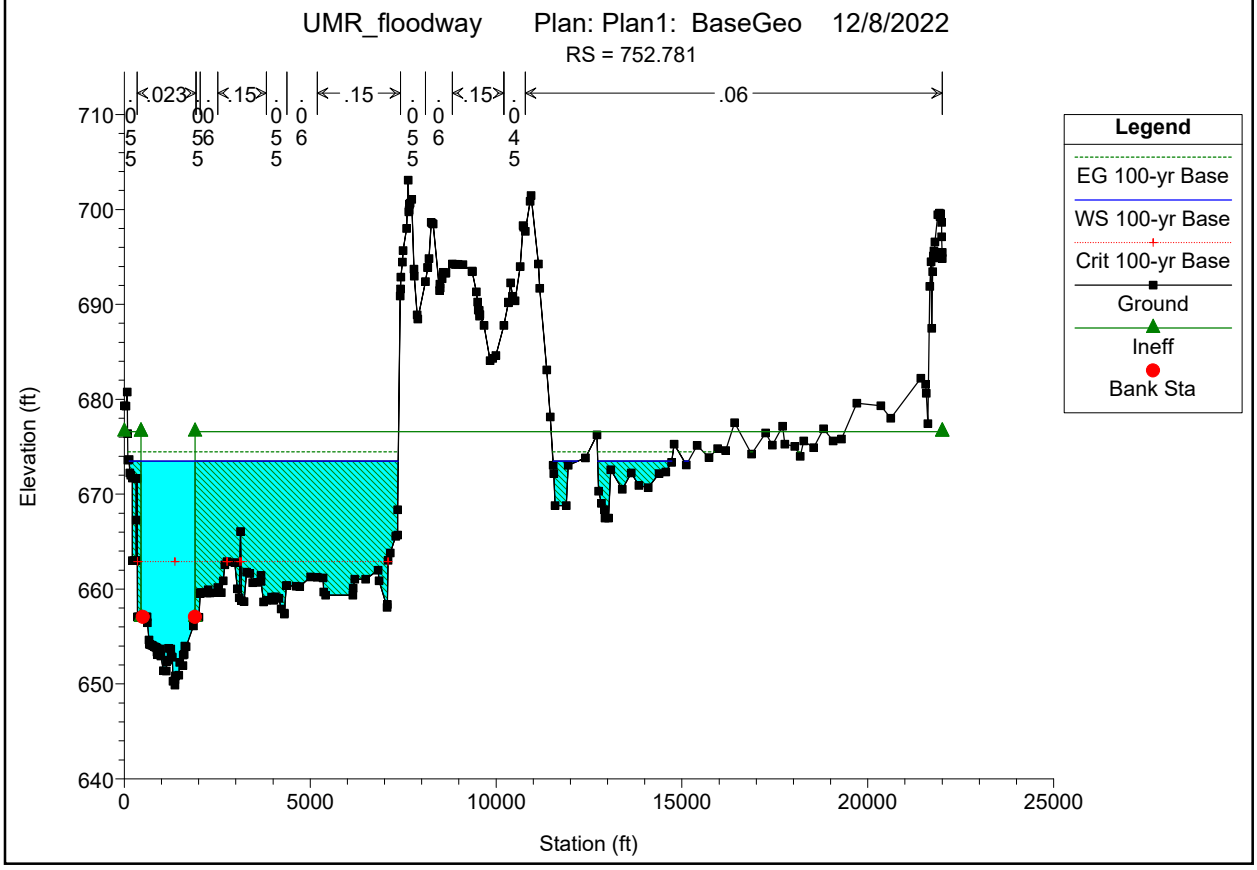

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 754.955
.044
.028
.044
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

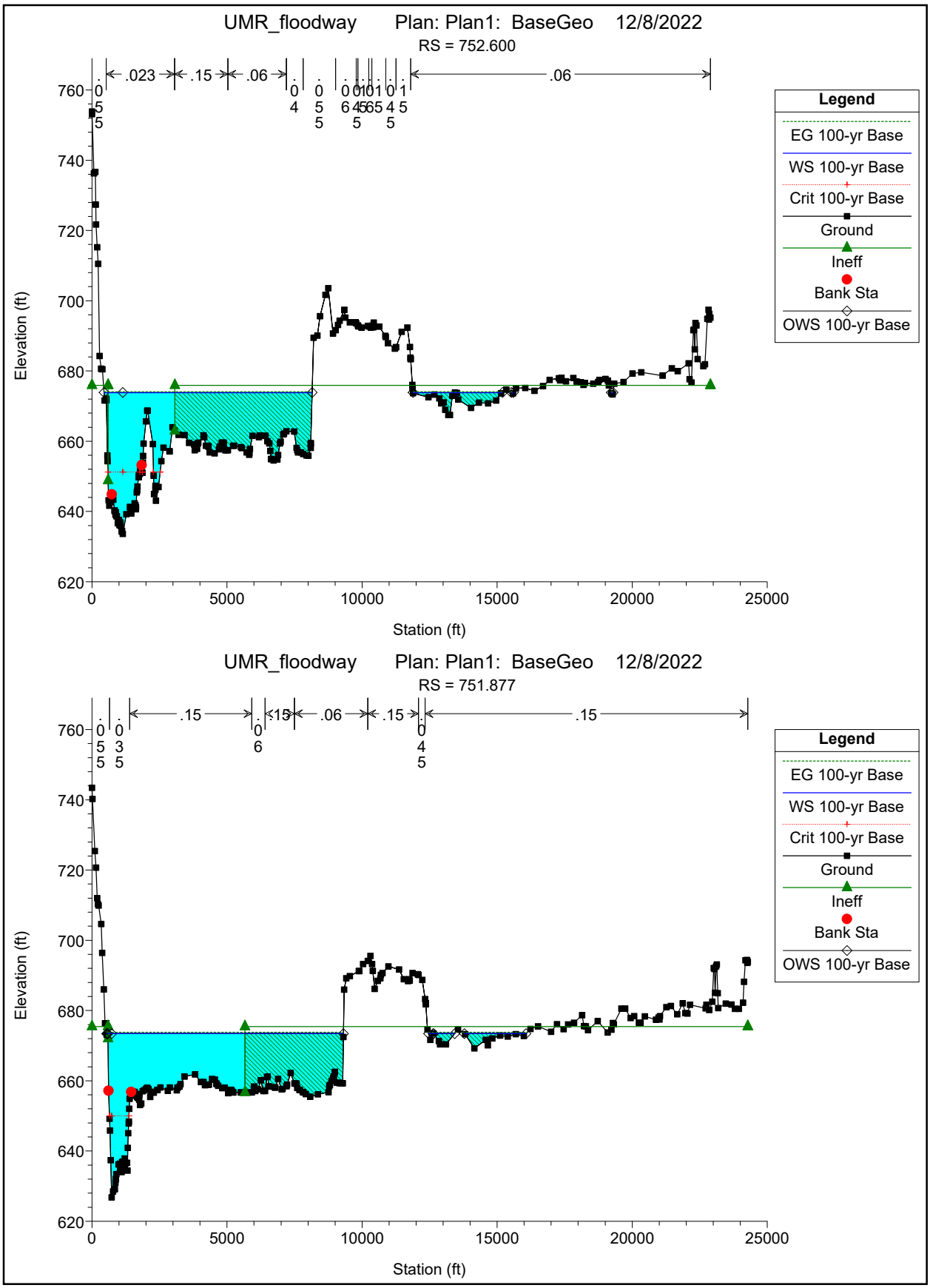

UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 754.592
.033
.028
.033
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 754.204
.028
.028
.033
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 753.586
.023
.023
.028
.055
.03
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 752.950
.022
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 752.823
.023
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 752.8 IS Lock and Dam 4
.023
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 752.781
.023
.15
.15
.15
.06
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 752.600
.023
.15
.06
.06
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
5000
10000
15000
20000
25000
Station (ft)
UMR_floodway Plan: Plan1: BaseGeo 12/8/2022
RS = 751.877
.15
.15
.06
.15
.15
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
5000
10000
15000
20000
25000
Station (ft)

Appendix D:
Existing Condition HEC-RAS

HEC-RAS Plan: Existing Locations: User Defined Profile: 100-yr Base

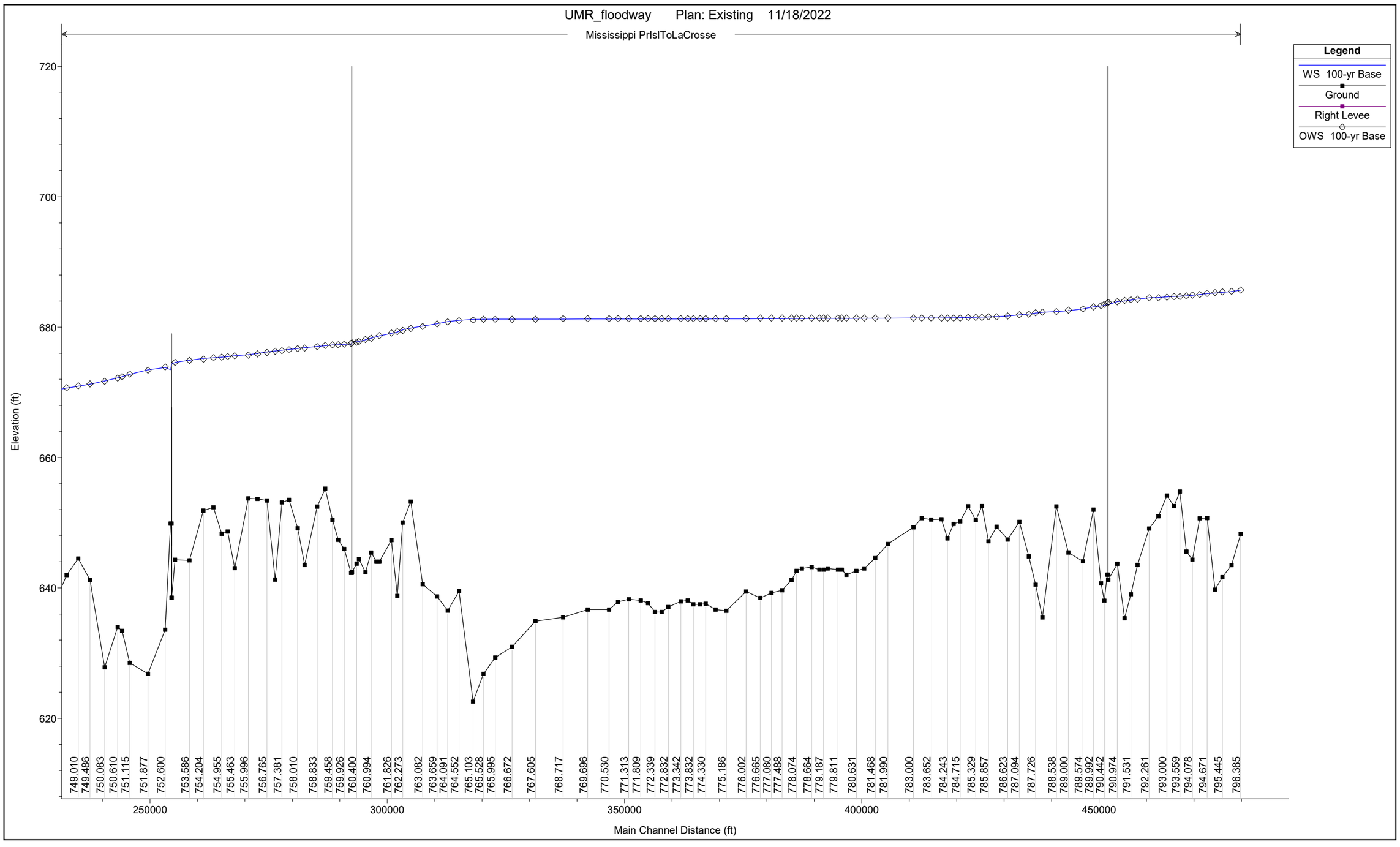
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	796.385	100-yr Base	192930.00	648.28	685.67	663.85	685.73	0.000046	2.92	187512.80	14649.85	0.10
Mississippi	PrIslToLaCrosse	796.000	100-yr Base	192930.00	643.51	685.46	660.87	685.59	0.000056	3.75	175721.50	13735.36	0.11
Mississippi	PrIslToLaCrosse	795.445	100-yr Base	192930.00	641.65	685.35	663.22	685.47	0.000062	3.82	183954.60	19506.62	0.12
Mississippi	PrIslToLaCrosse	795.000	100-yr Base	192930.00	639.73	685.23	663.51	685.37	0.000071	4.09	174128.90	14198.10	0.12
Mississippi	PrIslToLaCrosse	794.671	100-yr Base	196287.00	650.73	685.15	665.78	685.25	0.000080	3.57	186379.30	14193.75	0.11
Mississippi	PrIslToLaCrosse	794.379	100-yr Base	196231.00	650.68	685.01	667.96	685.14	0.000082	3.79	166520.40	13249.94	0.13
Mississippi	PrIslToLaCrosse	794.078	100-yr Base	196276.00	644.35	684.90	665.58	685.04	0.000082	3.95	159732.60	12555.03	0.13
Mississippi	PrIslToLaCrosse	793.829	100-yr Base	196321.00	645.57	684.80	666.01	684.93	0.000079	3.98	158481.50	12273.37	0.13
Mississippi	PrIslToLaCrosse	793.559	100-yr Base	196366.00	654.79	684.75	667.42	684.82	0.000051	2.92	170989.90	11794.28	0.10
Mississippi	PrIslToLaCrosse	793.302	100-yr Base	196412.00	652.56	684.72	668.29	684.76	0.000037	2.43	173937.90	11833.16	0.08
Mississippi	PrIslToLaCrosse	793.000	100-yr Base	196355.00	654.16	684.65	668.44	684.70	0.000048	2.79	173326.00	11766.46	0.10
Mississippi	PrIslToLaCrosse	792.640	100-yr Base	196445.00	651.01	684.56	667.14	684.62	0.000046	2.93	168560.30	11179.77	0.10
Mississippi	PrIslToLaCrosse	792.261	100-yr Base	196491.00	649.10	684.50	666.99	684.56	0.000051	3.04	165318.70	12153.91	0.10
Mississippi	PrIslToLaCrosse	791.792	100-yr Base	196479.00	643.53	684.30	665.27	684.45	0.000077	4.08	87112.88	6932.10	0.13
Mississippi	PrIslToLaCrosse	791.531	100-yr Base	196524.00	639.03	684.16	664.97	684.35	0.000092	4.54	73096.38	5474.90	0.14
Mississippi	PrIslToLaCrosse	791.273	100-yr Base	196570.00	635.36	684.01	665.67	684.25	0.000118	5.25	70295.23	5513.48	0.16
Mississippi	PrIslToLaCrosse	790.974	100-yr Base	196615.00	643.70	683.91	665.49	684.14	0.000121	4.89	67782.63	6017.48	0.16
Mississippi	PrIslToLaCrosse	790.604	100-yr Base	196558.00	641.25	683.47	665.90	683.91	0.000183	6.26	42257.64	8472.94	0.20
Mississippi	PrIslToLaCrosse	790.6		Bridge									
Mississippi	PrIslToLaCrosse	790.563	100-yr Base	196558.00	642.03	683.45	665.98	683.86	0.000178	6.14	44252.83	8452.31	0.19
Mississippi	PrIslToLaCrosse	790.442	100-yr Base	196604.00	638.05	683.35	660.85	683.55	0.000087	4.76	103666.30	7528.14	0.14
Mississippi	PrIslToLaCrosse	790.302	100-yr Base	196604.00	640.72	683.24	663.03	683.41	0.000087	4.44	102729.30	6408.90	0.14
Mississippi	PrIslToLaCrosse	789.992	100-yr Base	196649.00	652.00	683.11	668.86	683.23	0.000111	3.78	102166.70	6271.34	0.13
Mississippi	PrIslToLaCrosse	789.574	100-yr Base	196739.00	644.09	682.80	668.35	682.96	0.000116	4.51	92365.86	6593.66	0.15
Mississippi	PrIslToLaCrosse	789.000	100-yr Base	196728.00	645.43	682.52	666.57	682.64	0.000084	3.72	117063.10	7798.16	0.13
Mississippi	PrIslToLaCrosse	788.538	100-yr Base	196819.00	652.50	682.40	662.57	682.46	0.000045	2.76	133146.70	8108.44	0.09
Mississippi	PrIslToLaCrosse	787.988	100-yr Base	196807.00	635.48	682.27	667.70	682.33	0.000059	2.99	117557.60	7465.79	0.10
Mississippi	PrIslToLaCrosse	787.726	100-yr Base	196852.00	640.50	682.15	666.21	682.24	0.000067	3.47	106920.10	7360.28	0.11
Mississippi	PrIslToLaCrosse	787.466	100-yr Base	196898.00	644.85	682.01	664.20	682.08	0.000058	3.21	114450.20	7641.68	0.11
Mississippi	PrIslToLaCrosse	787.094	100-yr Base	196943.00	650.12	681.86	665.34	681.95	0.000069	3.42	122751.90	7668.48	0.12
Mississippi	PrIslToLaCrosse	786.623	100-yr Base	196932.00	647.42	681.71	666.85	681.80	0.000070	3.48	124728.40	8330.47	0.12
Mississippi	PrIslToLaCrosse	786.191	100-yr Base	197022.00	649.40	681.61	667.63	681.65	0.000045	2.69	153382.20	9456.08	0.09
Mississippi	PrIslToLaCrosse	785.857	100-yr Base	197068.00	647.16	681.56	667.79	681.59	0.000022	2.05	166677.60	11945.81	0.07
Mississippi	PrIslToLaCrosse	785.584	100-yr Base	197011.00	652.56	681.54	666.97	681.56	0.000015	1.41	177578.50	11191.62	0.05
Mississippi	PrIslToLaCrosse	785.329	100-yr Base	197056.00	650.40	681.51	666.22	681.54	0.000014	1.46	166693.60	10502.10	0.05
Mississippi	PrIslToLaCrosse	785.017	100-yr Base	197102.00	652.52	681.48	666.06	681.51	0.000017	1.59	148236.50	9162.83	0.06
Mississippi	PrIslToLaCrosse	784.715	100-yr Base	197147.00	650.20	681.45	665.65	681.48	0.000018	1.63	138918.60	8268.53	0.06
Mississippi	PrIslToLaCrosse	784.471	100-yr Base	197090.00	649.82	681.43	664.44	681.46	0.000013	1.42	157319.90	8355.13	0.05
Mississippi	PrIslToLaCrosse	784.243	100-yr Base	197136.00	647.59	681.42	664.87	681.44	0.000013	1.49	152575.20	8071.91	0.05
Mississippi	PrIslToLaCrosse	784.020	100-yr Base	197181.00	650.53	681.41	663.18	681.43	0.000009	1.20	179984.70	8796.41	0.04
Mississippi	PrIslToLaCrosse	783.652	100-yr Base	197226.00	650.49	681.40	660.33	681.41	0.000005	0.91	217800.50	9686.13	0.03
Mississippi	PrIslToLaCrosse	783.304	100-yr Base	197170.00	650.69	681.39	658.55	681.41	0.000004	0.88	232304.10	9984.62	0.03
Mississippi	PrIslToLaCrosse	783.000	100-yr Base	197215.00	649.31	681.39	656.78	681.40	0.000003	0.73	271884.80	10415.20	0.02
Mississippi	PrIslToLaCrosse	781.990	100-yr Base	197294.00	646.75	681.38	653.65	681.38	0.000002	0.62	335800.30	11492.00	0.02
Mississippi	PrIslToLaCrosse	781.468	100-yr Base	197385.00	644.58	681.37	652.63	681.38	0.000002	0.61	350813.30	11860.57	0.02
Mississippi	PrIslToLaCrosse	780.984	100-yr Base	197476.00	643.00	681.37	651.11	681.37	0.000002	0.70	317119.40	11414.77	0.02
Mississippi	PrIslToLaCrosse	780.631	100-yr Base	197419.00	642.60	681.36	650.23	681.37	0.000003	0.84	277049.30	13165.86	0.03
Mississippi	PrIslToLaCrosse	780.191	100-yr Base	197510.00	642.01	681.35	649.67	681.36	0.000003	0.83	273253.40	11036.70	0.03
Mississippi	PrIslToLaCrosse	779.984	100-yr Base	198626.00	642.80	681.35	649.94	681.36	0.000002	0.74	292670.10	10639.55	0.02
Mississippi	PrIslToLaCrosse	779.811	100-yr Base	198615.00	642.80	681.35	649.88	681.36	0.000002	0.66	317437.60	10485.81	0.02
Mississippi	PrIslToLaCrosse	779.388	100-yr Base	198832.00	643.00	681.35	649.80	681.35	0.000002	0.67	307774.70	9928.39	0.02
Mississippi	PrIslToLaCrosse	779.187	100-yr Base	198866.00	642.80	681.34	649.46	681.35	0.000002	0.71	293484.80	12154.13	0.02
Mississippi	PrIslToLaCrosse	779.000	100-yr Base	198900.00	642.80	681.34	649.02	681.35	0.000002	0.70	288101.60	8854.01	0.02
Mississippi	PrIslToLaCrosse	778.664	100-yr Base	199026.00	643.20	681.34	649.19	681.35	0.000002	0.73	278740.20	8443.37	0.02
Mississippi	PrIslToLaCrosse	778.290	100-yr Base	199152.00	643.00	681.33	648.85	681.34	0.000003	0.85	252807.80	8401.98	0.02
Mississippi	PrIslToLaCrosse	778.074	100-yr Base	199186.00	642.60	681.32	648.04	681.34	0.000003	0.96	227552.10	8275.67	0.03
Mississippi	PrIslToLaCrosse	777.875	100-yr Base	199232.00	641.22	681.32	647.37	681.33	0.000003	0.94	228905.80	8214.85	0.03
Mississippi	PrIslToLaCrosse	777.488	100-yr Base	199232.00	639.64	681.31	646.63	681.32	0.000005	1.18	200751.20	8529.87	0.03
Mississippi	PrIslToLaCrosse	777.080	100-yr Base	199232.00	639.25	681.30	646.05	681.31	0.000003	0.93	239403.50	8219.75	0.03
Mississippi	PrIslToLaCrosse	776.665	100-yr Base	199232.00	638.46	681.30	645.03	681.31	0.000003	0.87	235152.40	6741.74	0.02
Mississippi	PrIslToLaCrosse	776.002	100-yr Base	199232.00	639.45	681.29	644.60	681.30	0.000002	0.82	256235.60	7015.01	0.02
Mississippi	PrIslToLaCrosse	775.186	100-yr Base	199232.00	636.49	681.28	644.23	681.29	0.000002	0.75	285457.40	8317.79	0.02
Mississippi	PrIslToLaCrosse	774.739	100-yr Base	199232.00	636.68	681.27	644.14	681.28	0.000003	0.81	261953.40	8224.20	0.02
Mississippi	PrIslToLaCrosse	774.330	100-yr Base	199232.00	637.58	681.26	644.78	681.28	0.000003	1.02	217234.50	8547.67	0.03
Mississippi	PrIslToLaCrosse	774.110	100-yr Base	199232.00	637.48	681.26	643.30	681.27	0.000002	0.74	294421.40	9495.68	0.02
Mississippi	PrIslToLaCrosse	773.832	100-yr Base	199232.00	637.48	681.26	642.91	681.27	0.000001	0.64	328697.10	9883.54	0.02
Mississippi	PrIslToLaCrosse	773.623	100-yr Base	199232.00	638.07	681.26	642.94	681.27	0.000001	0.57	366709.50	10392.43	0.02
Mississippi	PrIslToLaCrosse	773.342	100-yr Base	199232.00	637.94	681.26	643.11	681.27	0.000001	0.56	370021.20	10624.26	0.02
Mississippi	PrIslToLaCrosse	772.832	100-yr Base	199232.00	637.08	681.26	643.38	681.26	0.000001	0.66	313775.90	9562.56	0.02
Mississippi	PrIslToLaCrosse	772.560	100-yr Base	199232.00	636.29	681.25	642.39	681.26	0.000001	0.58	355921.40	10877.79	0.02
Mississippi	PrIslToLaCrosse	772.339	100-yr Base	199232.00	636.29	681.25	642.02	681.26	0.000001	0.50	412621.00	11546.52	0.01
Mississippi	PrIslToLaCrosse	772.092	100-yr Base	199232.00	637.67	681.25	642.09	681.26	0.000001	0.46	452789.70	11919.25	0.01
Mississippi	PrIslToLaCrosse	771.809	100-yr Base	199232.00	638.07	681.25	642.33	681.26	0.000001	0.44	476764.30	13982.90	0.01
Mississippi	PrIslToLaCrosse	771.313	100-yr Base	199232.00	638.26	681.25	642.68	681.25	0.000001	0.42	495981.10	13716.06	0.01
Mississippi	PrIslToLaCrosse	770.876	100-yr Base	199232.00	637.87	681.25	642.56	681.25	0.000001	0.45	476078.70	14553.42	0.01
Mississippi	PrIslToLaCrosse	770.530	100-yr Base	199232.00	636.69	681.25	642.40	681.25	0.000001	0.45	472040.40	13811.46	0.01
Mississippi	PrIslToLaCrosse	769.696	100-yr Base	199232.00	636.69	681.25	642.80	681.25	0.000001	0.45	482299.50	14291.96	0.01
Mississippi	PrIslToLaCrosse	768.717	100-yr Base	199232.00	635.50	681.24	642.85	681.24	0.000001	0.49	434805.70	11581.13	0.01
Mississippi	PrIslToLaCrosse	767.605	100-yr Base	199232.00	634.91	681.24	642.08	681.24	0.000001	0.51	409794.50	10764.52	0.01
Mississippi	PrIslToLaCrosse	766.672	100-yr Base	199232.00	630.97	681.23	640.45	681.23	0.000001	0.60	358428.30	9429.36	0.02
Mississippi	PrIslToLaCrosse	765.995	100-yr Base	199232.00	629.32	681.22	638.79	681.23	0.000001	0.74	313698.80	8697.42	0.02
Mississippi	PrIslToLaCrosse	765.528	100-yr Base	199232.00	626.80	681.22	637.59	681.22	0.000002	0.91	273702.70	8769.84	0.02
Mississippi	PrIslToLaCrosse	765.103	100-yr Base	199232.00	622.56	681.18	634.06	681.22	0.000006	1.68	215072.50	9096.51	0.04
Mississippi	PrIslToLaCrosse	764.552	100-yr Base	199232.00	639.50	681.05	660.87	681.17	0.000078	3.34	113281.40	8823.91	0.11
Mississippi	PrIslToLaCrosse	764.091	100-yr Base	199232.00	636.52	680.85	659.34	680.98	0.000079	3.26	123758.00	10520.26	0.11
Mississippi	PrIslToLaCrosse	763.659	100-yr Base	199232.00	638.70	680.53	661.86	680.75	0.000124	4.43	103969.10	11188.49	0.15
Mississippi	PrIslToLaCrosse	763.082	100-yr Base	229611.00	640.57	680.16	663.96	680.37	0.000124	4.73	106135.30	11722.95	0.16

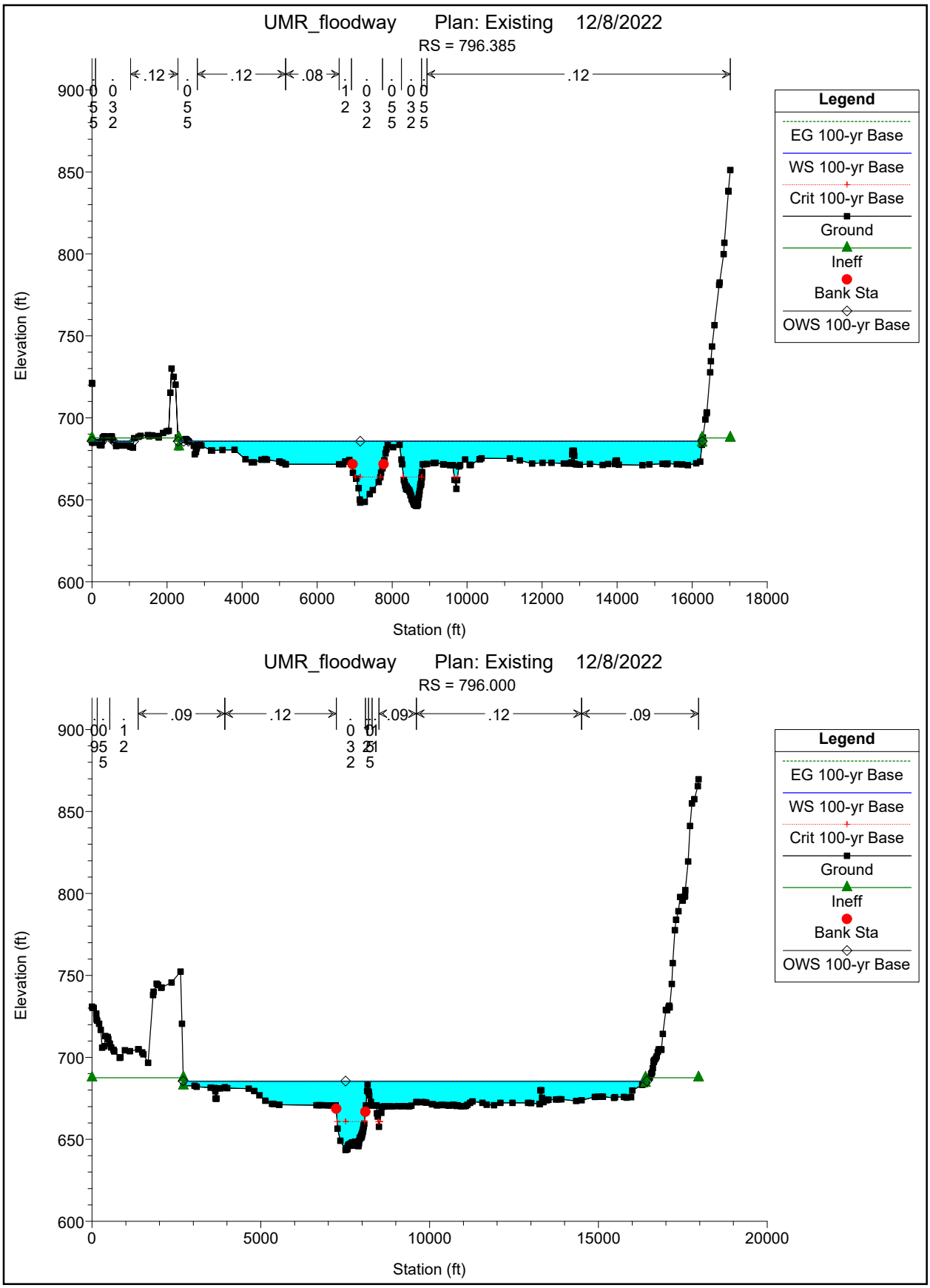
HEC-RAS Plan: Existing Locations: User Defined Profile: 100-yr Base (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	762.578	100-yr Base	229611.00	653.24	679.85	665.76	680.05	0.000143	4.52	129186.00	13484.81	0.16
Mississippi	PrIslToLaCrosse	762.273	100-yr Base	229611.00	650.04	679.59	666.97	679.75	0.000236	4.40	127108.10	14423.34	0.16
Mississippi	PrIslToLaCrosse	762.062	100-yr Base	229611.00	638.79	679.25	664.97	679.51	0.000169	5.42	122939.80	14803.86	0.18
Mississippi	PrIslToLaCrosse	761.826	100-yr Base	229611.00	647.34	679.04	665.46	679.30	0.000170	5.44	136150.20	15237.21	0.18
Mississippi	PrIslToLaCrosse	761.327	100-yr Base	229611.00	644.03	678.65	664.10	678.88	0.000157	4.81	134679.80	16334.60	0.17
Mississippi	PrIslToLaCrosse	760.994	100-yr Base	229611.00	645.42	678.30	664.70	678.57	0.000179	5.14	134245.60	17374.84	0.19
Mississippi	PrIslToLaCrosse	760.759	100-yr Base	229611.00	642.41	678.05	663.34	678.34	0.000178	5.47	142371.60	15918.74	0.19
Mississippi	PrIslToLaCrosse	760.495	100-yr Base	229611.00	644.41	677.82	662.94	678.10	0.000170	5.50	141621.90	15728.67	0.18
Mississippi	PrIslToLaCrosse	760.400	100-yr Base	229611.00	643.73	677.77	665.31	678.00	0.000173	5.25	122586.30	15909.14	0.18
Mississippi	PrIslToLaCrosse	760.216	100-yr Base	229611.00	642.43	677.69	664.11	677.87	0.000079	4.02	70217.59	15434.44	0.14
Mississippi	PrIslToLaCrosse	760.2		Bridge									
Mississippi	PrIslToLaCrosse	760.181	100-yr Base	229611.00	642.30	677.42	666.65	677.82	0.000185	6.20	54347.52	15557.62	0.22
Mississippi	PrIslToLaCrosse	759.926	100-yr Base	229611.00	645.99	677.37	667.35	677.53	0.000113	4.66	140750.90	15098.92	0.17
Mississippi	PrIslToLaCrosse	759.684	100-yr Base	229611.00	647.38	677.31	667.75	677.39	0.000066	3.61	147763.40	15160.14	0.13
Mississippi	PrIslToLaCrosse	759.458	100-yr Base	229611.00	650.43	677.26	663.72	677.31	0.000041	2.67	148451.40	14237.99	0.10
Mississippi	PrIslToLaCrosse	759.170	100-yr Base	229611.00	655.22	677.15	668.29	677.23	0.000090	3.51	147218.40	14647.94	0.14
Mississippi	PrIslToLaCrosse	758.833	100-yr Base	229611.00	652.49	677.03	667.37	677.09	0.000060	3.13	155104.20	15160.93	0.12
Mississippi	PrIslToLaCrosse	758.299	100-yr Base	229611.00	643.54	676.85	666.70	676.91	0.000057	3.01	152263.80	14301.85	0.11
Mississippi	PrIslToLaCrosse	758.010	100-yr Base	229611.00	649.15	676.72	666.84	676.80	0.000068	3.39	133920.50	14848.46	0.13
Mississippi	PrIslToLaCrosse	757.668	100-yr Base	229611.00	653.51	676.59	666.97	676.68	0.000073	3.26	119497.60	15488.71	0.13
Mississippi	PrIslToLaCrosse	757.381	100-yr Base	229611.00	653.12	676.47	665.14	676.57	0.000080	3.53	107455.30	16049.33	0.14
Mississippi	PrIslToLaCrosse	757.105	100-yr Base	229611.00	641.29	676.35	661.79	676.47	0.000067	3.43	94481.04	14793.31	0.13
Mississippi	PrIslToLaCrosse	756.765	100-yr Base	229611.00	653.40	676.20	663.00	676.34	0.000098	3.67	86410.75	14366.27	0.15
Mississippi	PrIslToLaCrosse	756.373	100-yr Base	229611.00	653.66	675.97	664.47	676.13	0.000104	3.70	75525.72	12656.26	0.15
Mississippi	PrIslToLaCrosse	755.996	100-yr Base	229611.00	653.73	675.79	662.73	675.92	0.000099	3.68	84299.00	13938.42	0.15
Mississippi	PrIslToLaCrosse	755.463	100-yr Base	229611.00	643.03	675.60	657.27	675.68	0.000045	2.55	104051.30	13327.38	0.10
Mississippi	PrIslToLaCrosse	755.186	100-yr Base	229611.00	648.65	675.47	662.62	675.59	0.000077	3.61	97485.73	13844.89	0.14
Mississippi	PrIslToLaCrosse	754.955	100-yr Base	229611.00	648.31	675.40	662.26	675.50	0.000065	3.15	108445.30	14745.09	0.12
Mississippi	PrIslToLaCrosse	754.592	100-yr Base	229611.00	652.36	675.30	664.44	675.38	0.000058	2.77	108146.10	16529.92	0.12
Mississippi	PrIslToLaCrosse	754.204	100-yr Base	231280.00	651.87	675.21	662.92	675.27	0.000042	2.31	120203.60	17923.70	0.10
Mississippi	PrIslToLaCrosse	753.586	100-yr Base	231280.00	644.22	674.92	661.74	675.09	0.000072	3.50	71972.00	12640.25	0.15
Mississippi	PrIslToLaCrosse	752.950	100-yr Base	231280.00	644.31	674.60	658.21	674.87	0.000059	4.21	55018.50	11437.57	0.15
Mississippi	PrIslToLaCrosse	752.823	100-yr Base	231280.00	638.50	674.34	654.22	674.80	0.000080	5.49	42262.00	10128.84	0.18
Mississippi	PrIslToLaCrosse	752.8		Inl Struct									
Mississippi	PrIslToLaCrosse	752.781	100-yr Base	231280.00	649.88	673.48	662.91	674.47	0.000286	8.03	28904.10	10012.96	0.32
Mississippi	PrIslToLaCrosse	752.600	100-yr Base	231280.00	633.59	673.81	651.22	674.06	0.000044	4.37	60690.73	11106.44	0.13
Mississippi	PrIslToLaCrosse	751.877	100-yr Base	231280.00	626.83	673.45	650.02	673.80	0.000274	5.56	94419.30	11983.71	0.16

UMR_floodway Plan: Existing 11/18/2022

Mississippi PrIslToLaCrosse

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.12
.08
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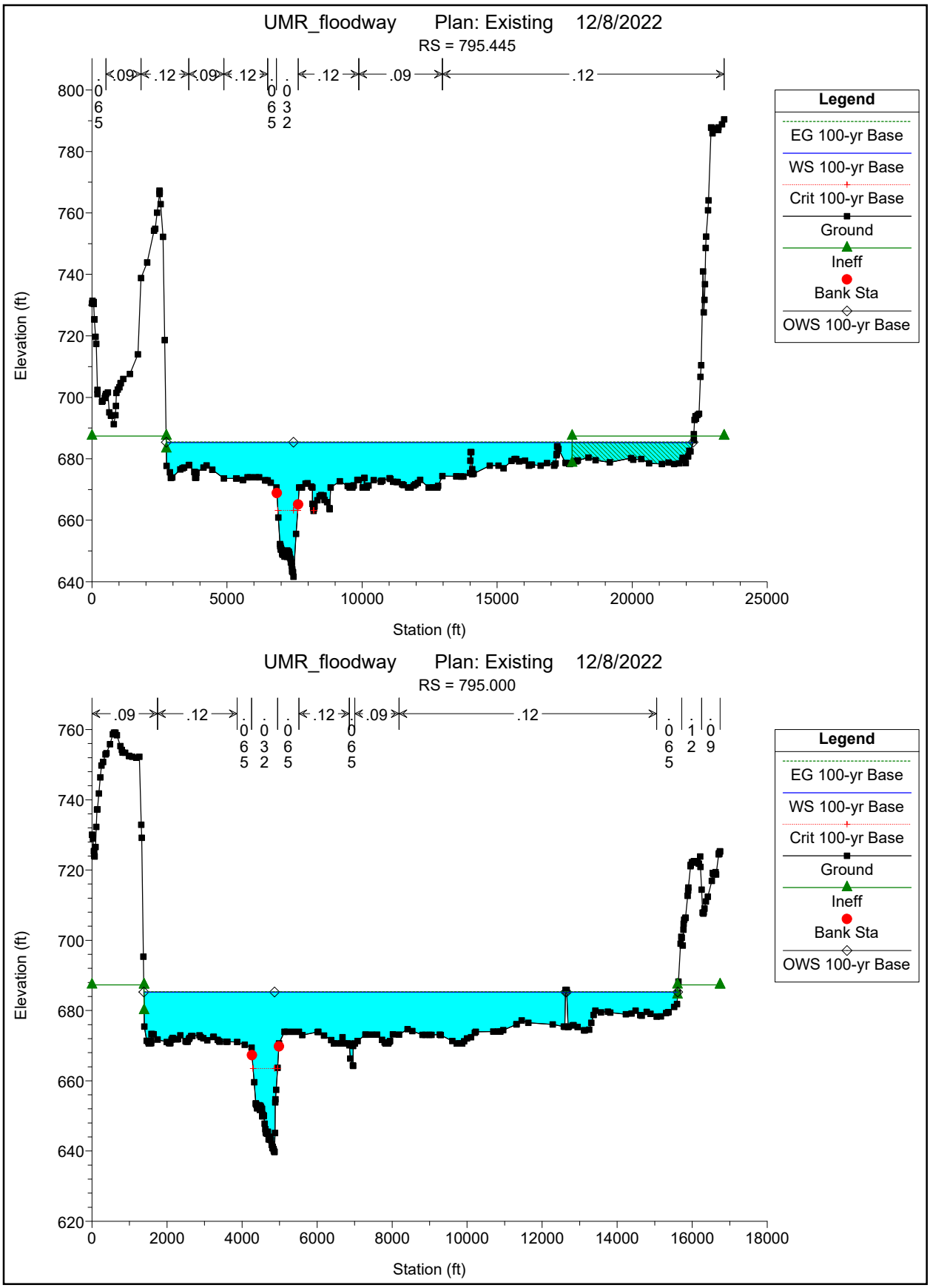
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 796.000
.09
.12
.09
.12
.09
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
600
0
5000
10000
15000
20000
Station (ft)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.065 .065 .032
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780
760
740
720
700
680
660
640
0 5000 10000 15000 20000 25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
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.065 .032 .065 .065 .129
Elevation (ft)
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740
720
700
680
660
640
620
0 2000 4000 6000 8000 10000 12000 14000 16000 18000
Station (ft)
Legend
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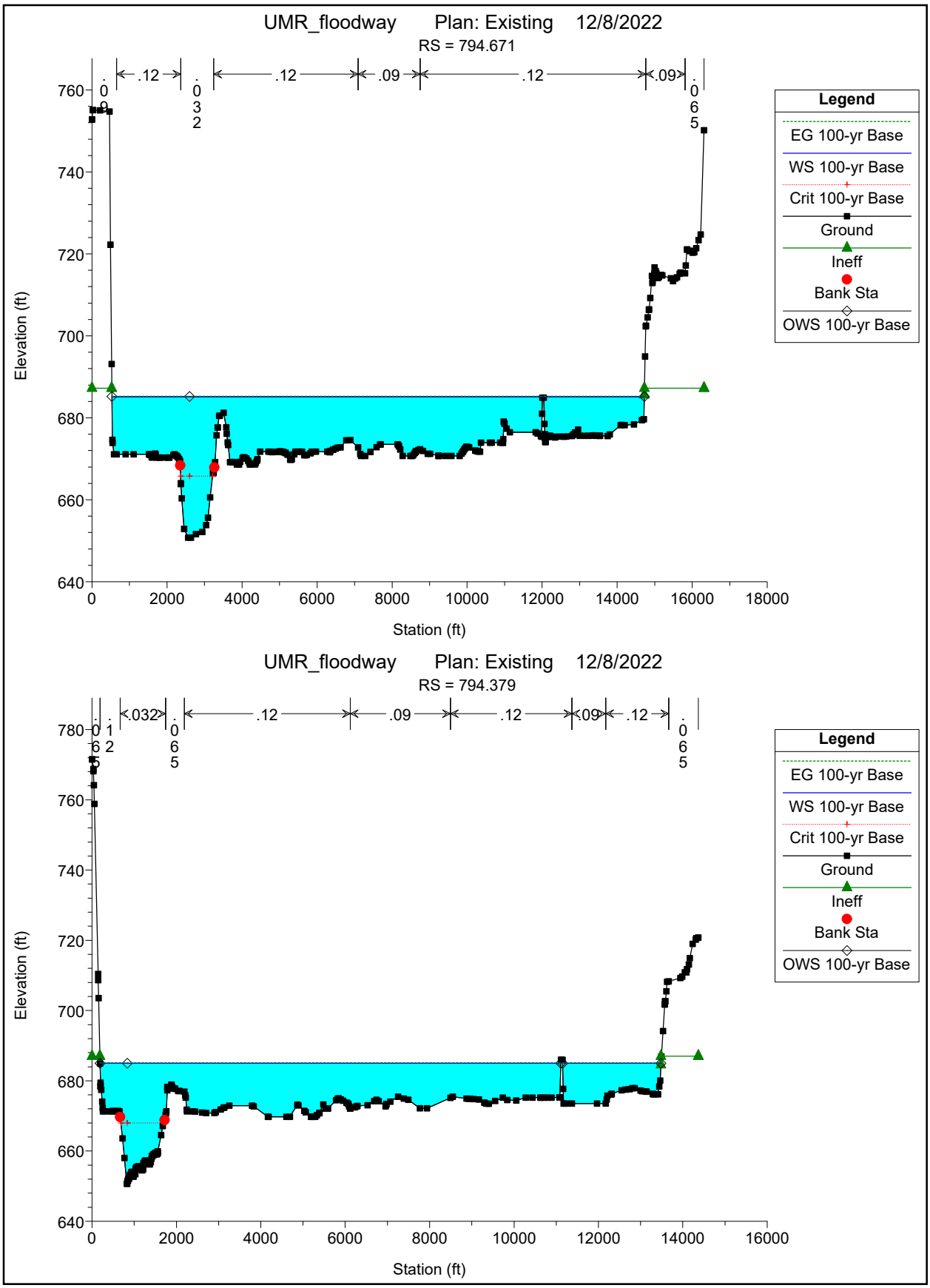
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base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Elevation (ft)
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740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
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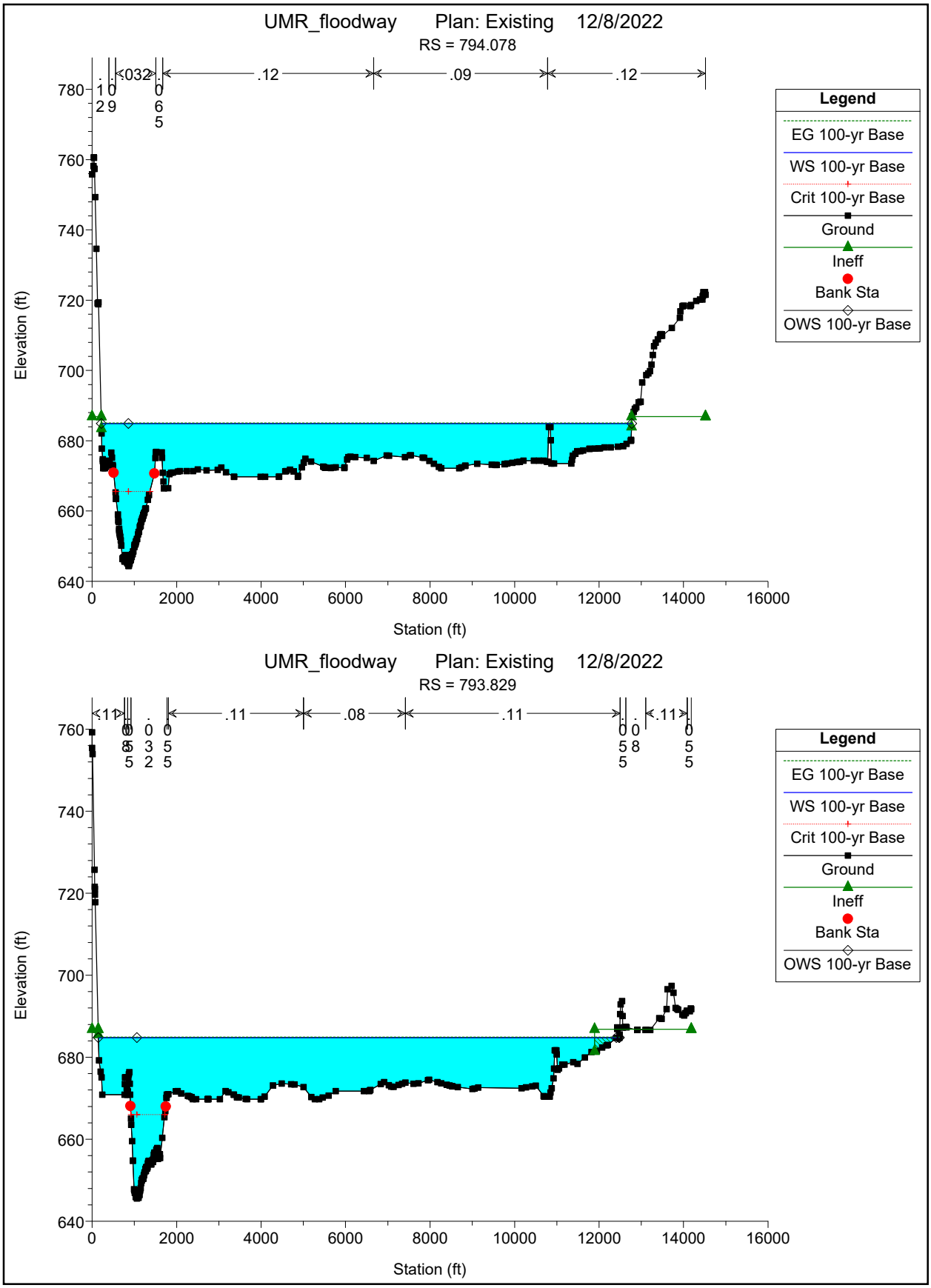
.12
.032
.065
.12
.09
.12
.09
.12
.065
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base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Station (ft)
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WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
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.11
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Elevation (ft)
Station (ft)
Legend
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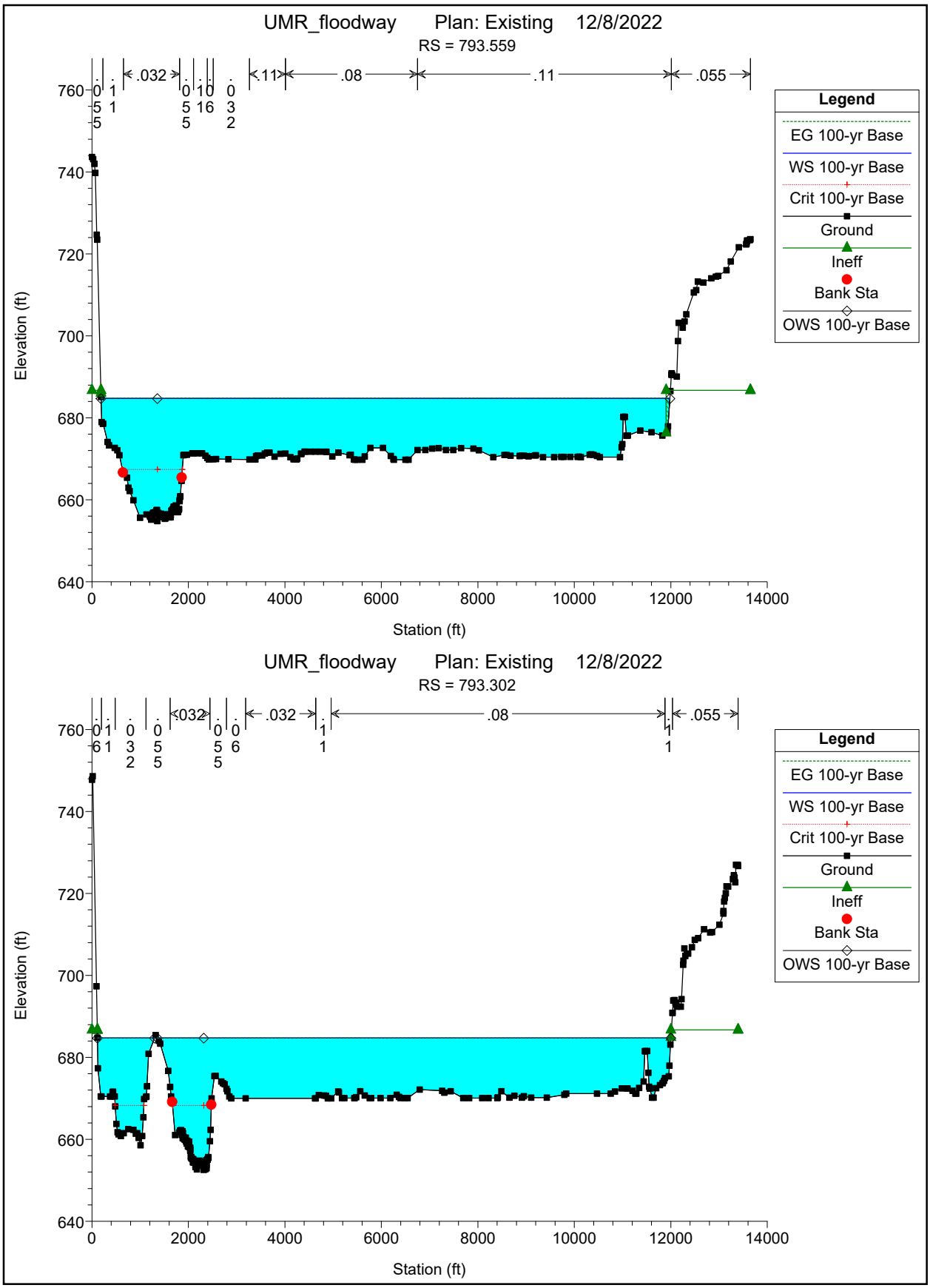
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base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Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
UMR_floodway Plan: Existing 12/8/2022
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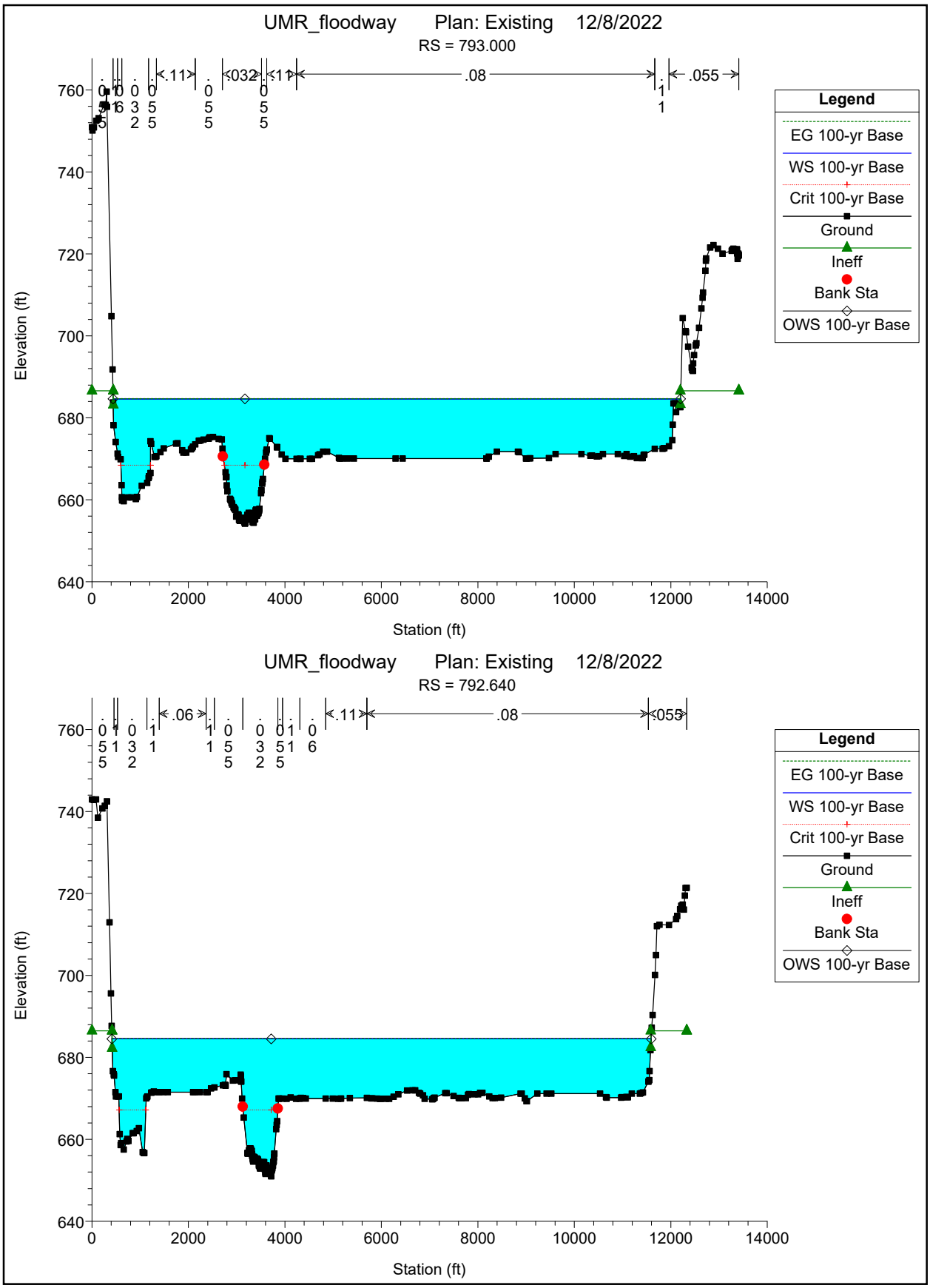
.032
.032
.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000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.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
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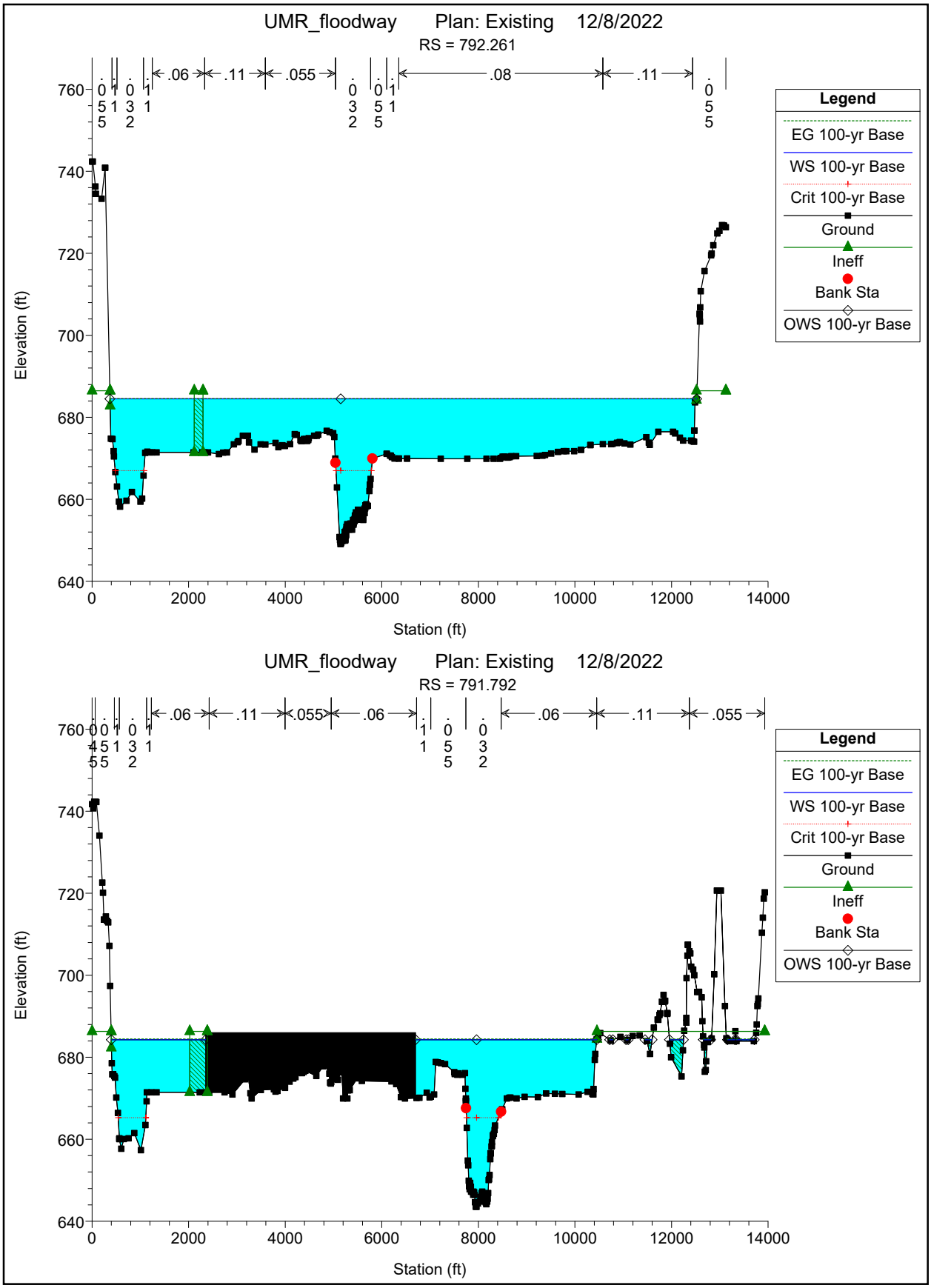
.06
.11
.08
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)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Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 791.792
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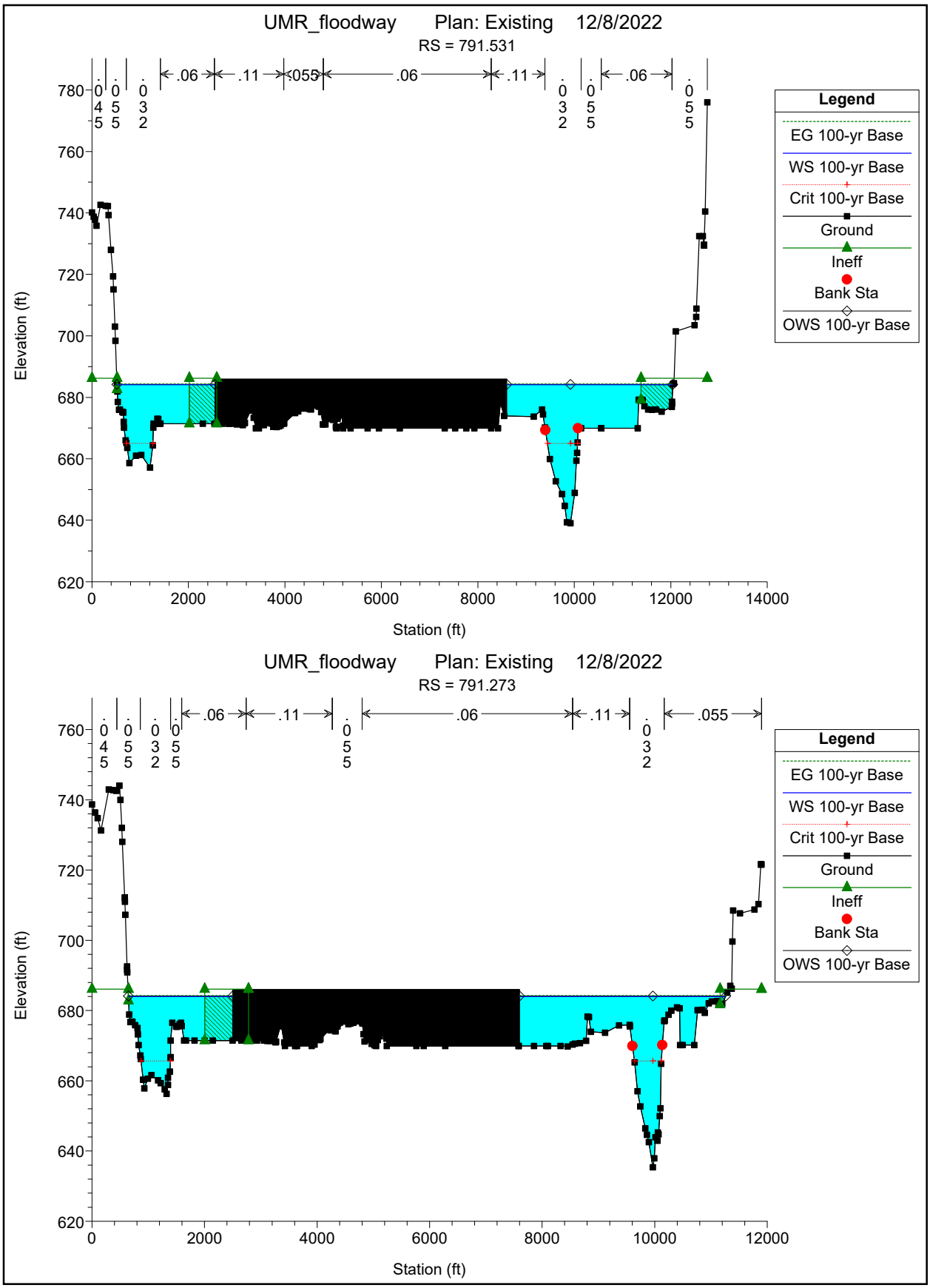
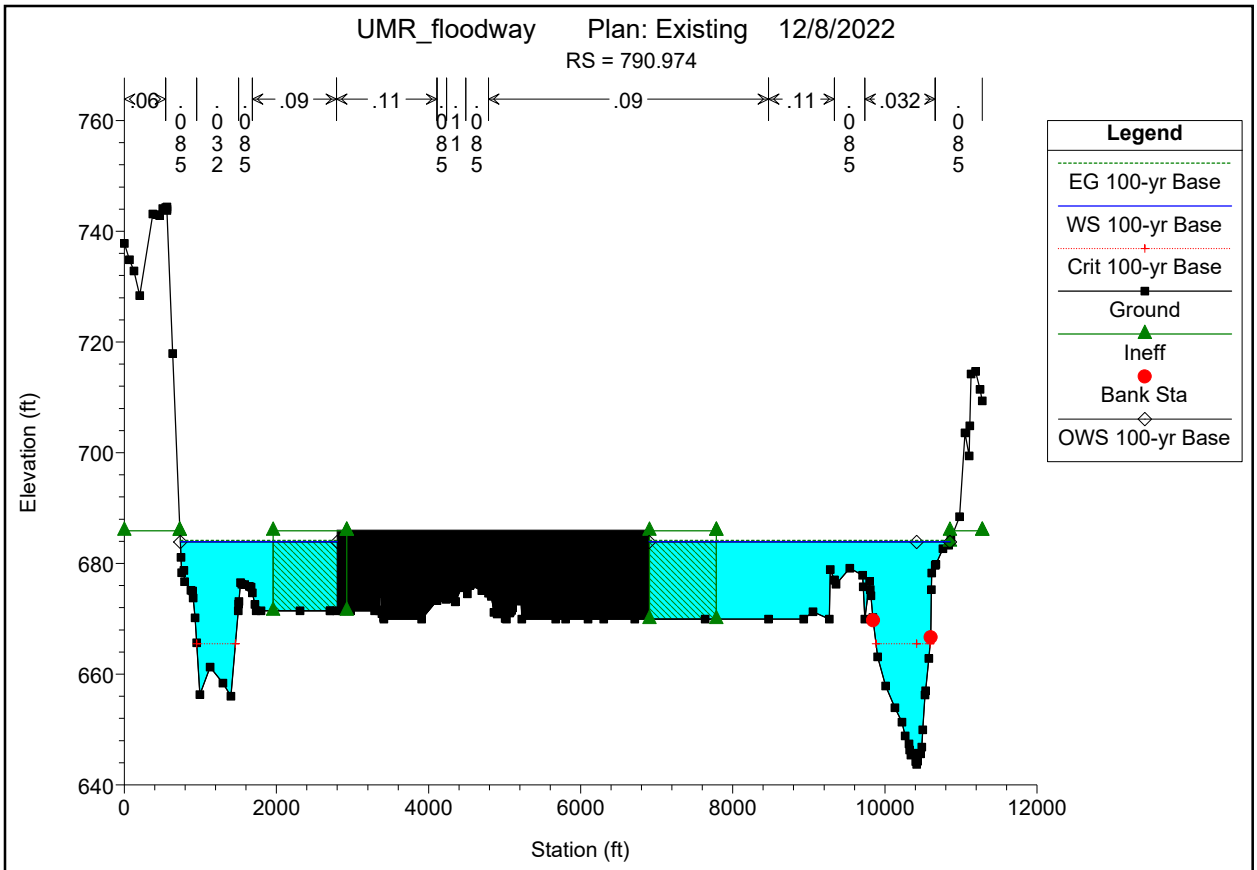
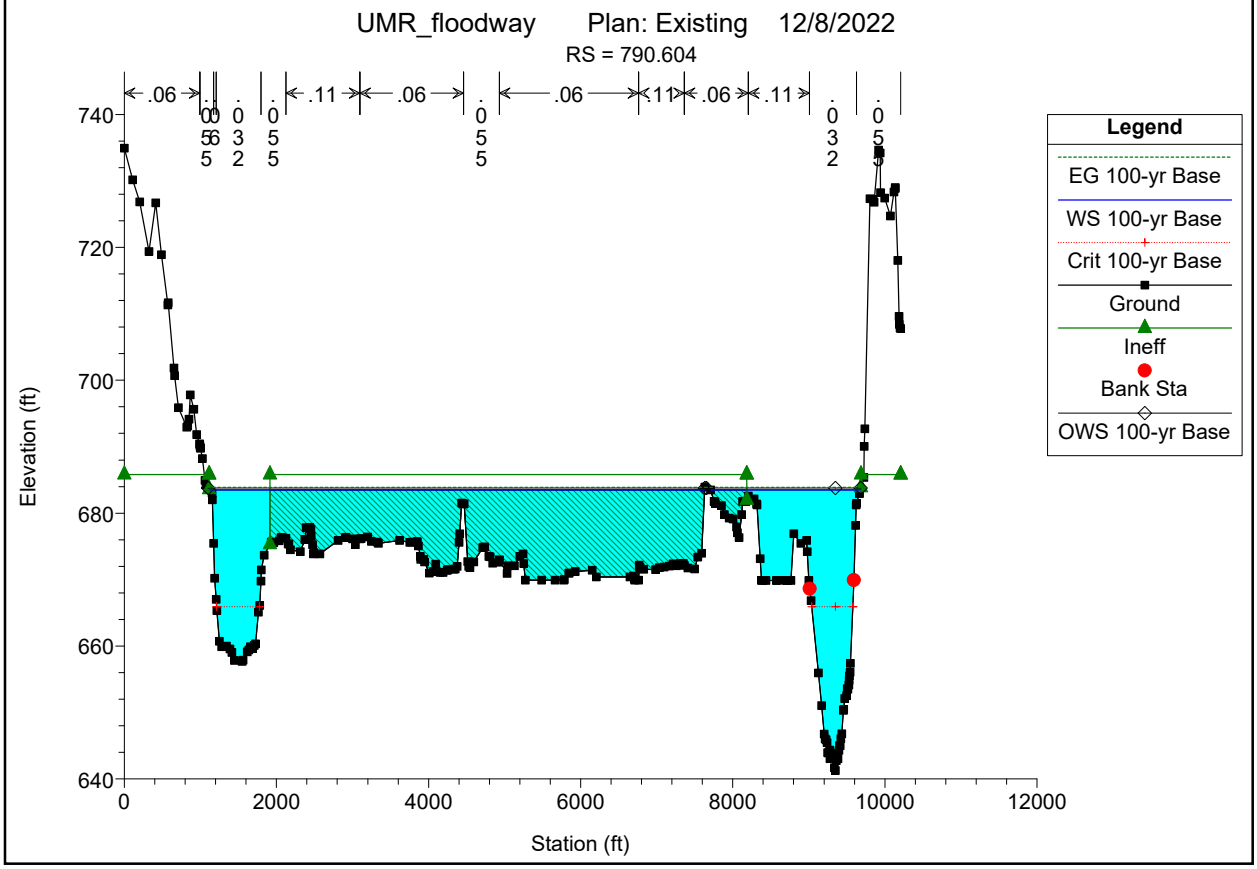
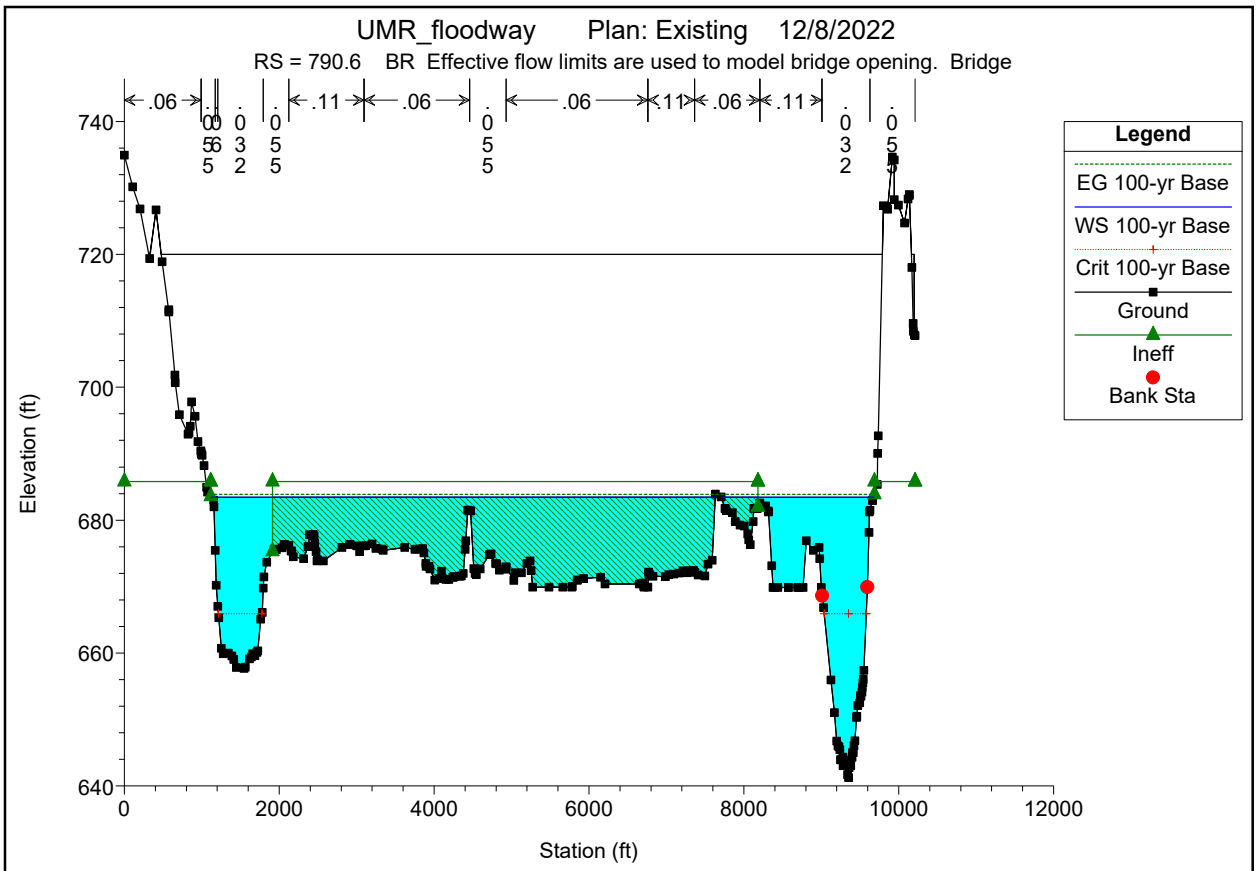
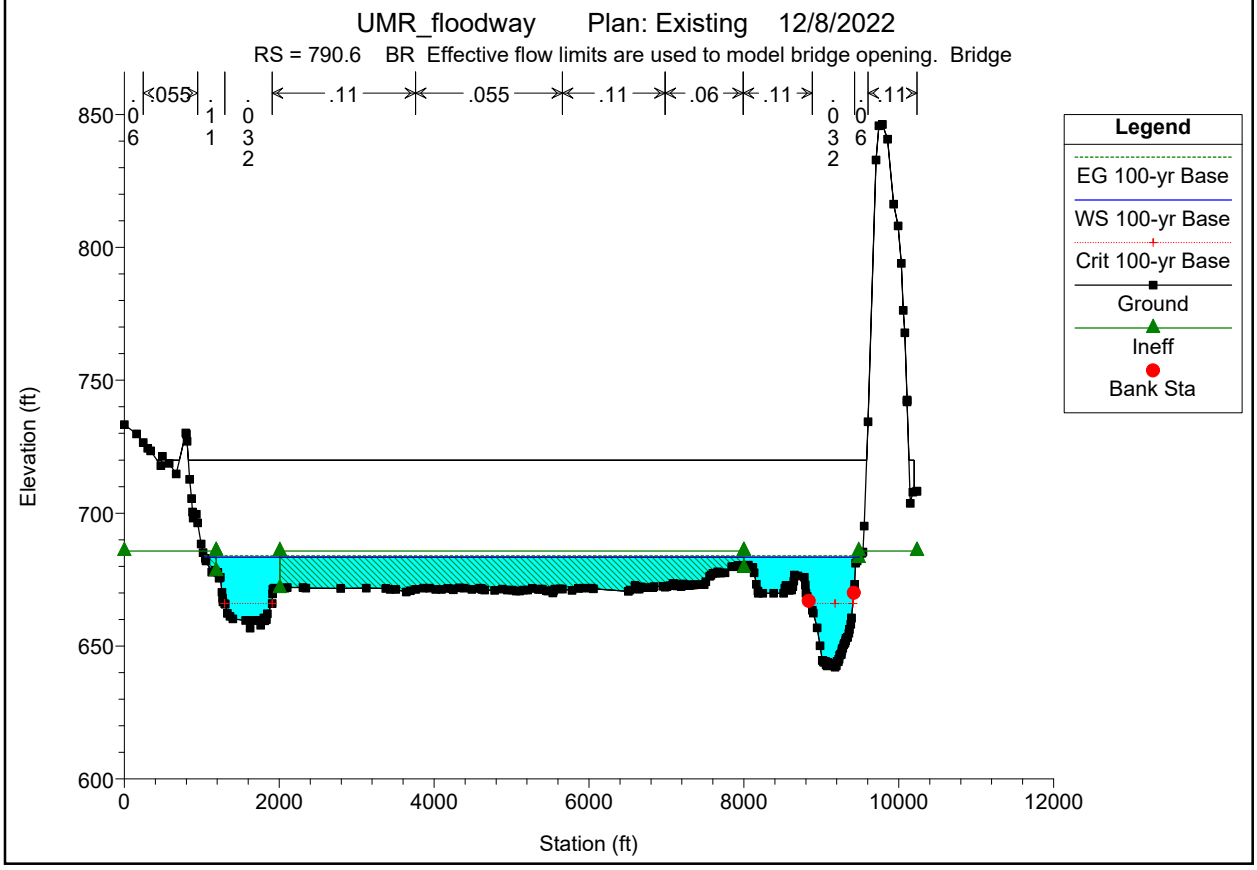
.11
.055
.06
.06
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

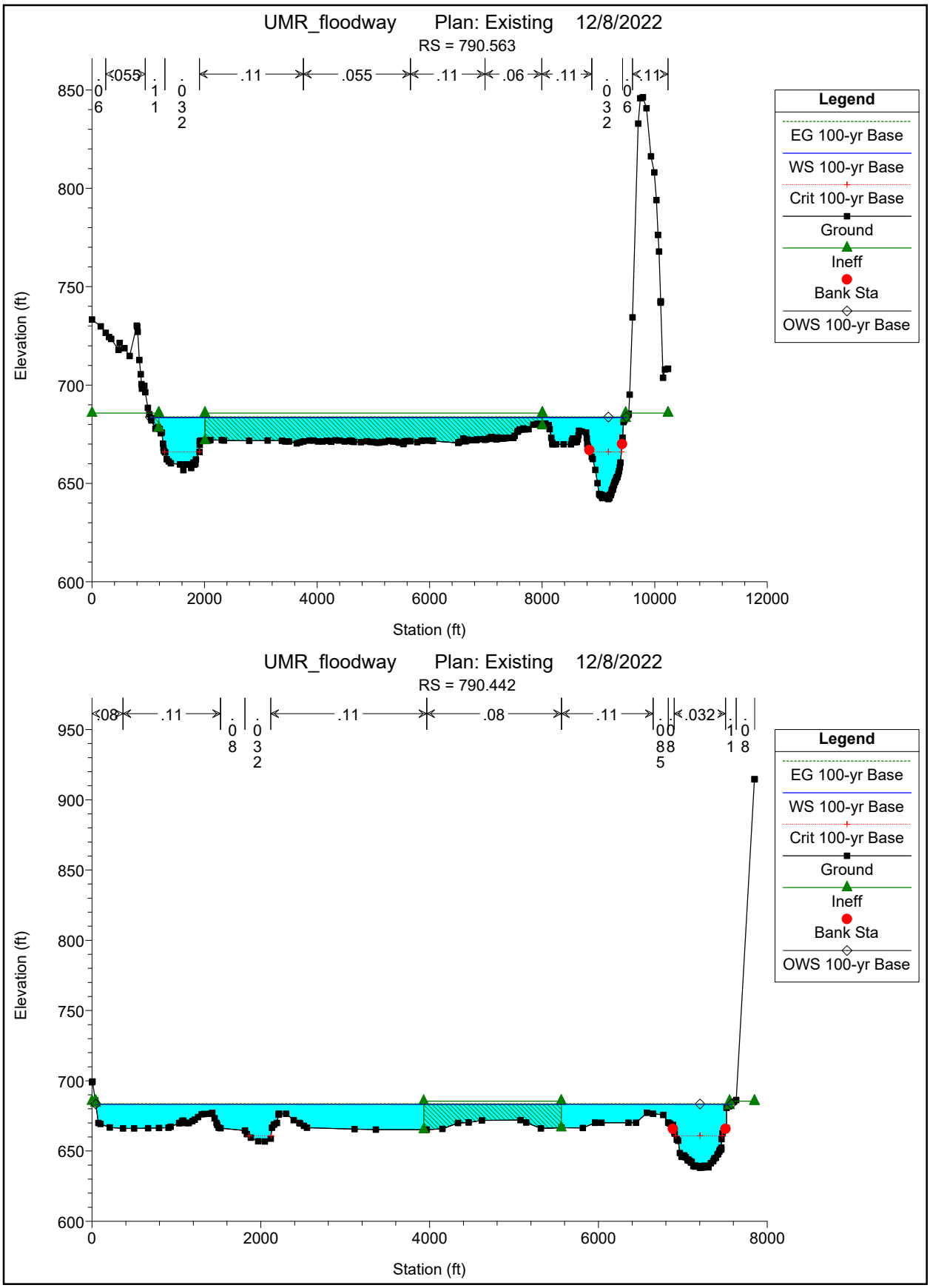

UMR_floodway Plan: Existing 12/8/2022
RS = 791.531
.045
.055
.032
.06
.11
.055
.06
.11
.032
.055
.06
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 791.273
.045
.055
.032
.055
.06
.11
.055
.06
.11
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)

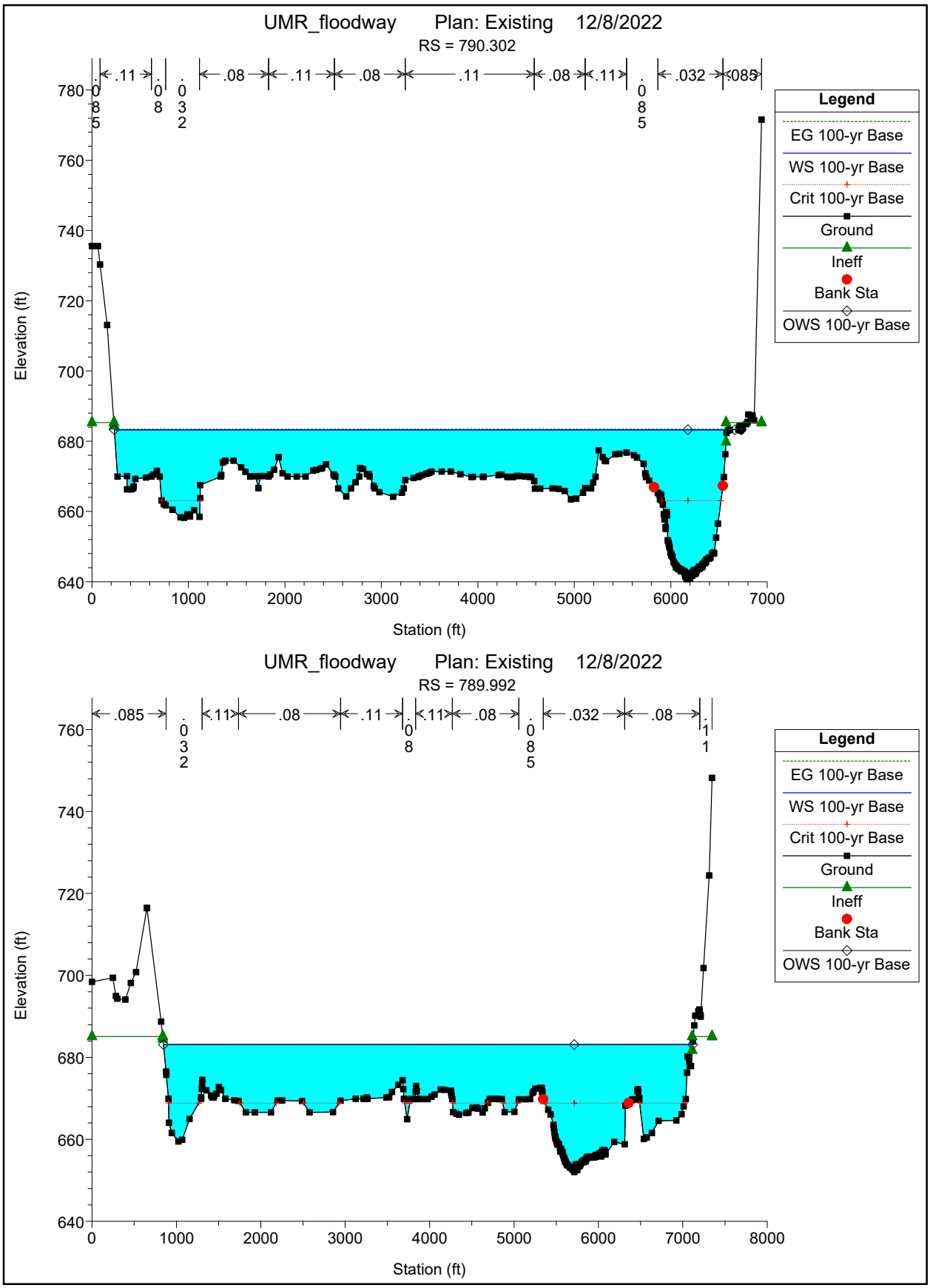

UMR_floodway Plan: Existing 12/8/2022
RS = 790.974
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

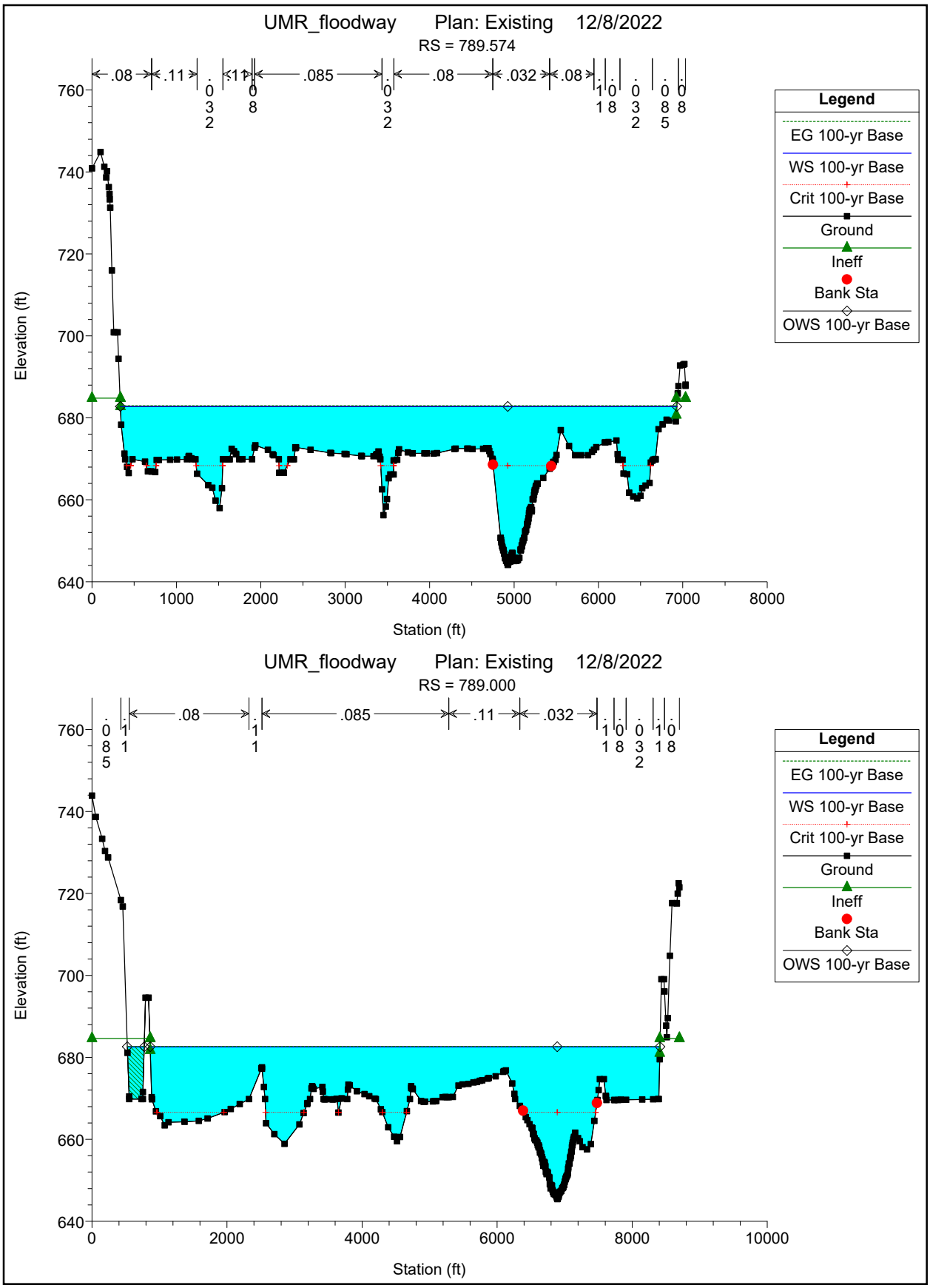

UMR_floodway Plan: Existing 12/8/2022
RS = 790.604
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

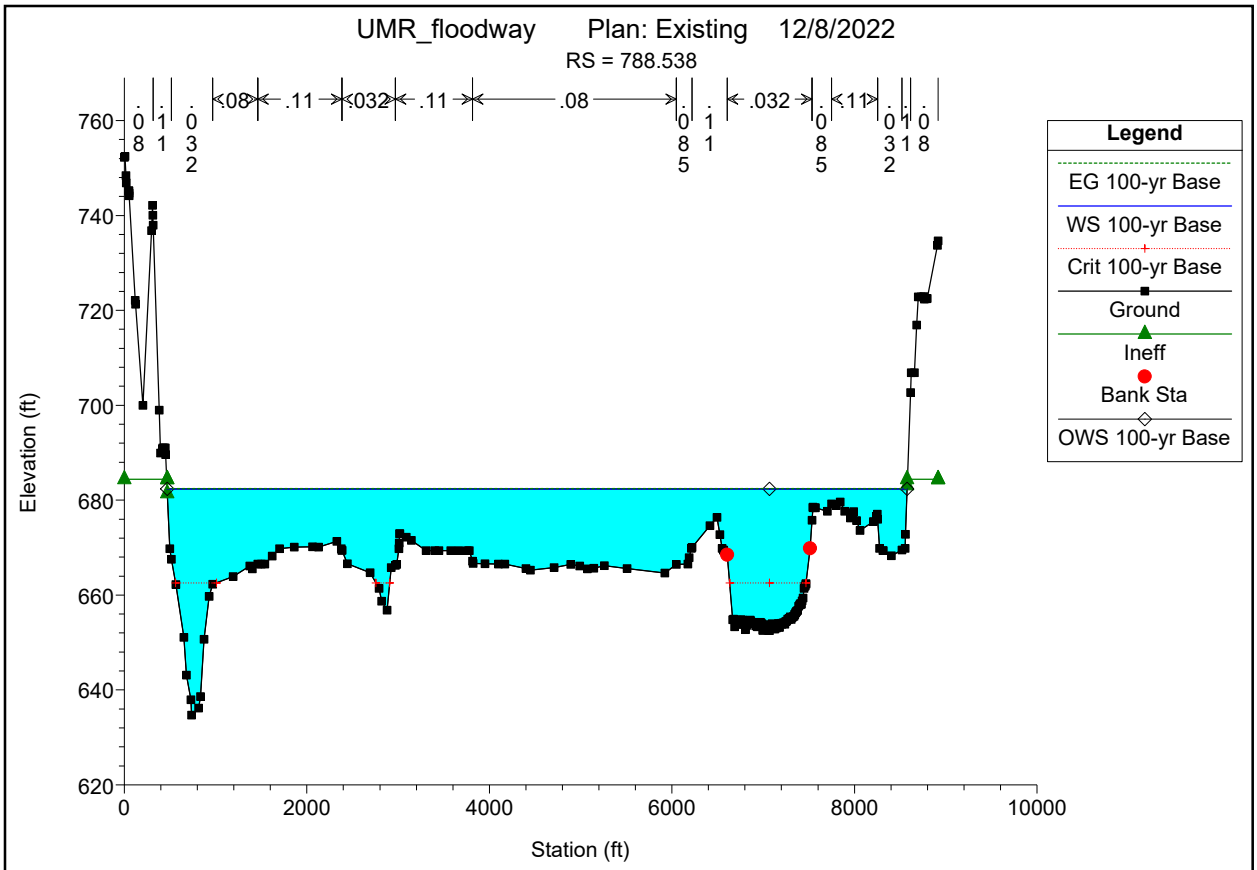

UMR_floodway Plan: Existing 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.032
.055
.11
.06
.055
.06
.11
.06
.11
.032
.055
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

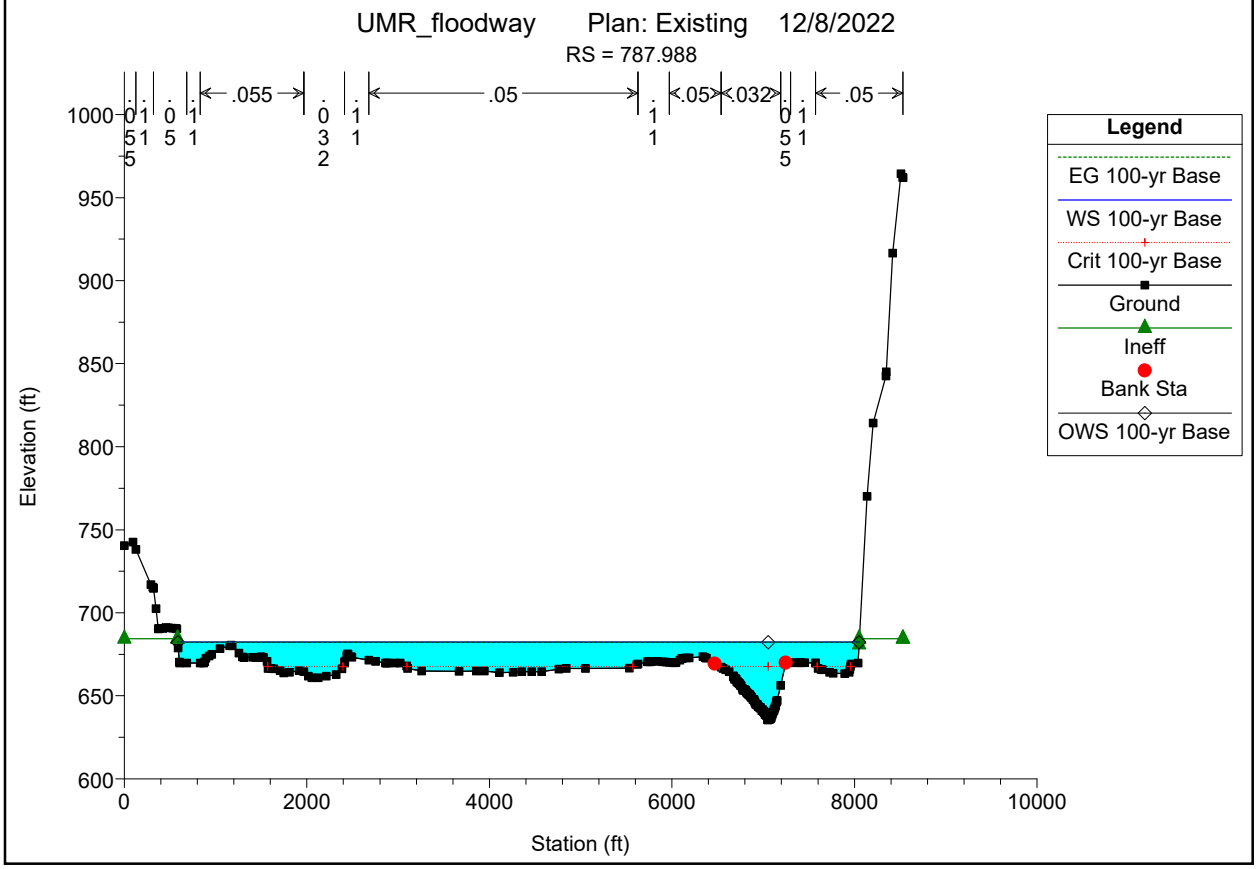

UMR_floodway Plan: Existing 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.11
.032
.11
.055
.11
.06
.11
.032
.06
.11
Elevation (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

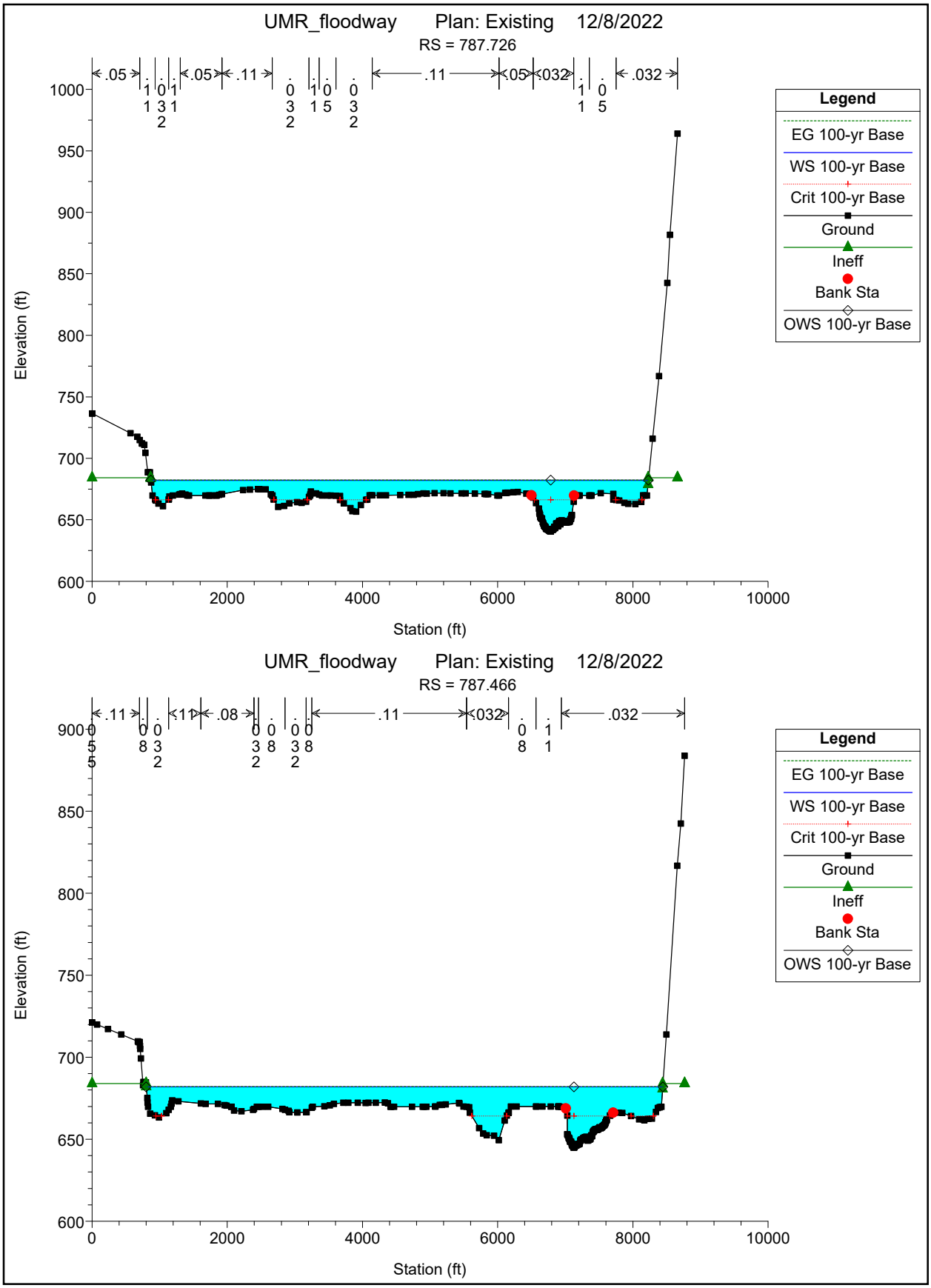

UMR_floodway Plan: Existing 12/8/2022
RS = 790.563
.055
.11
.055
.11
.06
.11
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 790.442
.08
.11
.11
.08
.11
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

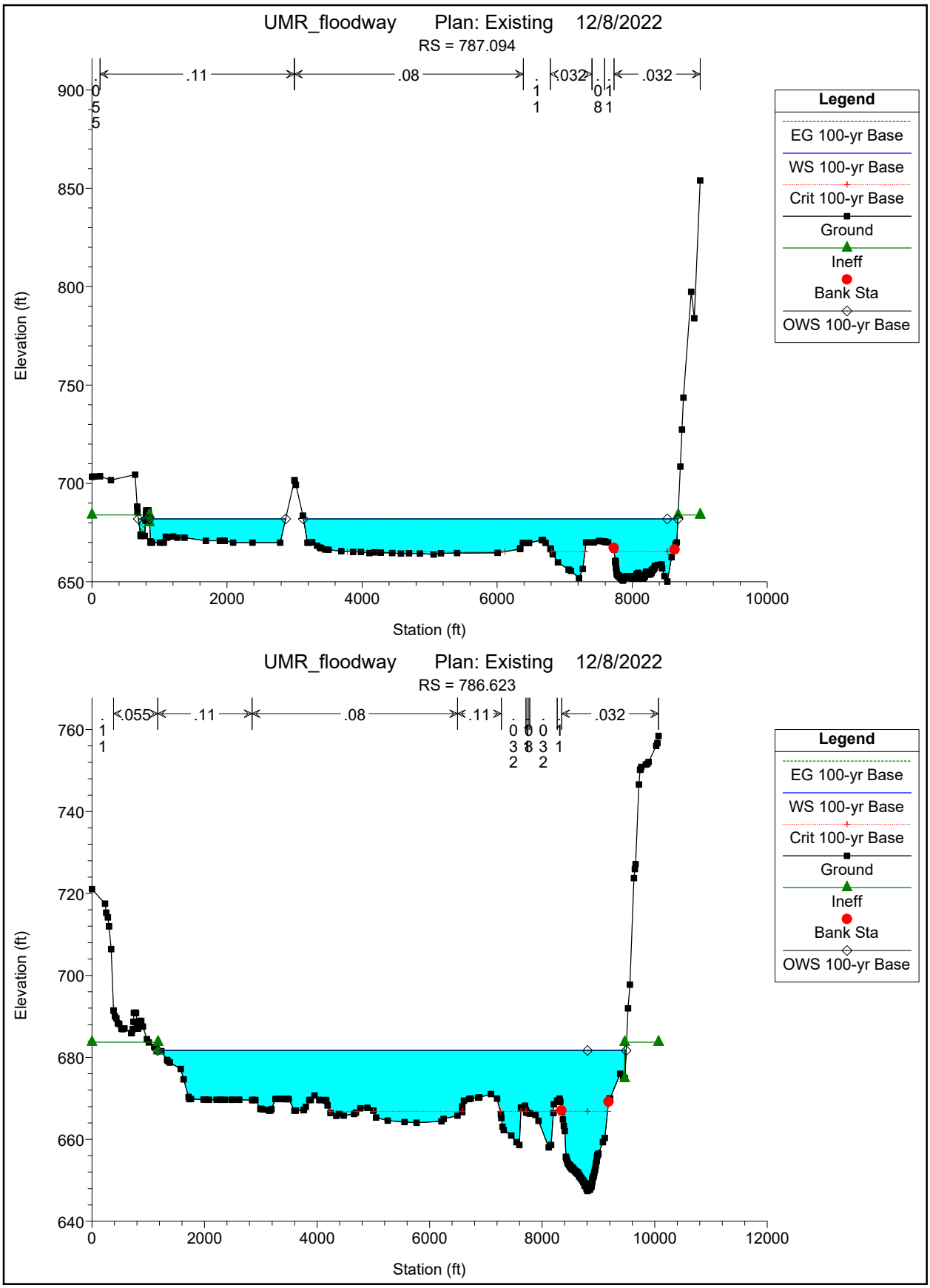

UMR_floodway Plan: Existing 12/8/2022
RS = 790.302
.085
.11
.08
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 789.992
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

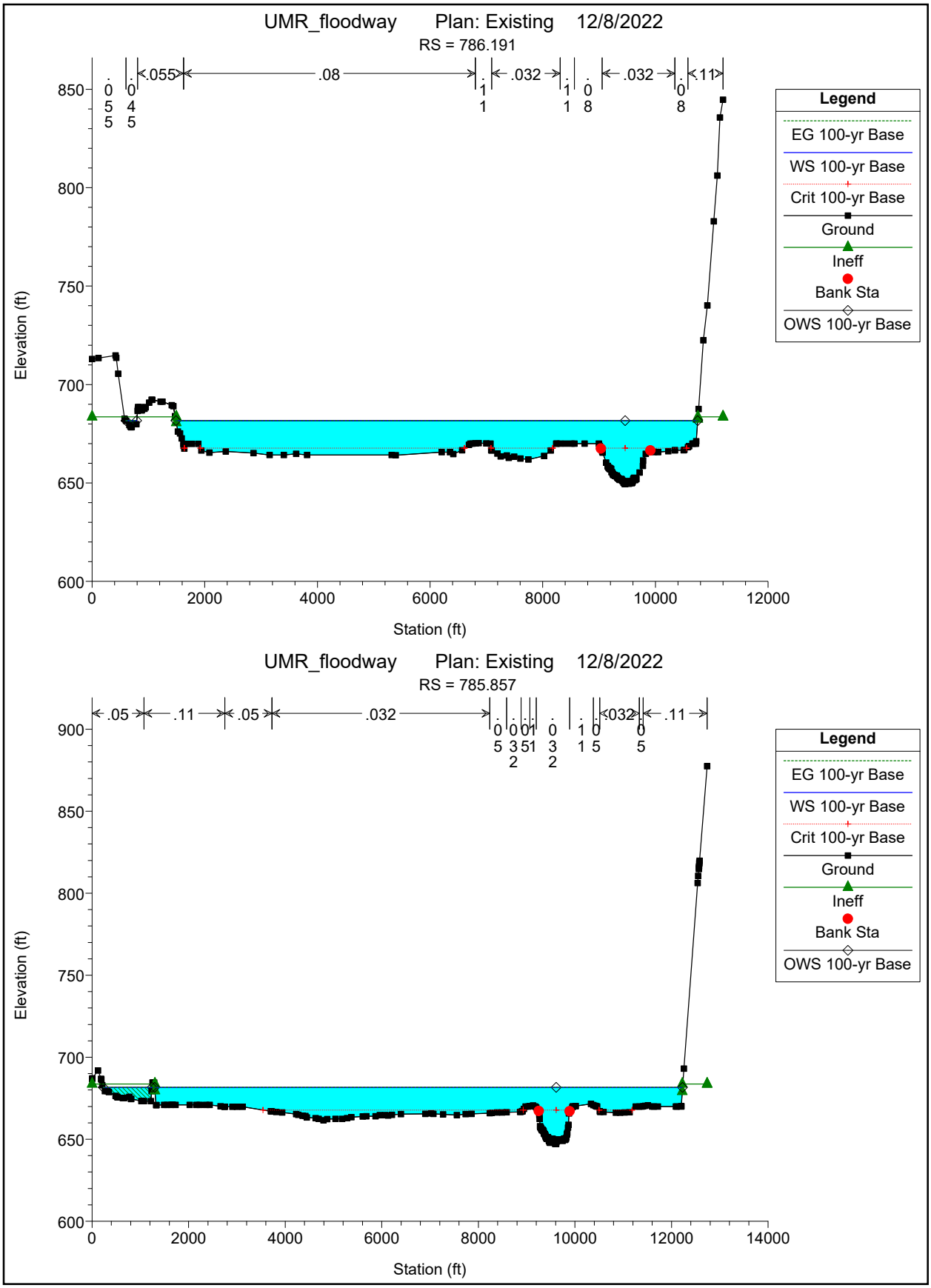

UMR_floodway Plan: Existing 12/8/2022
RS = 789.574
.08
.11
.032
.11
.085
.08
.032
.08
Elevation (ft)
760
740
720
700
680
660
640
0
1000
2000
3000
4000
5000
6000
7000
8000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 789.000
.08
.085
.11
.032
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

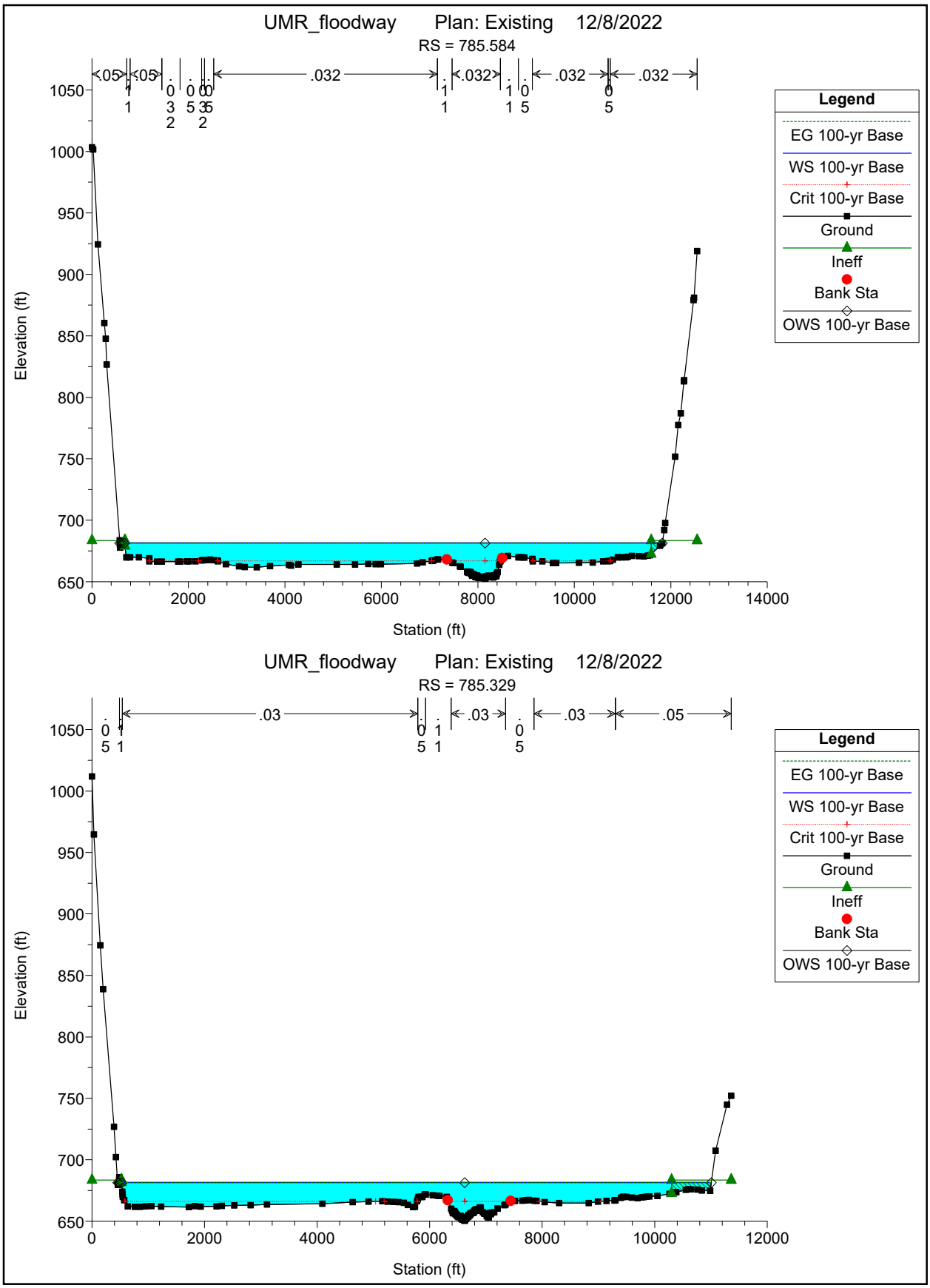

UMR_floodway Plan: Existing 12/8/2022
RS = 788.538
.08 .11 .032 .11 .08 .032 .11
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

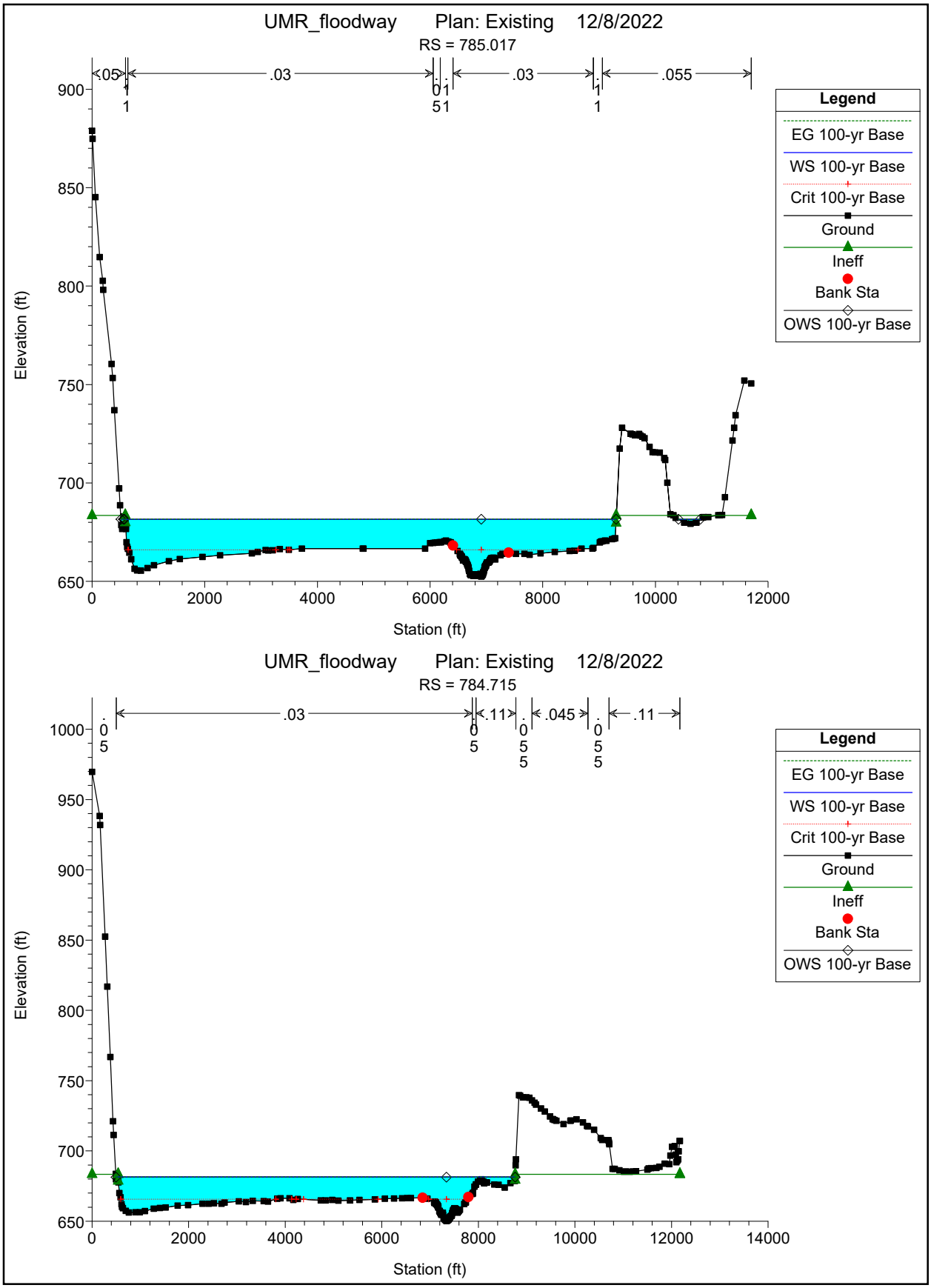

UMR_floodway Plan: Existing 12/8/2022
RS = 787.988
.055 .05 .05 .032 .05
Elevation (ft)
1000
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

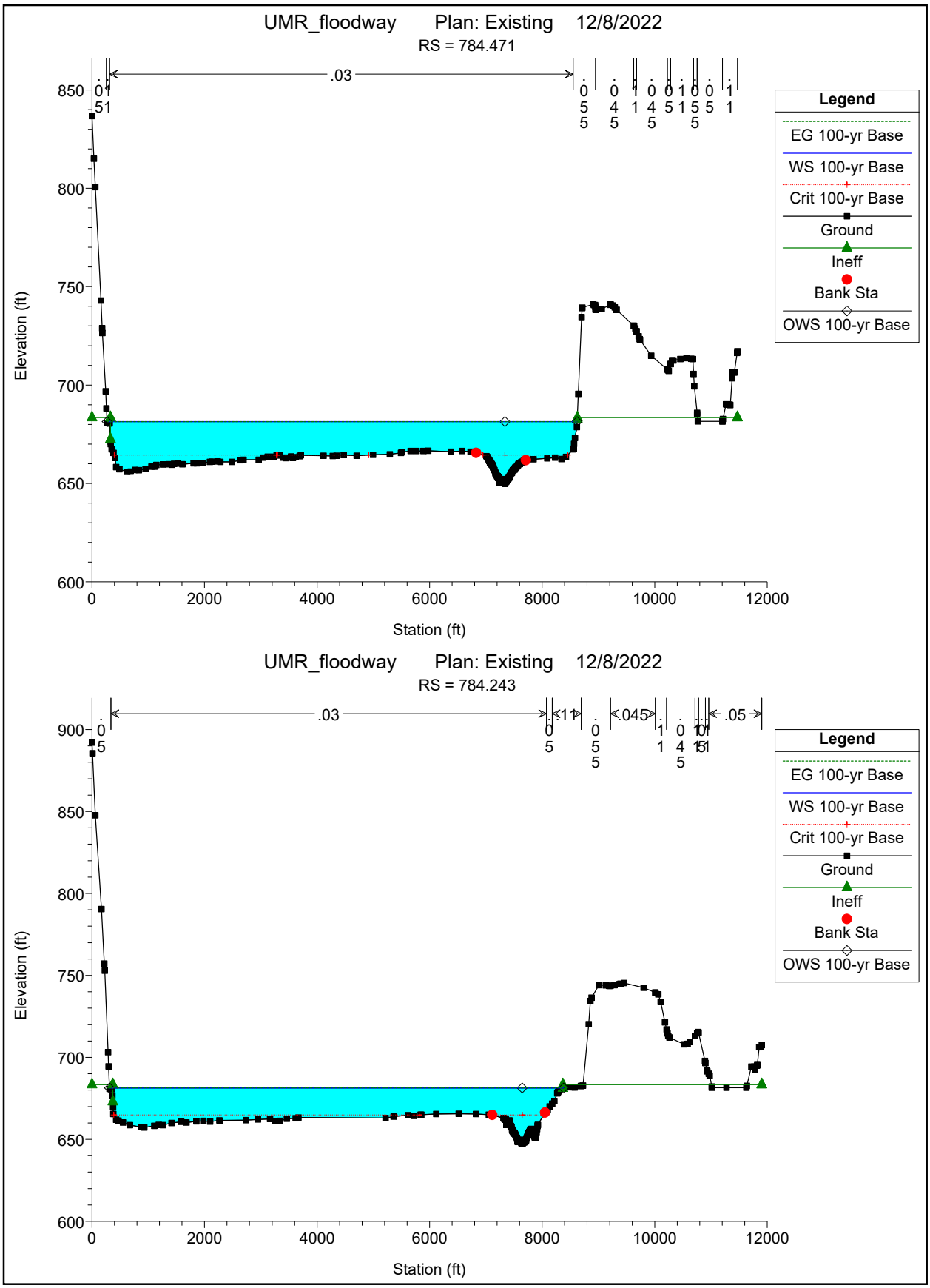

UMR_floodway Plan: Existing 12/8/2022
RS = 787.726
.05 .11 .05 .11 .11 .05 .032 .032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 787.466
.11 .11 .08 .11 .032 .032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

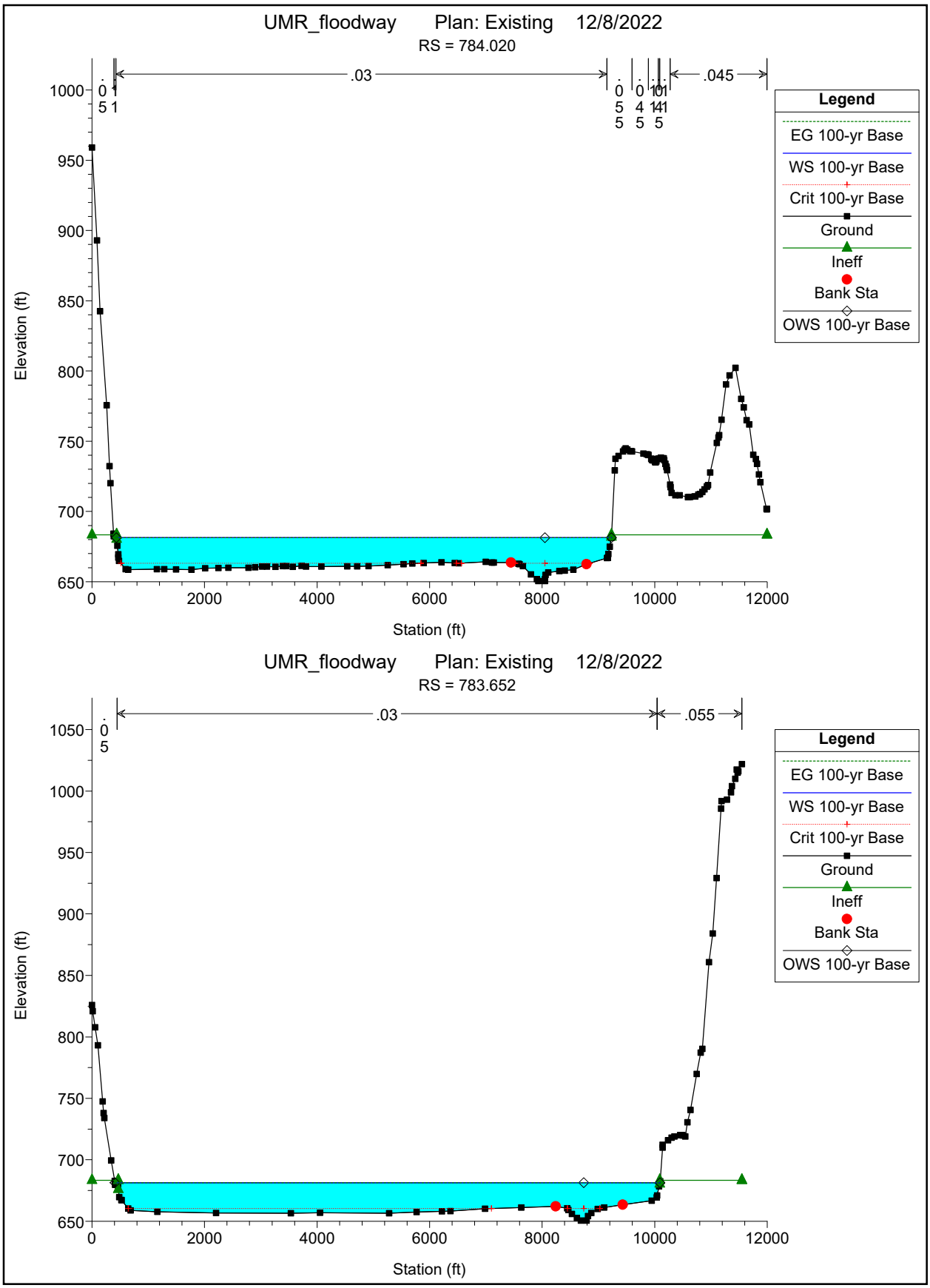

UMR_floodway Plan: Existing 12/8/2022
RS = 787.094
.055
.11
.08
.11
.032
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
900
850
800
750
700
650
0
2000
4000
6000
8000
10000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 786.623
.055
.11
.08
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)

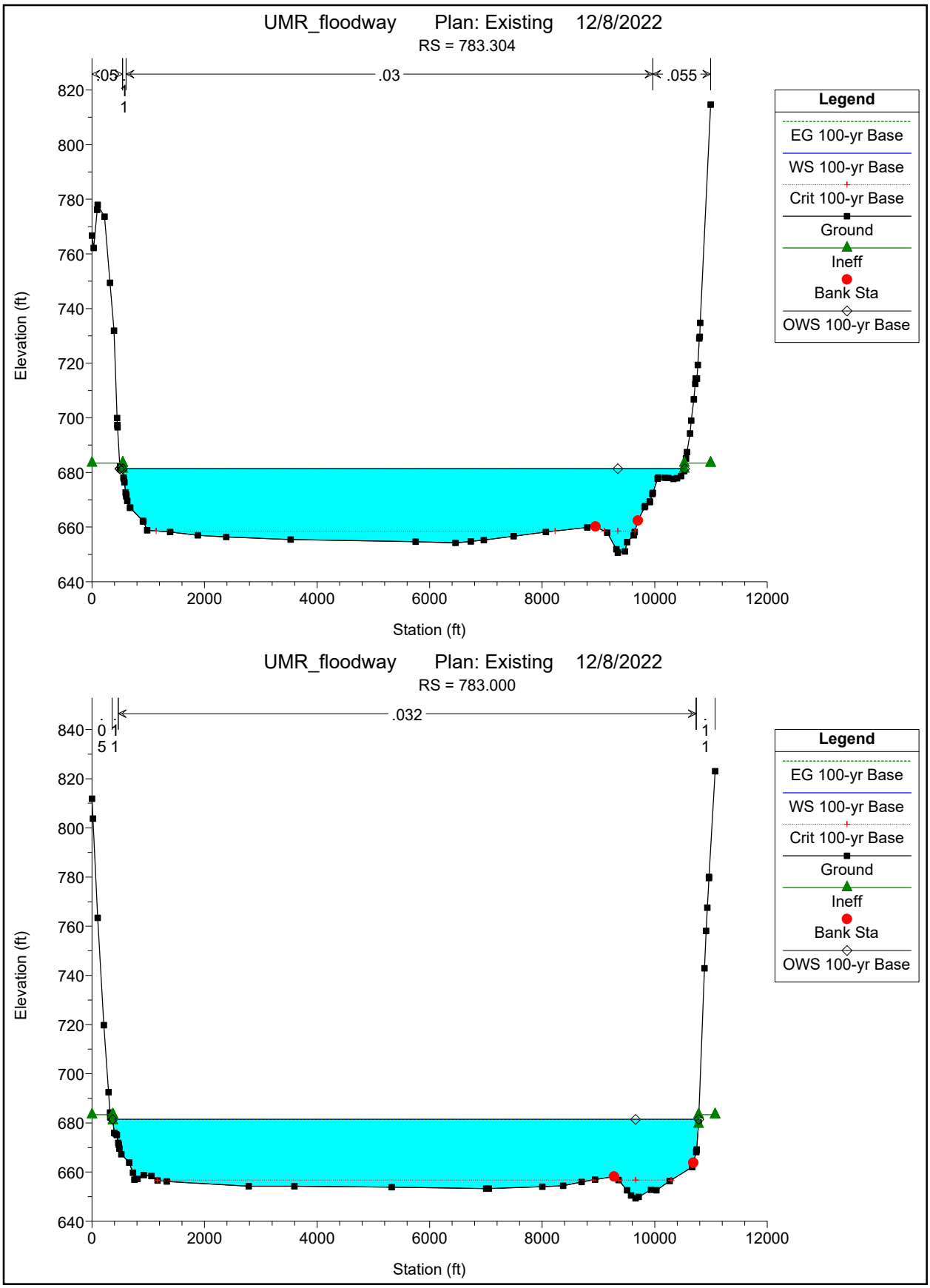

UMR_floodway Plan: Existing 12/8/2022
RS = 786.191
.055
.08
.032
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 785.857
.05
.11
.05
.032
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

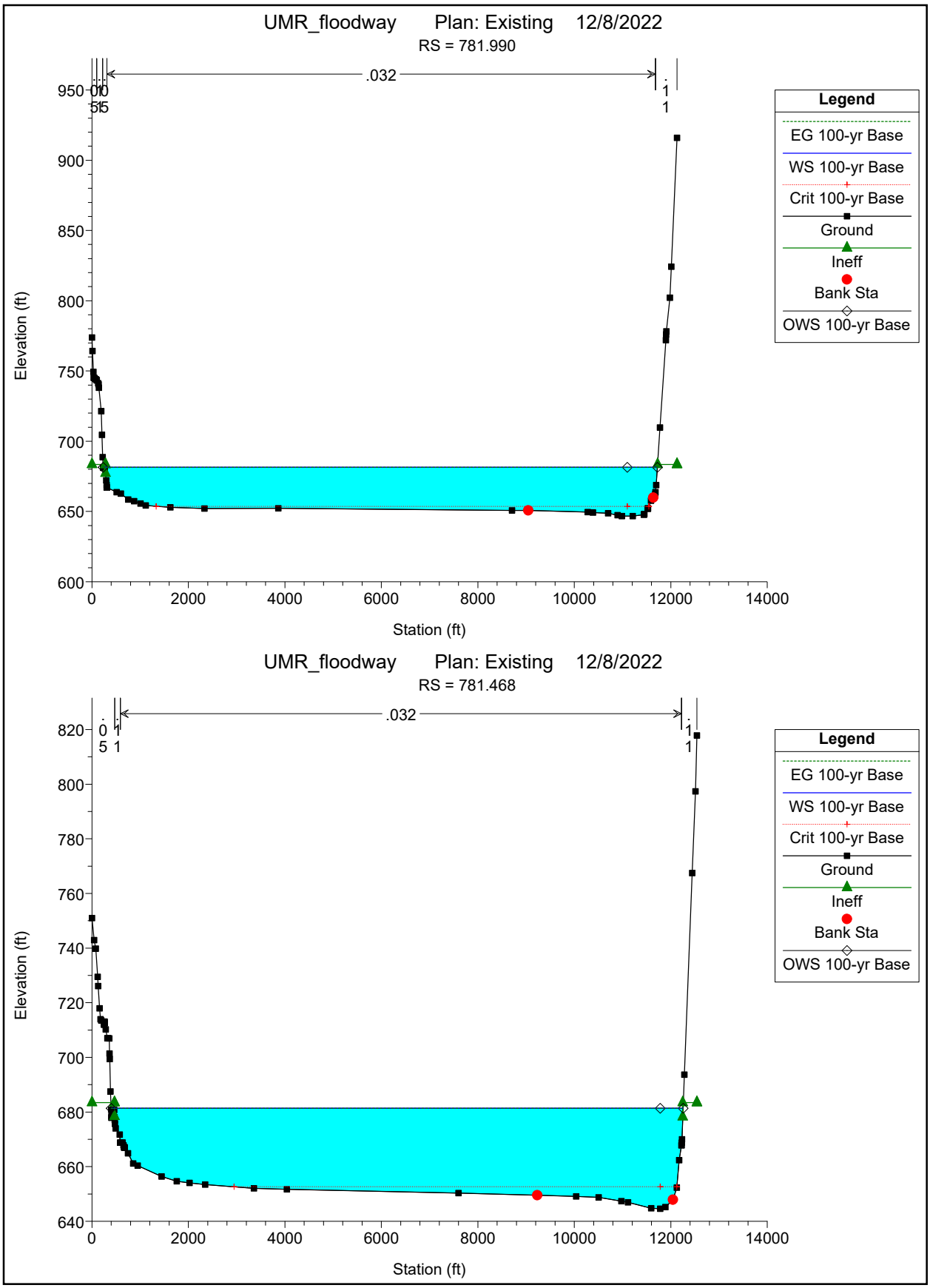

UMR_floodway Plan: Existing 12/8/2022
RS = 785.584
.05
.05
.032
.032
.032
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 785.329
.03
.03
.03
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

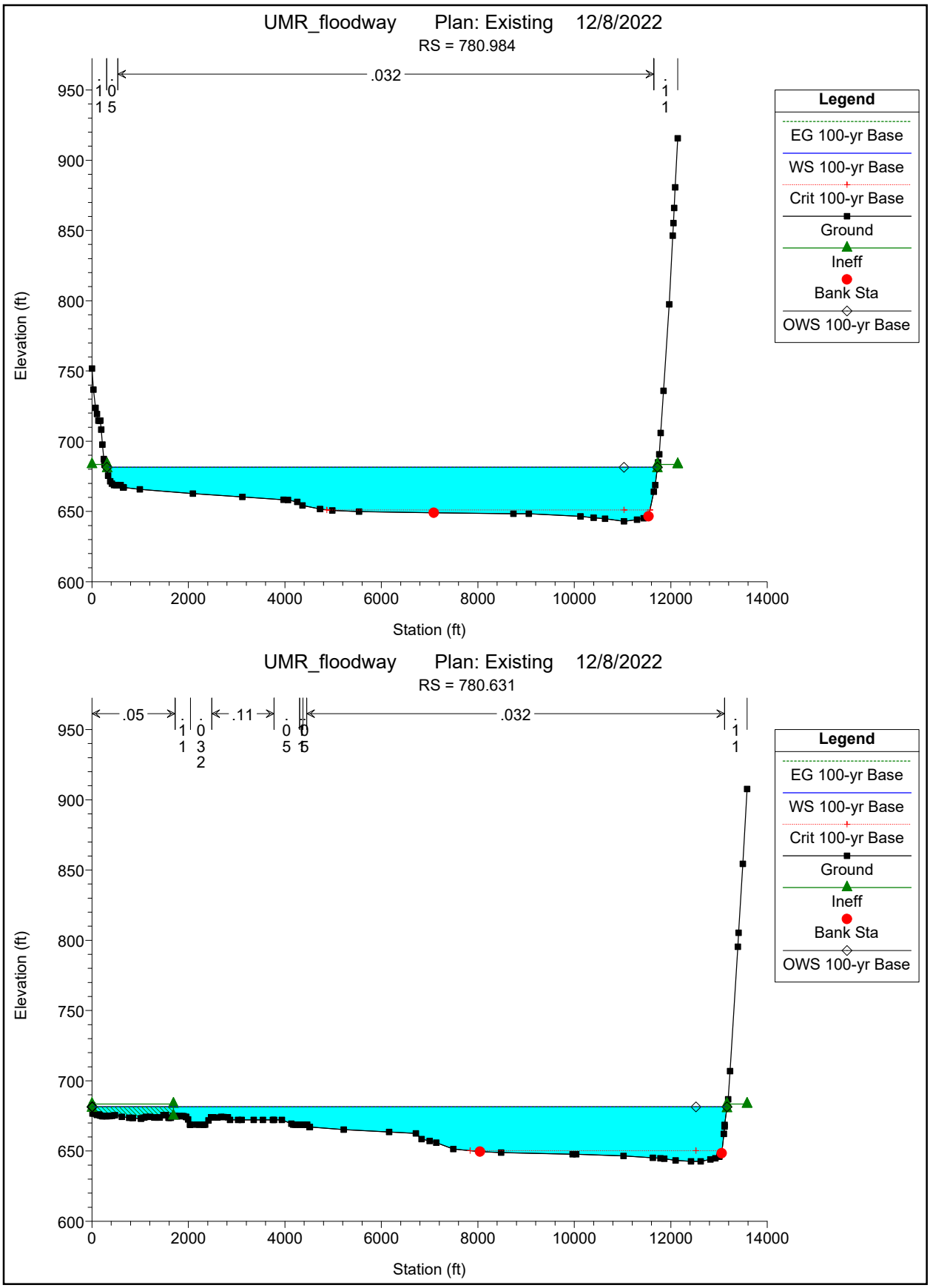

UMR_floodway Plan: Existing 12/8/2022
RS = 785.017
.05
.03
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 784.715
.03
.11
.045
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

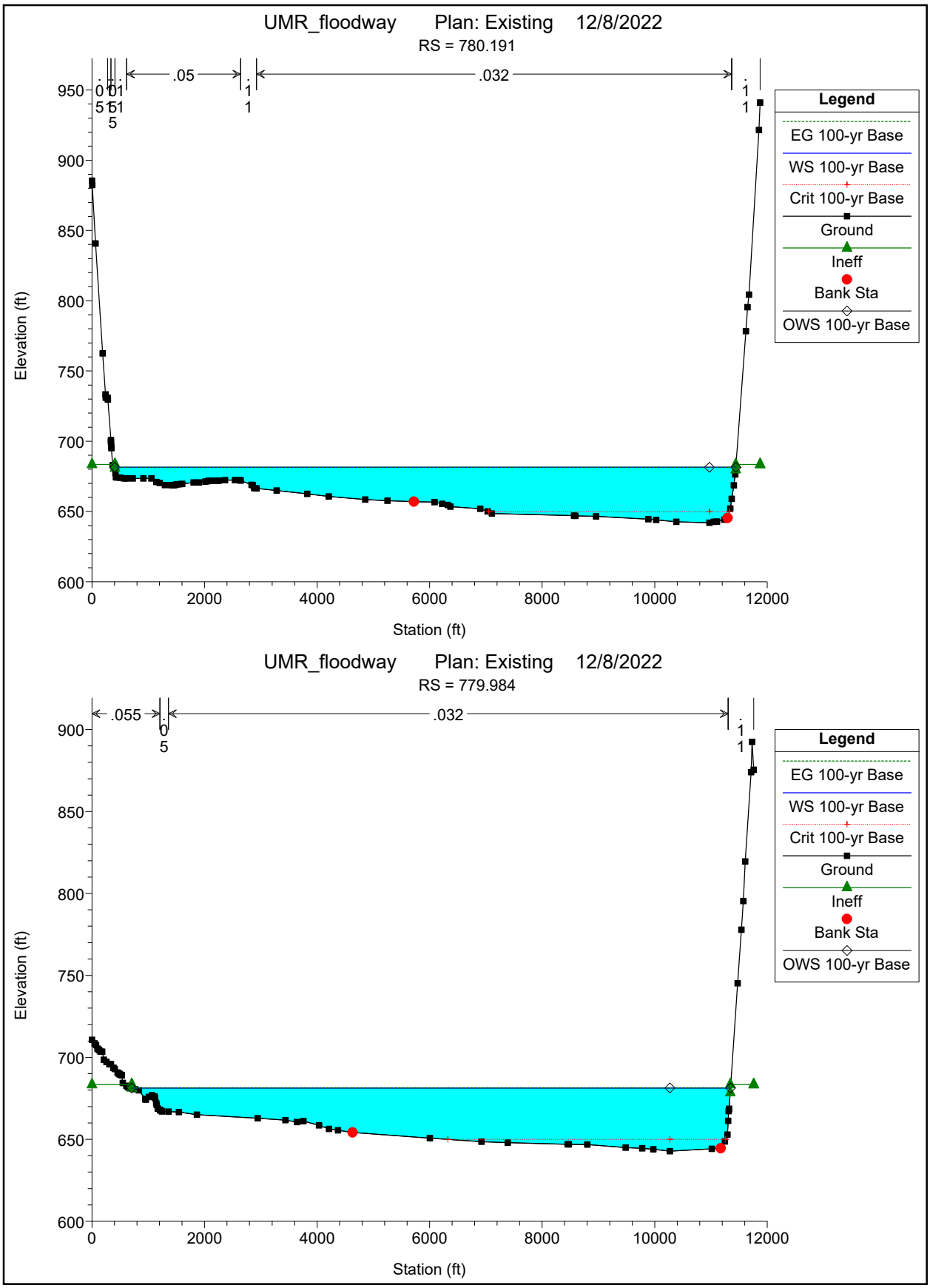

UMR_floodway Plan: Existing 12/8/2022
RS = 784.471
.03
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 784.243
.03
.045
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

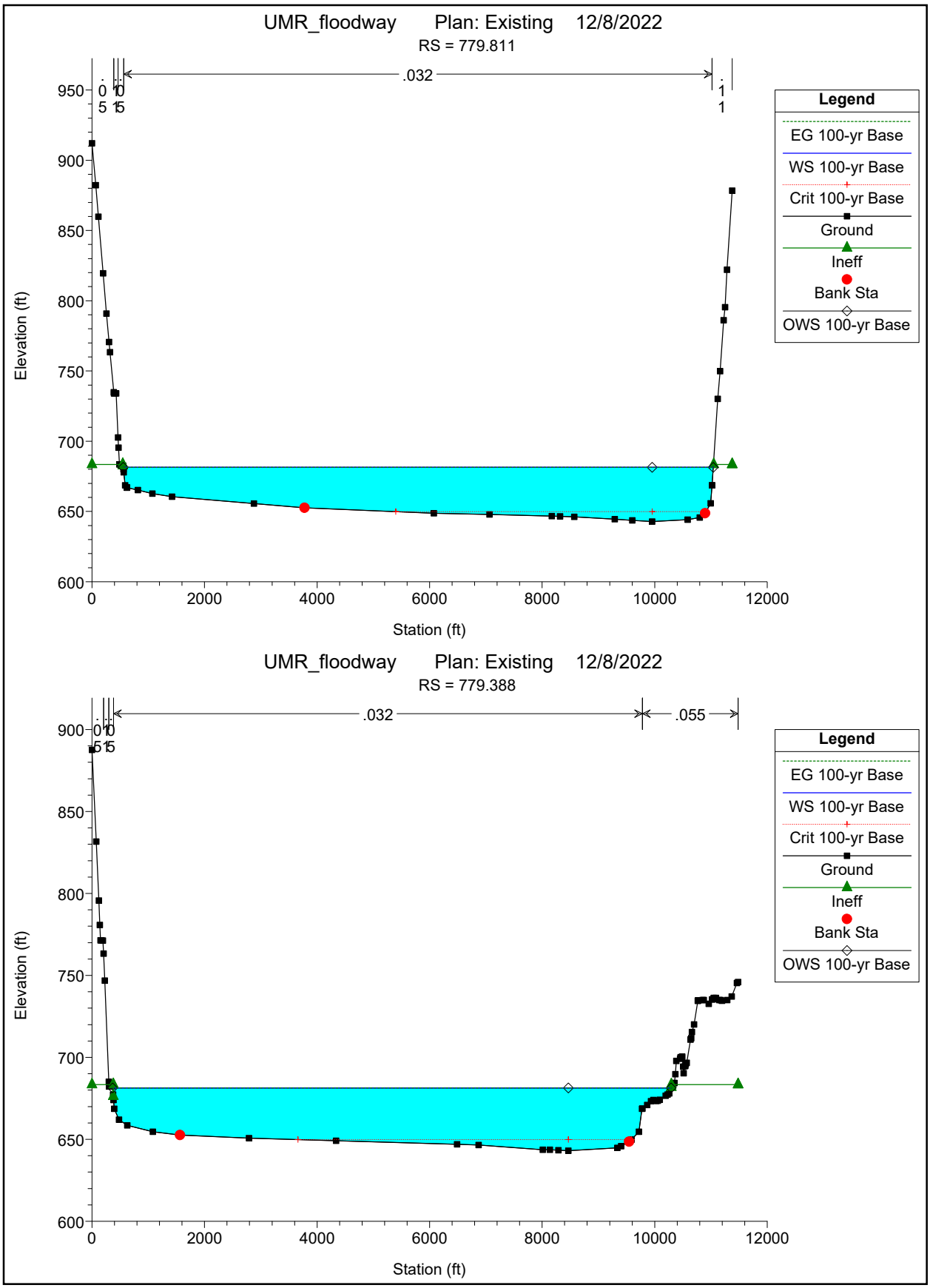

UMR_floodway Plan: Existing 12/8/2022
RS = 784.020
.03
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 783.652
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

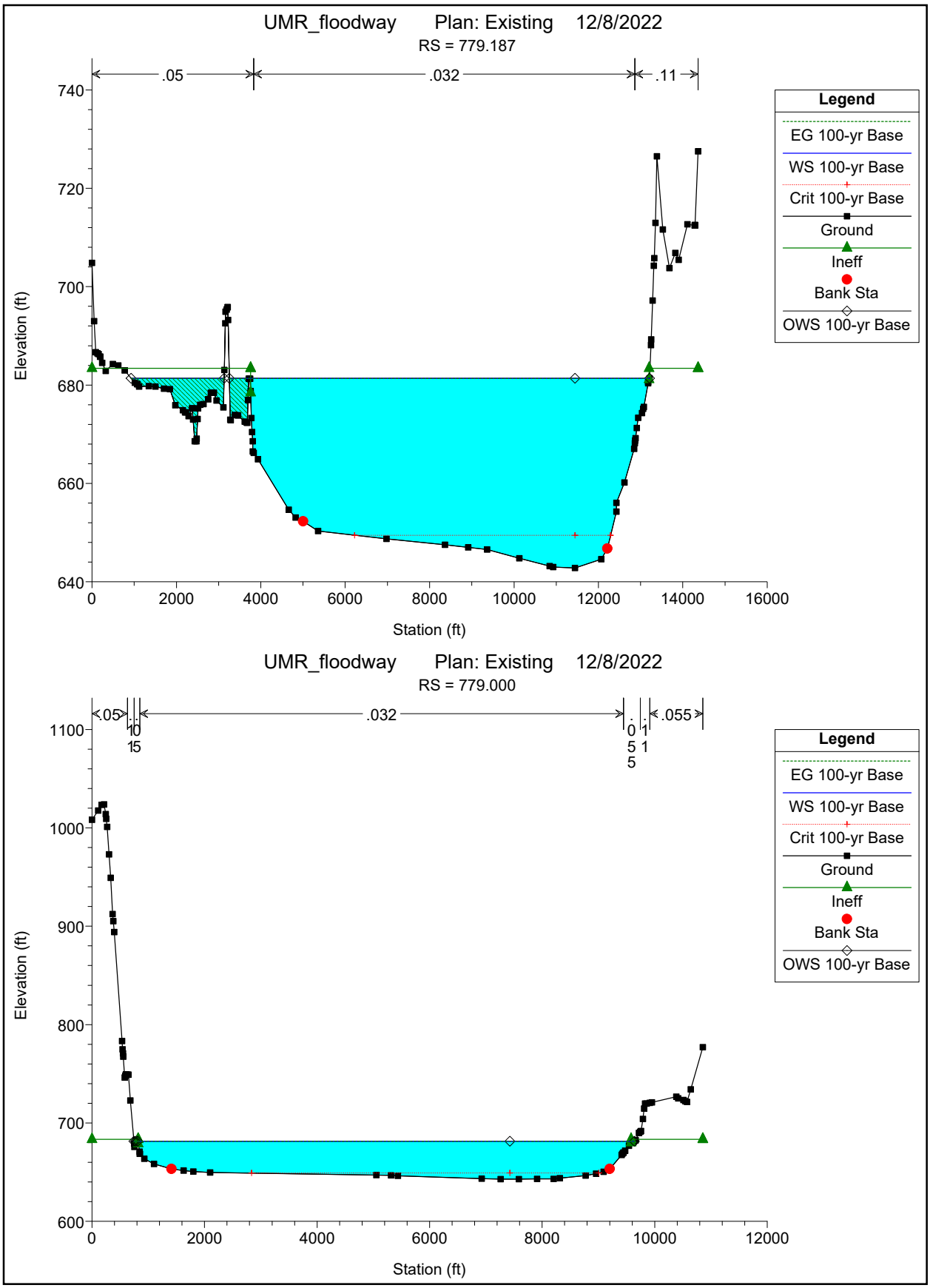

UMR_floodway Plan: Existing 12/8/2022
RS = 783.304
.05
.03
.055
1
1
Elevation (ft)
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 783.000
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

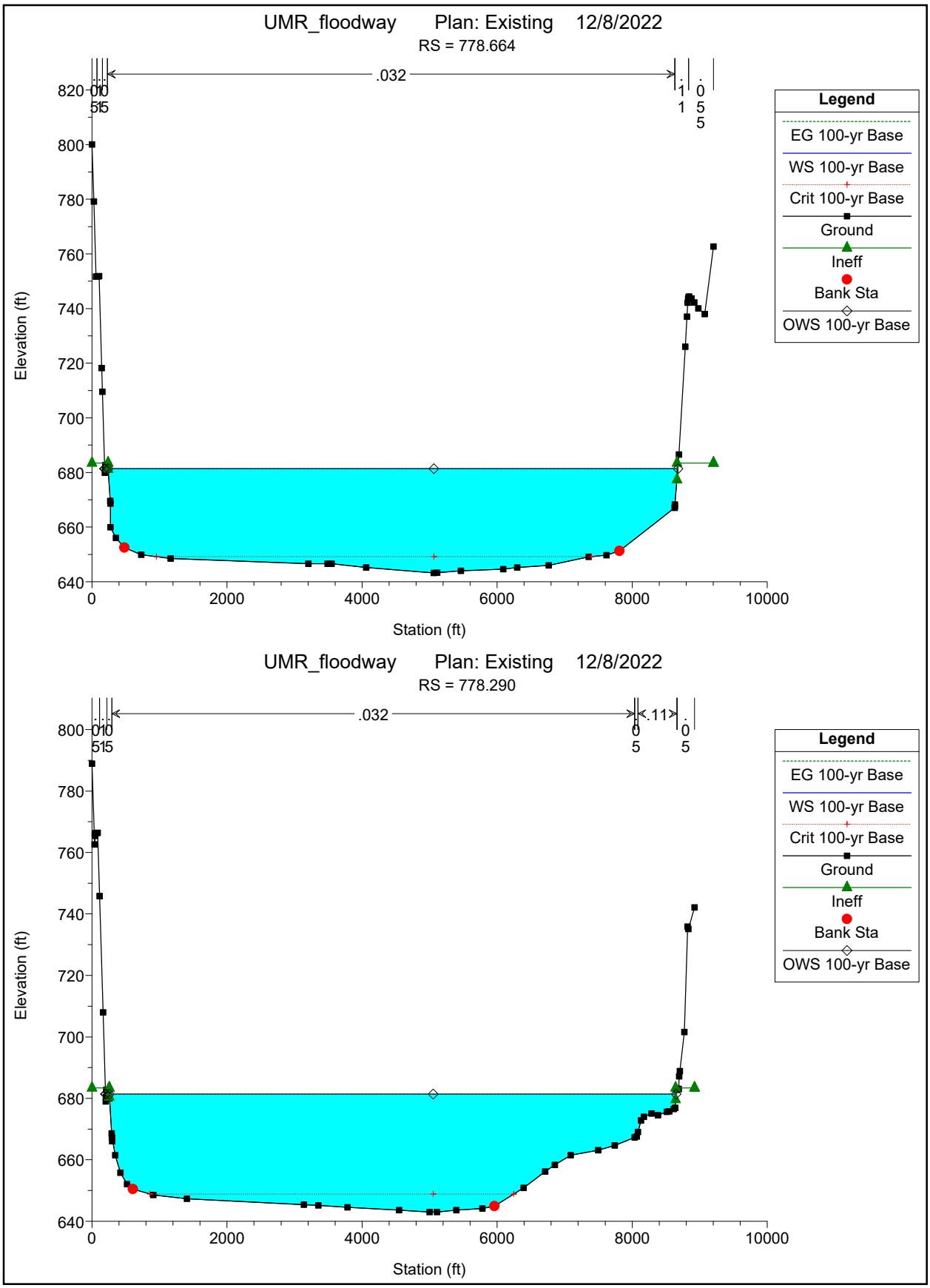

UMR_floodway Plan: Existing 12/8/2022
RS = 781.990
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 781.468
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

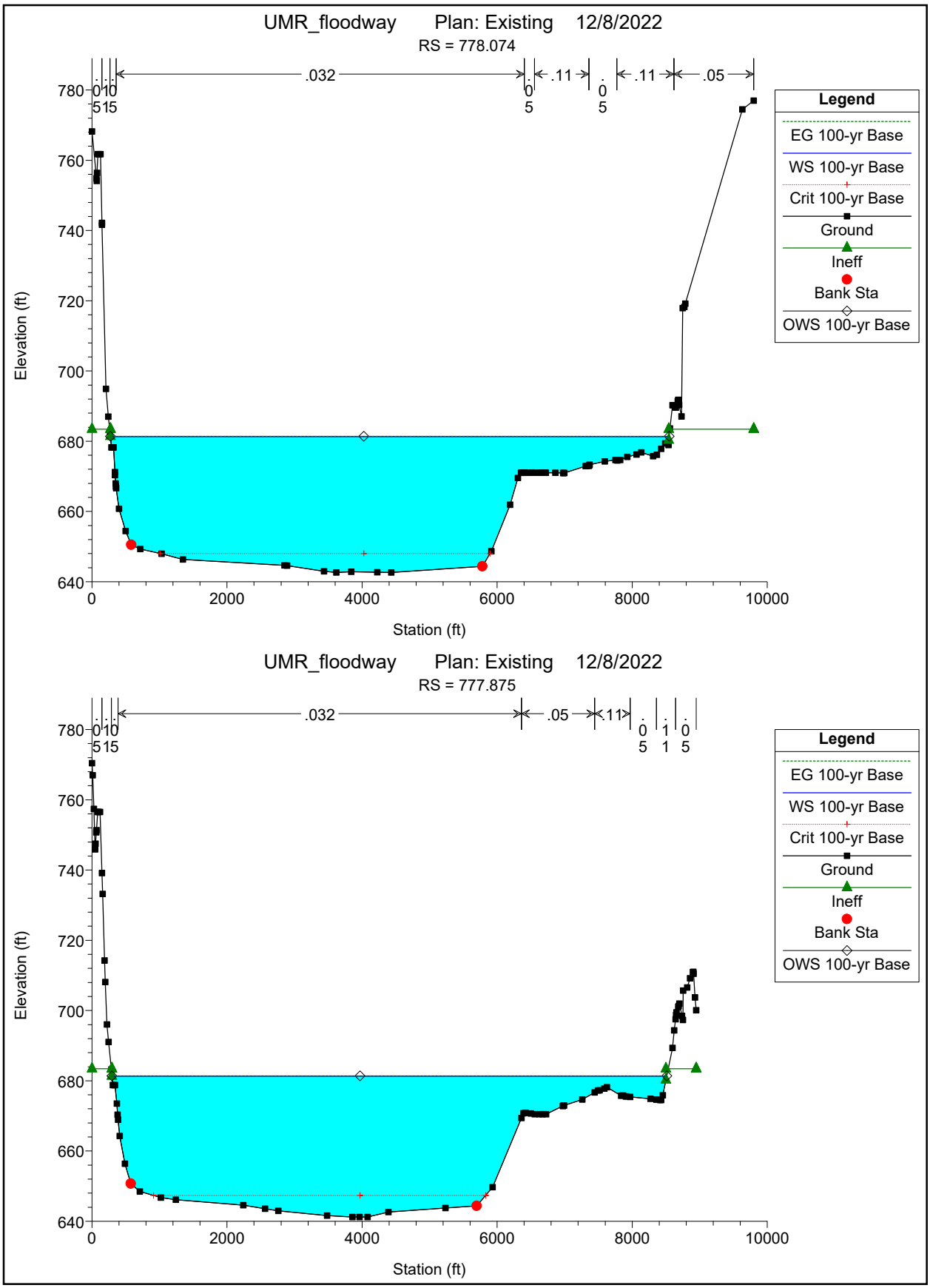

UMR_floodway Plan: Existing 12/8/2022
RS = 780.984
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 780.631
.05
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

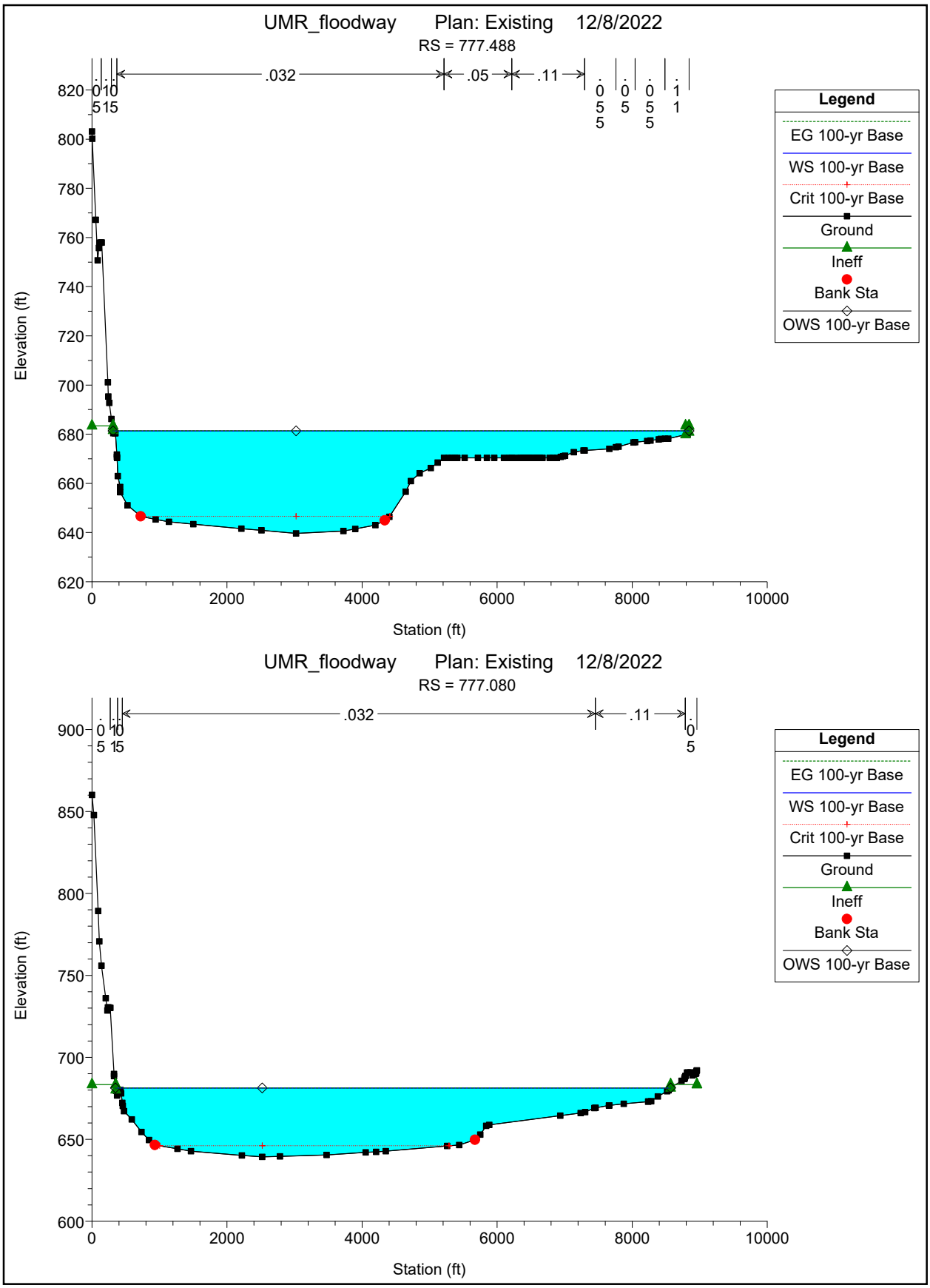

UMR_floodway Plan: Existing 12/8/2022
RS = 780.191
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 779.984
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

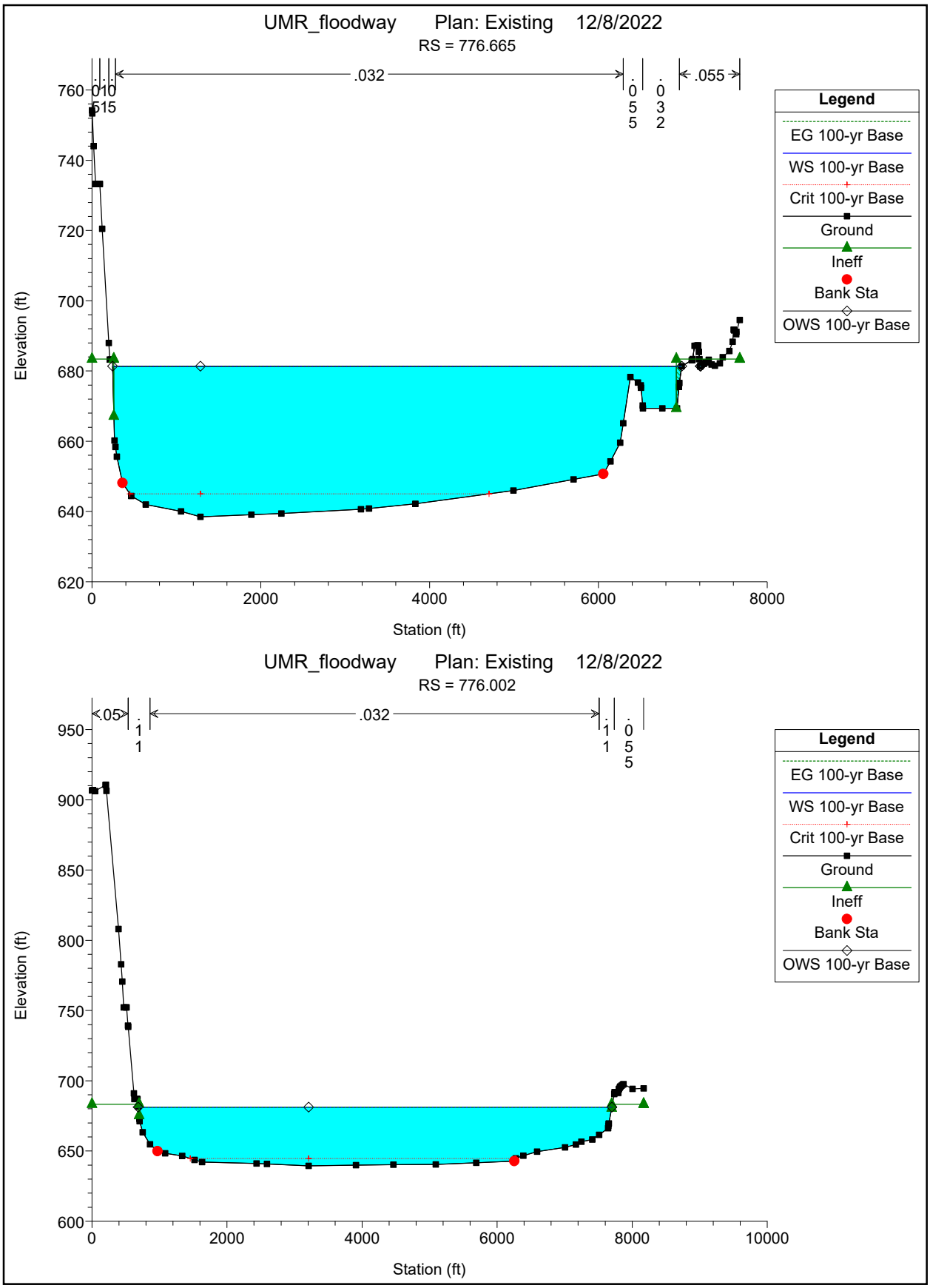

UMR_floodway Plan: Existing 12/8/2022
RS = 779.811
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 779.388
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

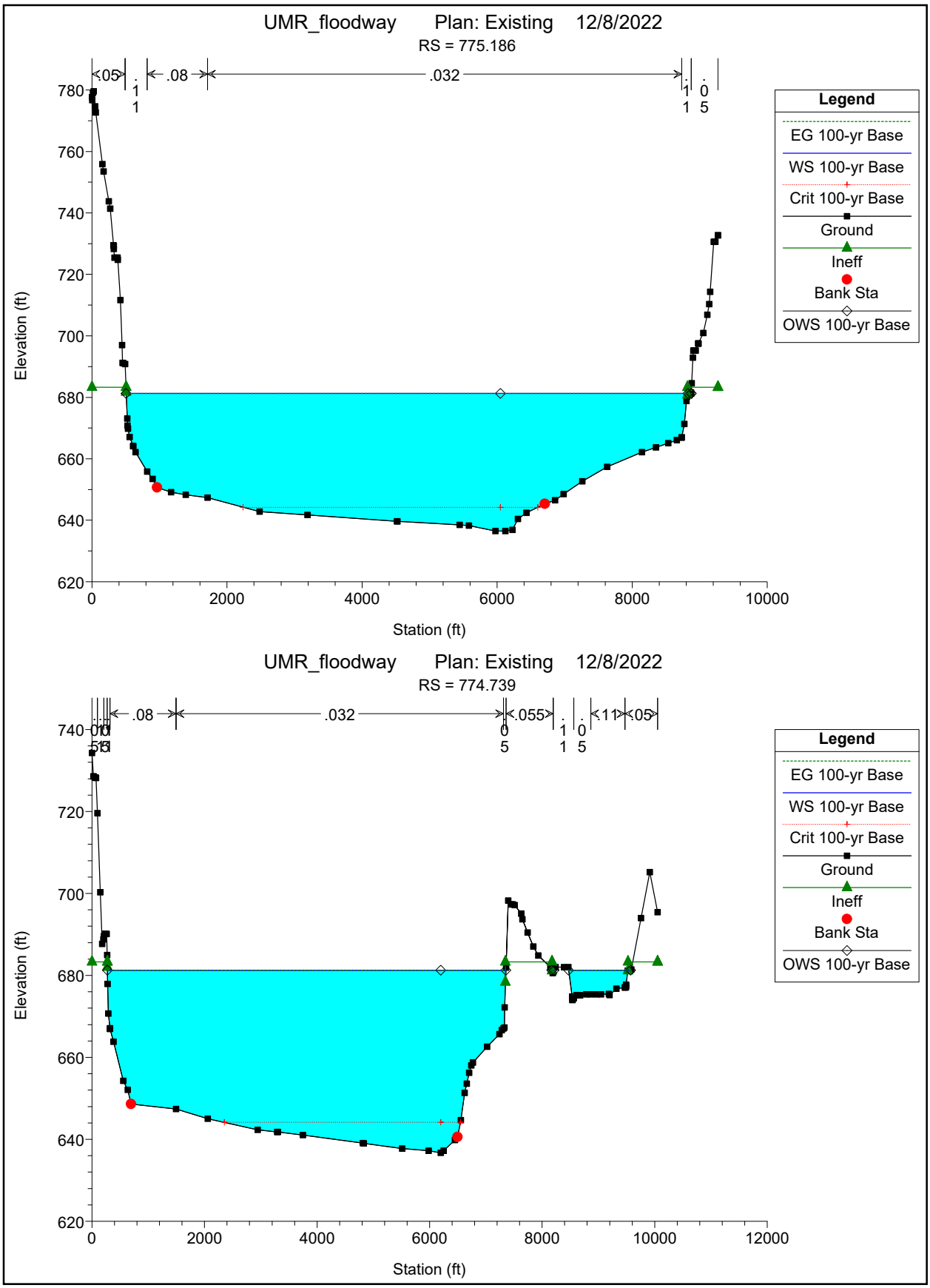

UMR_floodway Plan: Existing 12/8/2022
RS = 779.187
.05
.032
.11
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 779.000
.05
.032
.055
Elevation (ft)
1100
1000
900
800
700
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

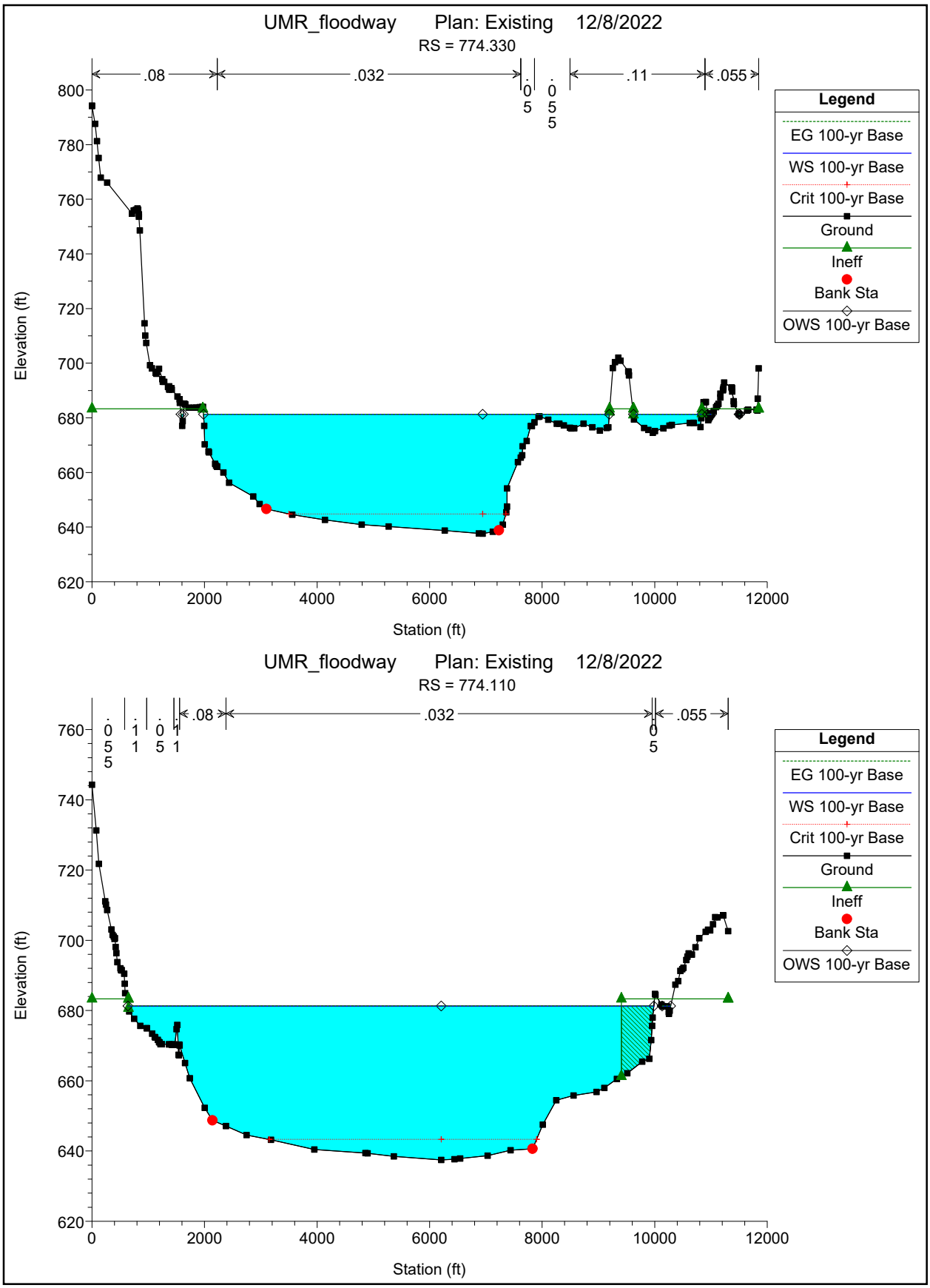

UMR_floodway Plan: Existing 12/8/2022
RS = 778.664
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 778.290
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

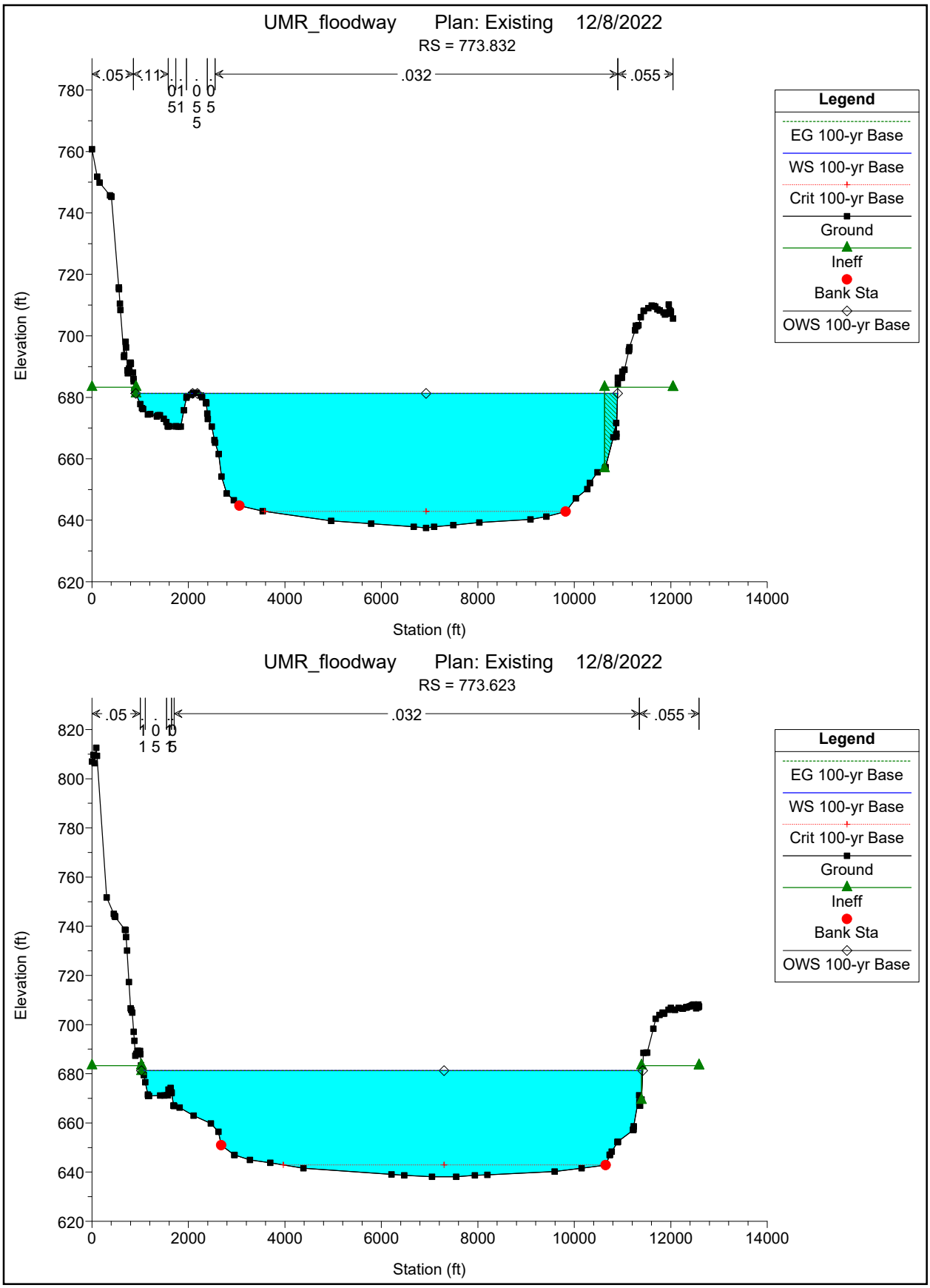

UMR_floodway Plan: Existing 12/8/2022
RS = 778.074
.032
.11
.11
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 777.875
.032
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

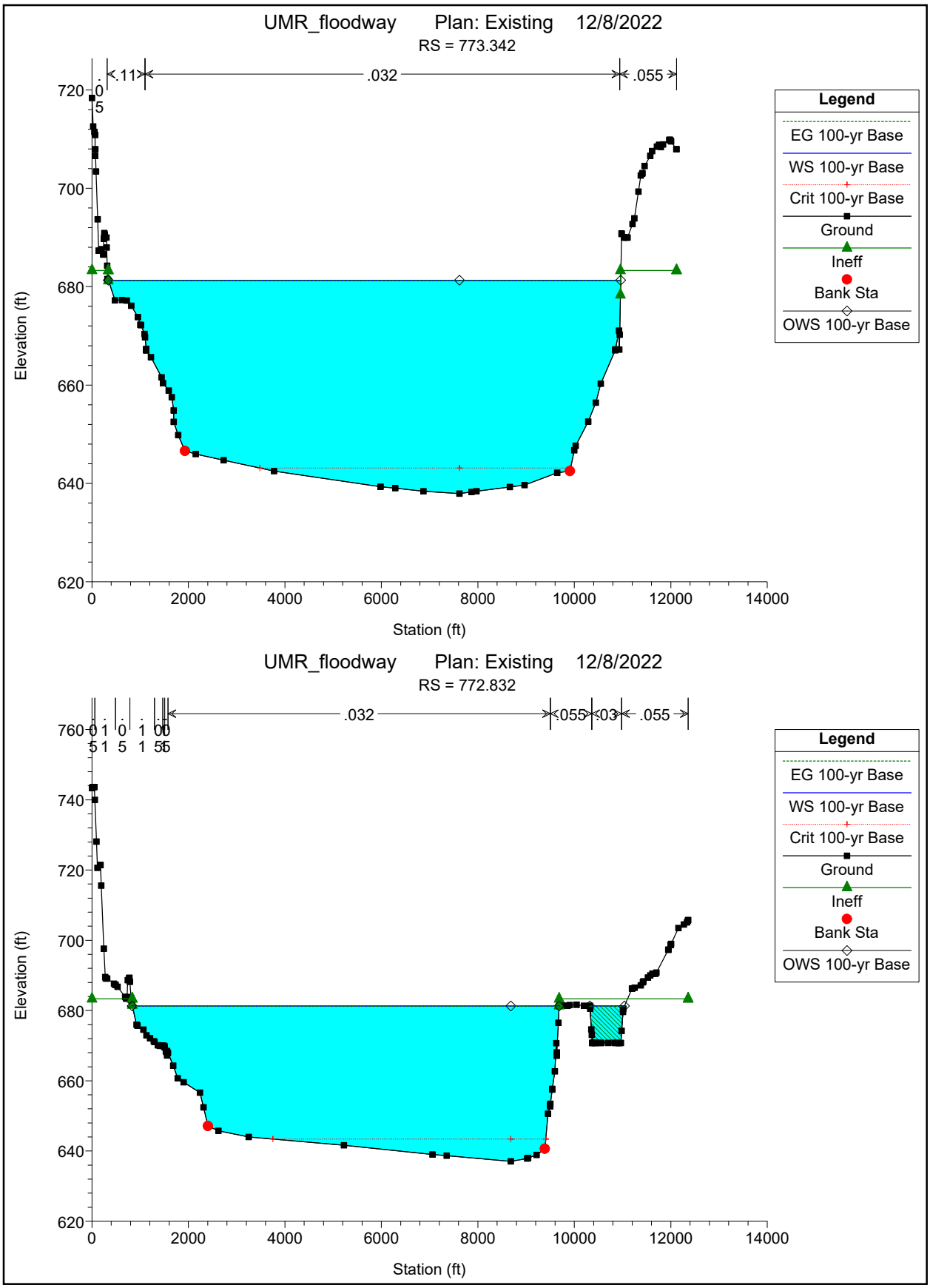

UMR_floodway Plan: Existing 12/8/2022
RS = 777.488
.032
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 777.080
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

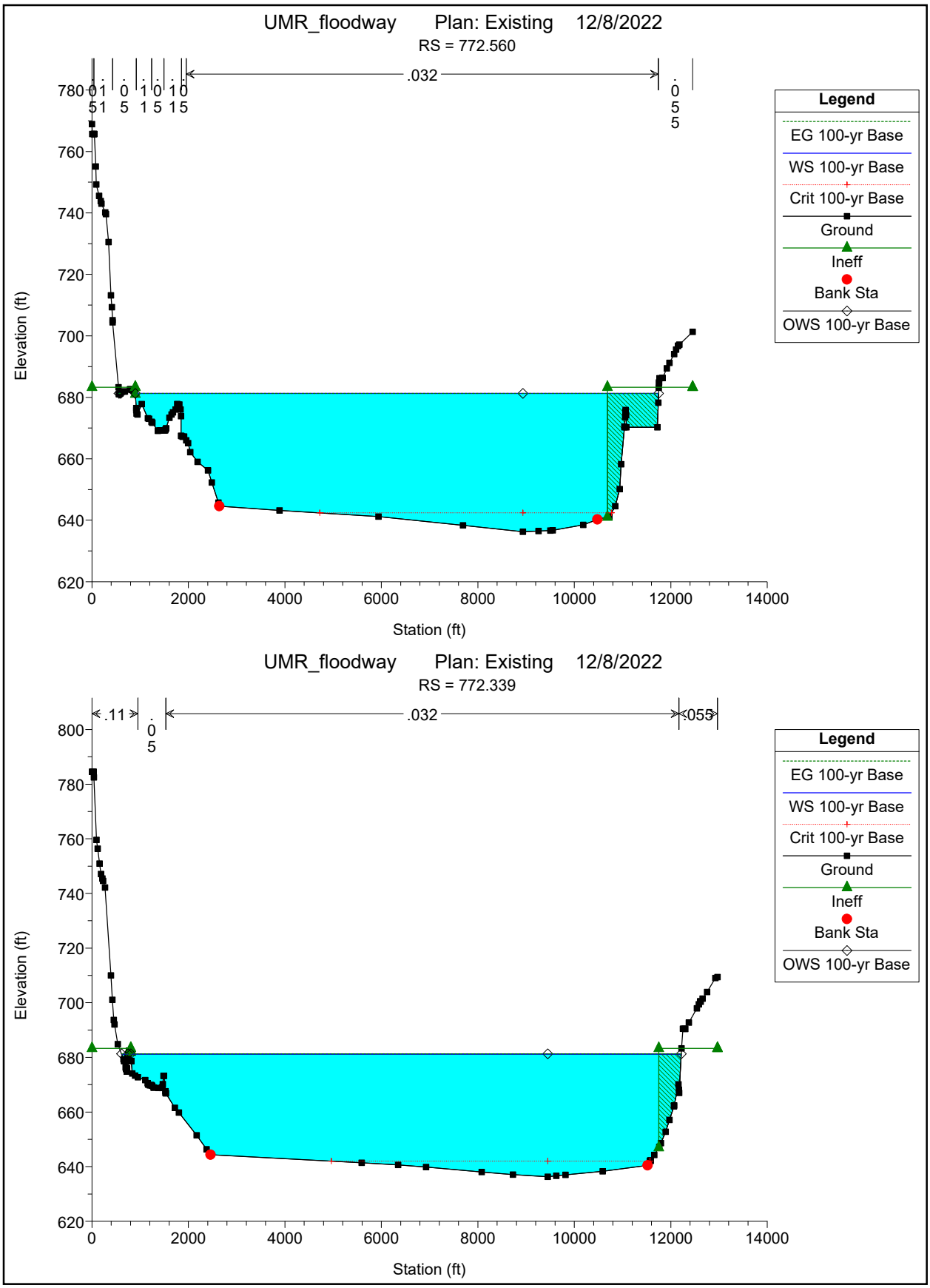

UMR_floodway Plan: Existing 12/8/2022
RS = 776.665
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 776.002
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

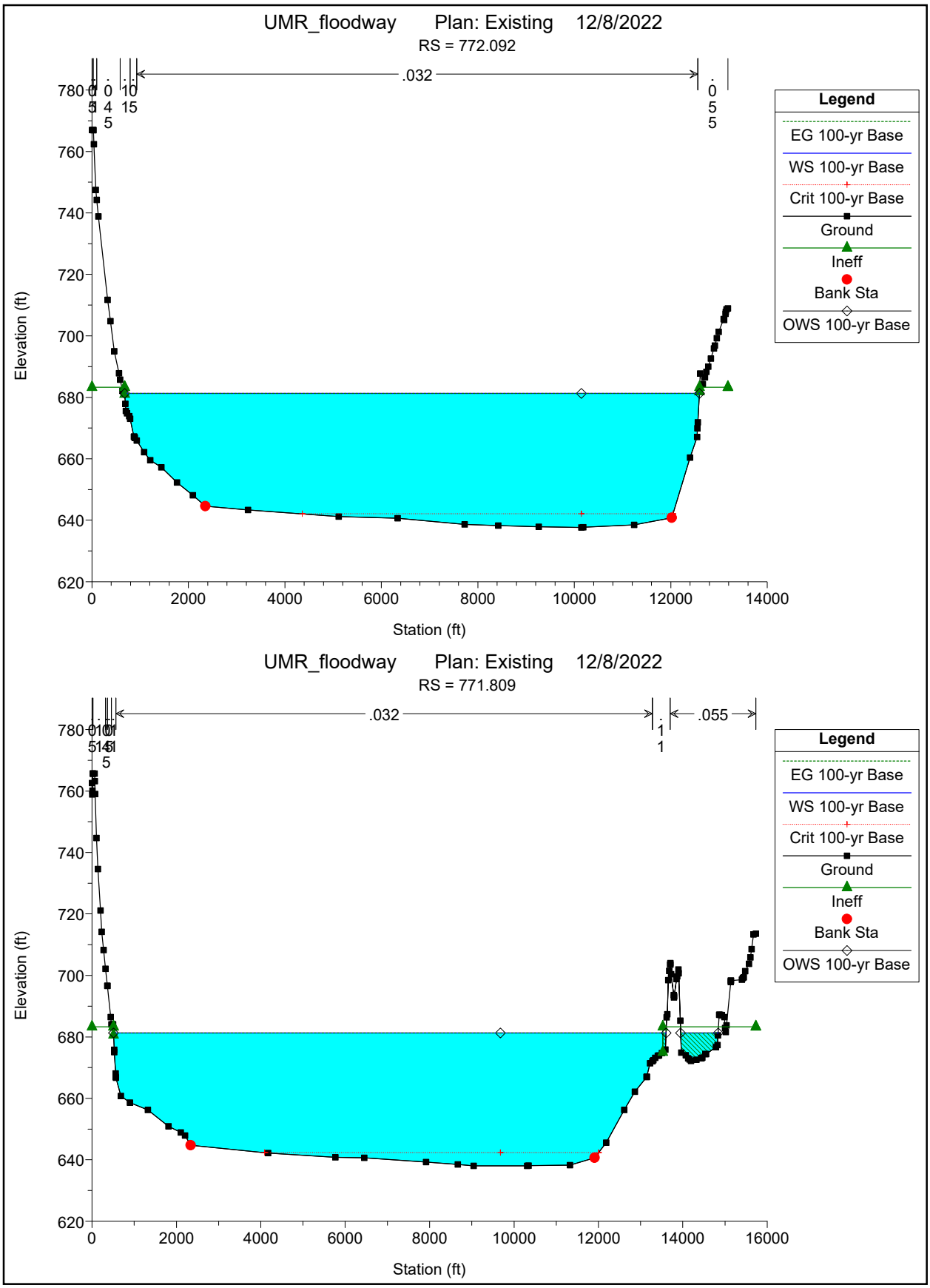

UMR_floodway Plan: Existing 12/8/2022
RS = 775.186
.05
.08
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 774.739
.08
.032
.055
.11
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

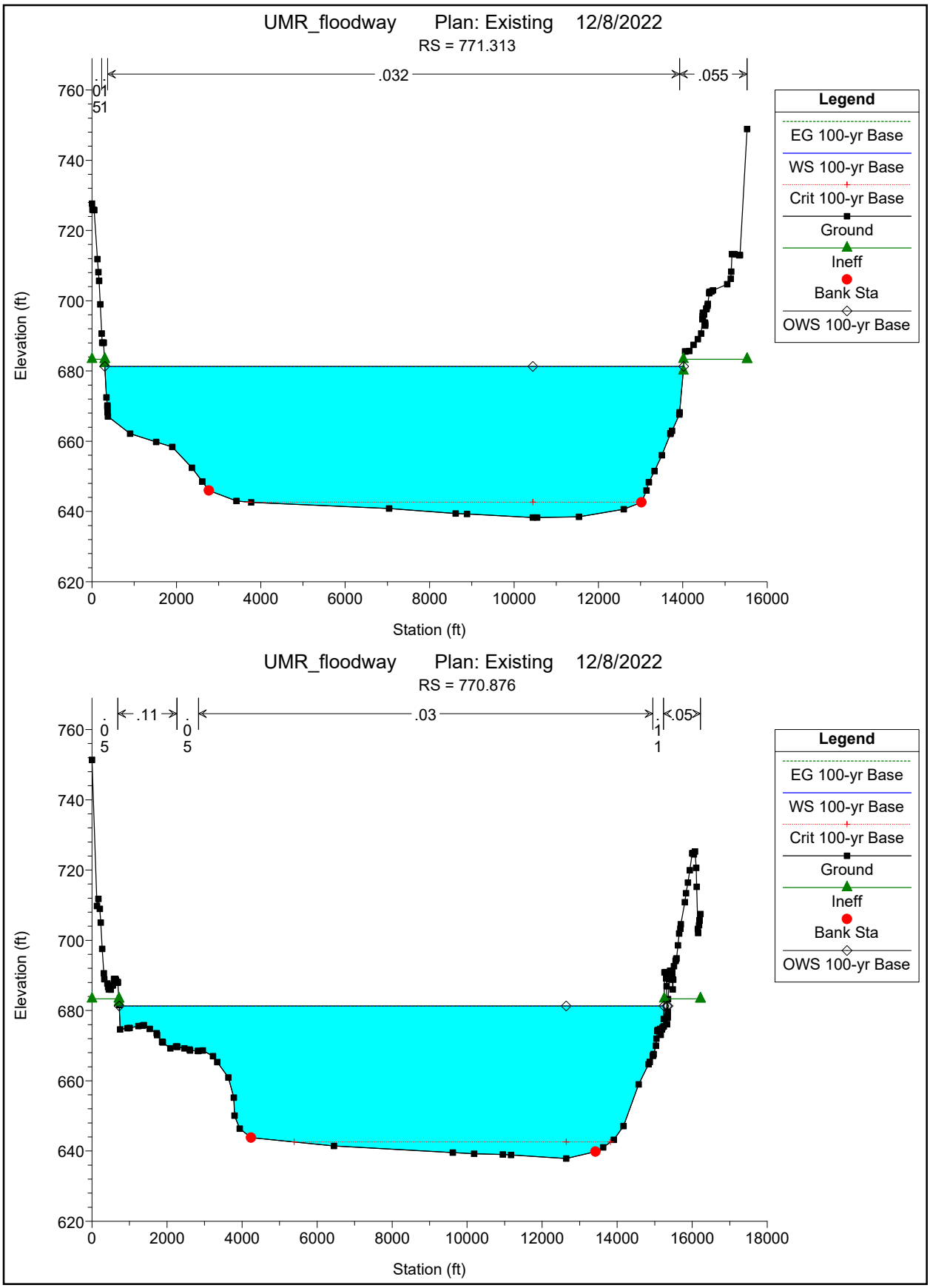

UMR_floodway Plan: Existing 12/8/2022
RS = 774.330
.08
.032
.05
.05
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 774.110
.055
.11
.05
.11
.08
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

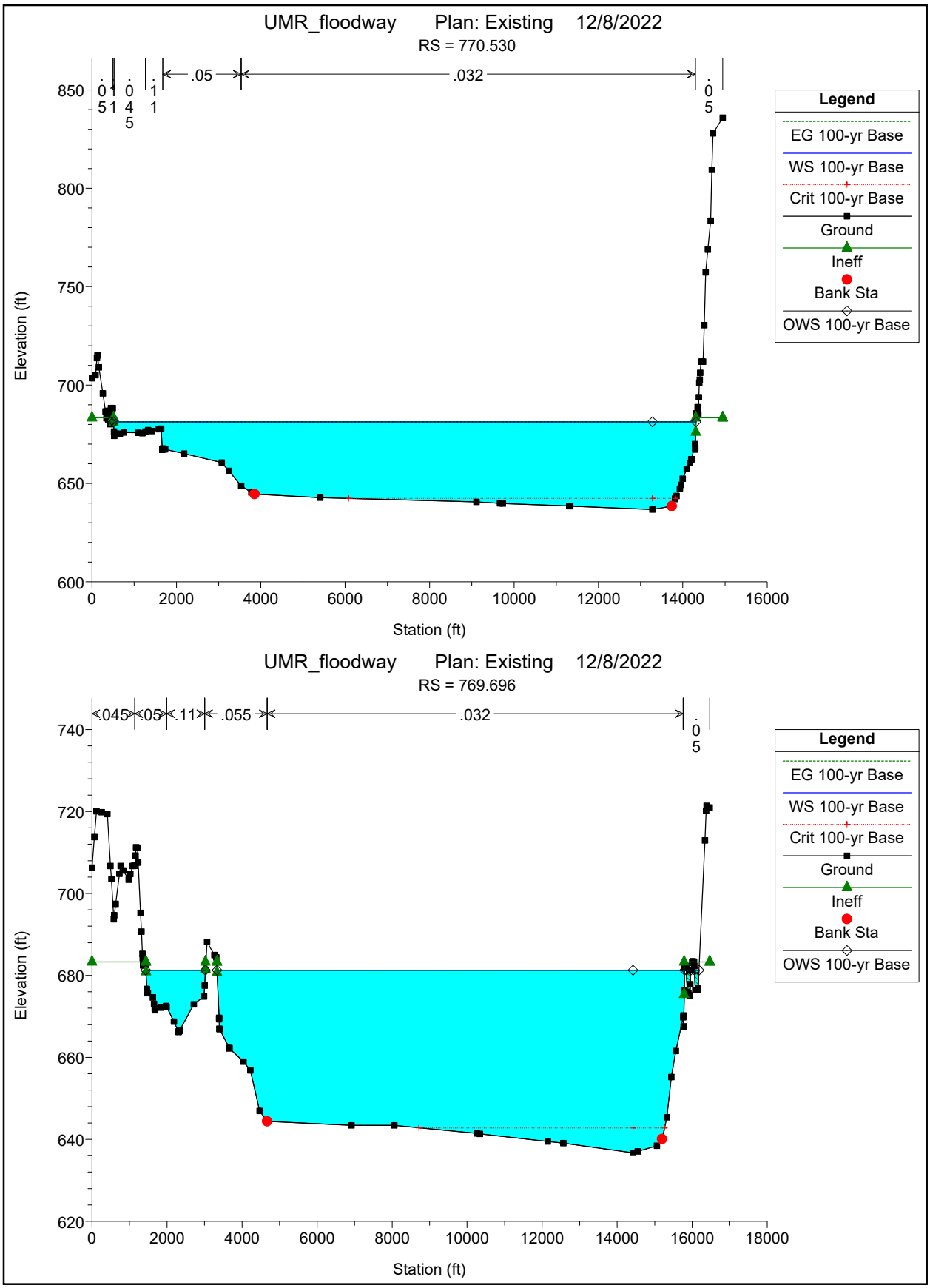

UMR_floodway Plan: Existing 12/8/2022
RS = 773.832
.05
.032
.055
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 773.623
.05
.032
.055
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

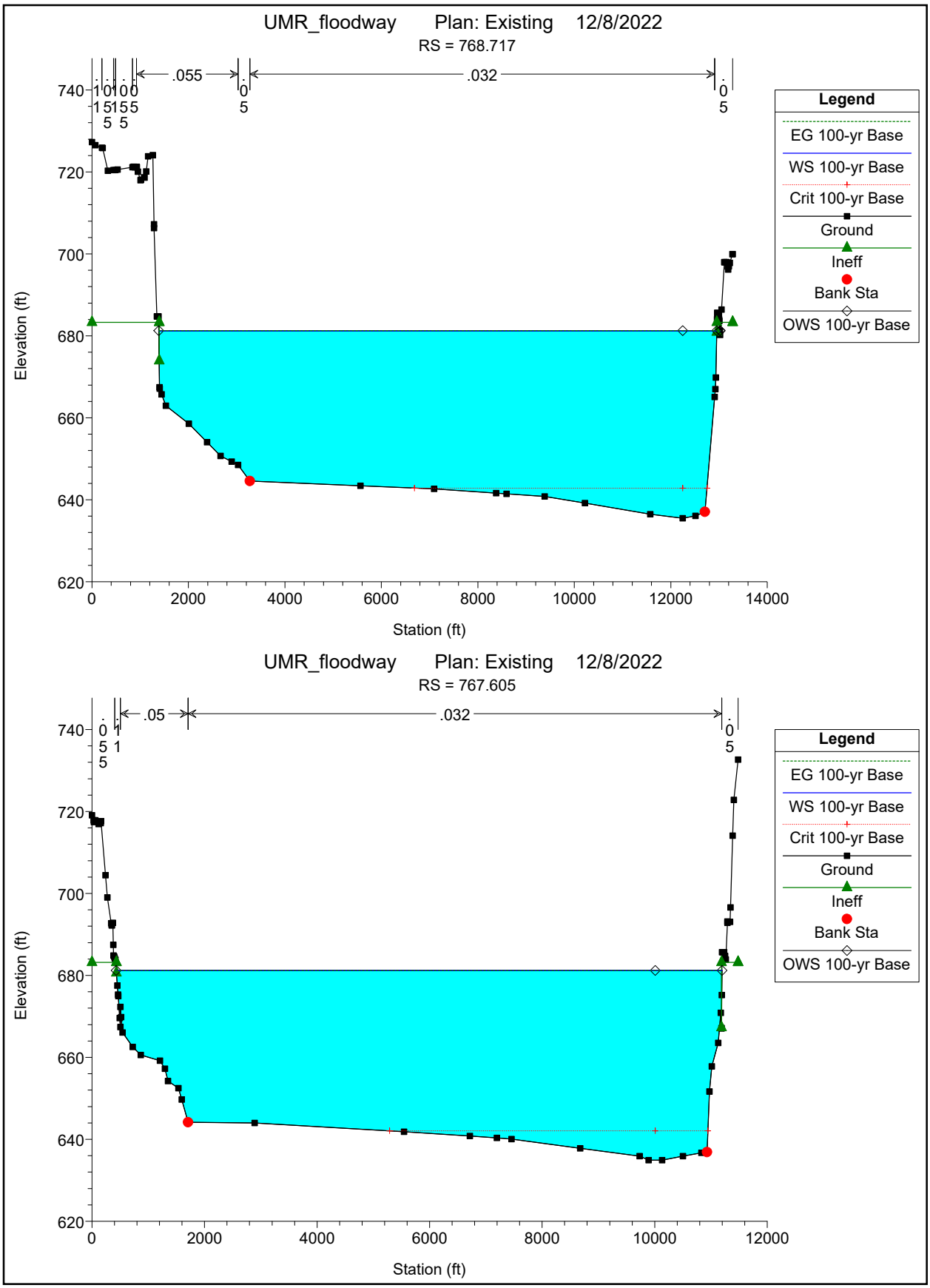

UMR_floodway Plan: Existing 12/8/2022
RS = 773.342
.11
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 772.832
.032
.055
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

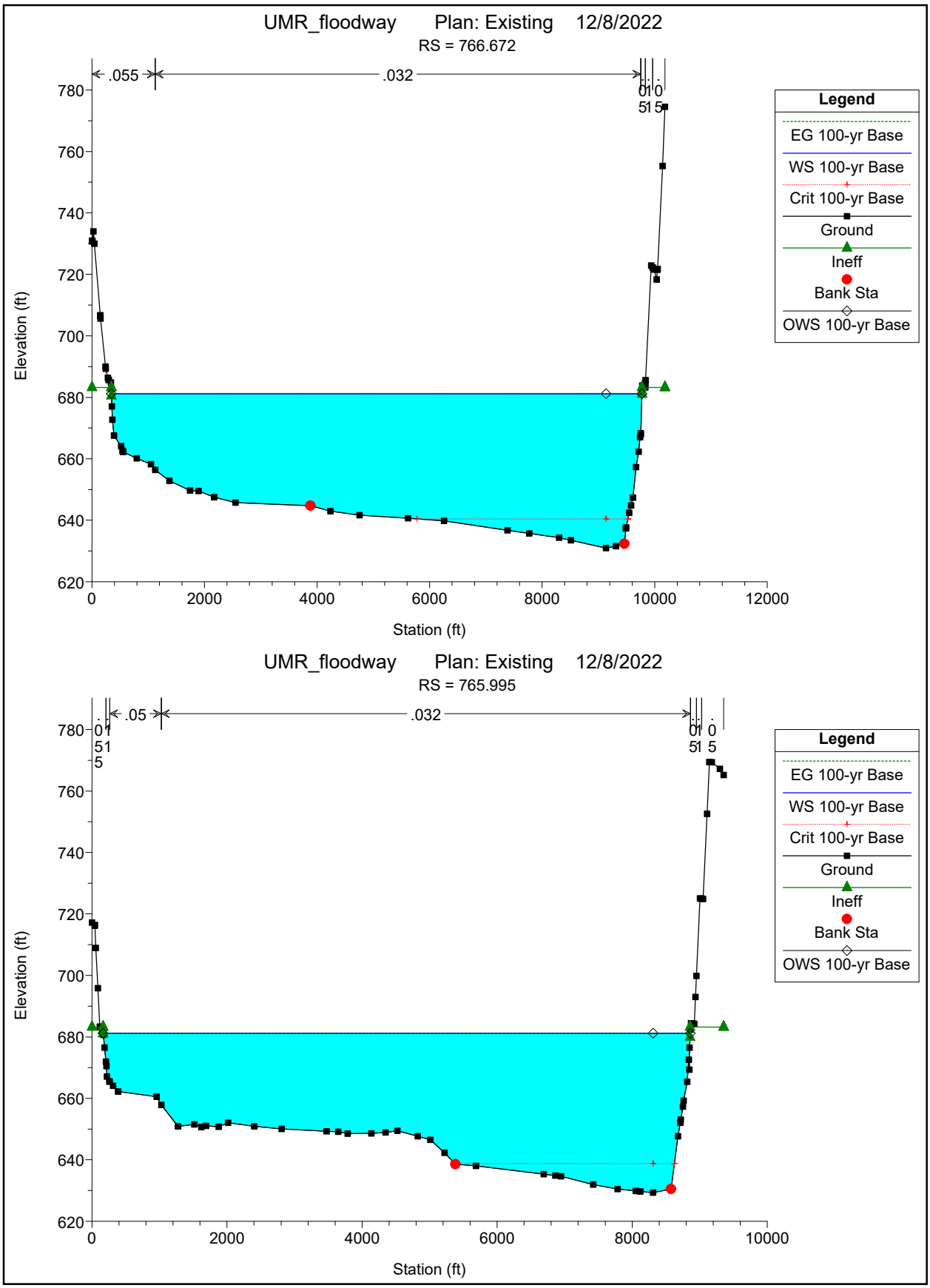

UMR_floodway Plan: Existing 12/8/2022
RS = 772.560
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 772.339
.11
.032
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

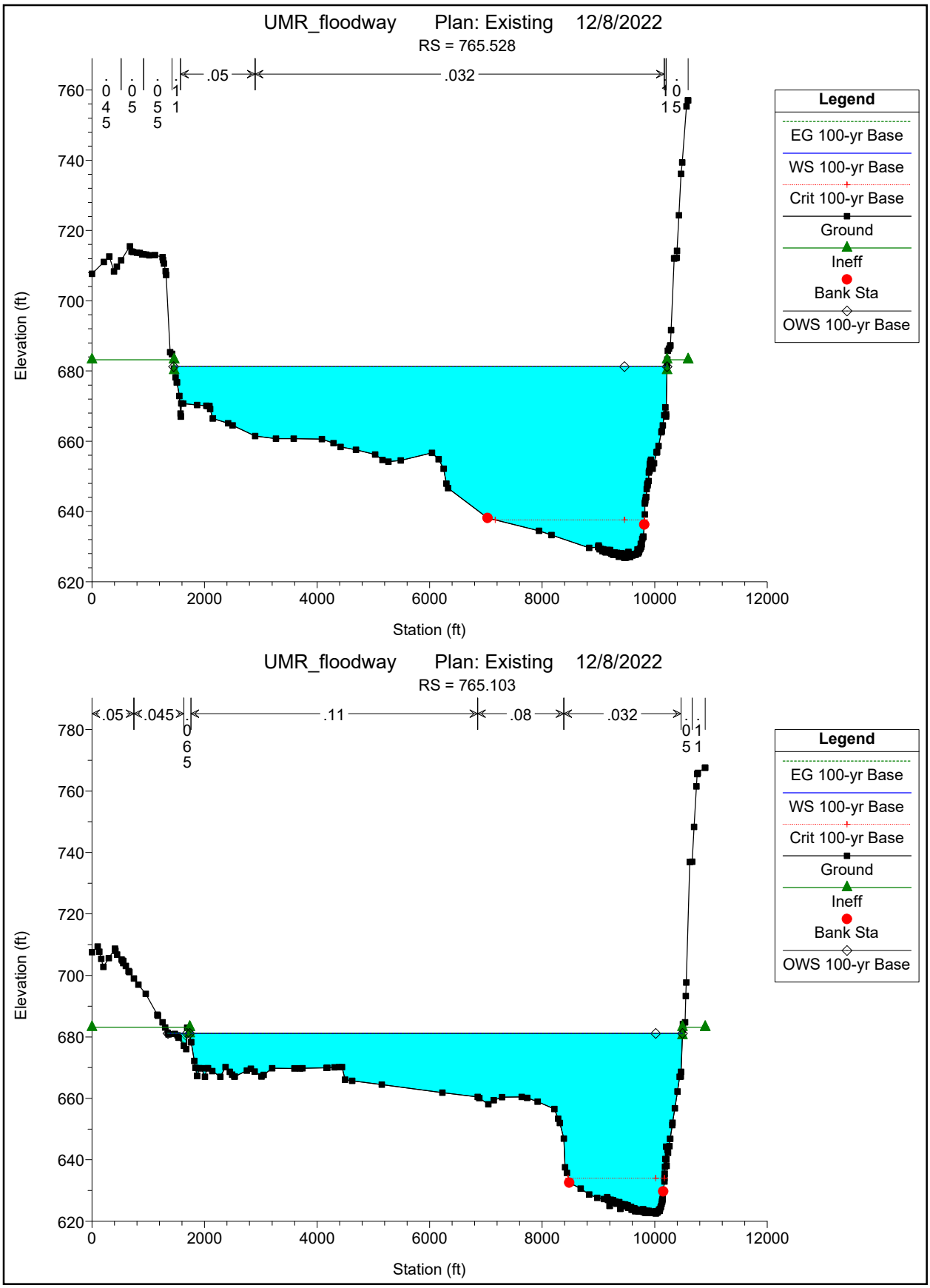

UMR_floodway Plan: Existing 12/8/2022
RS = 772.092
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 771.809
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

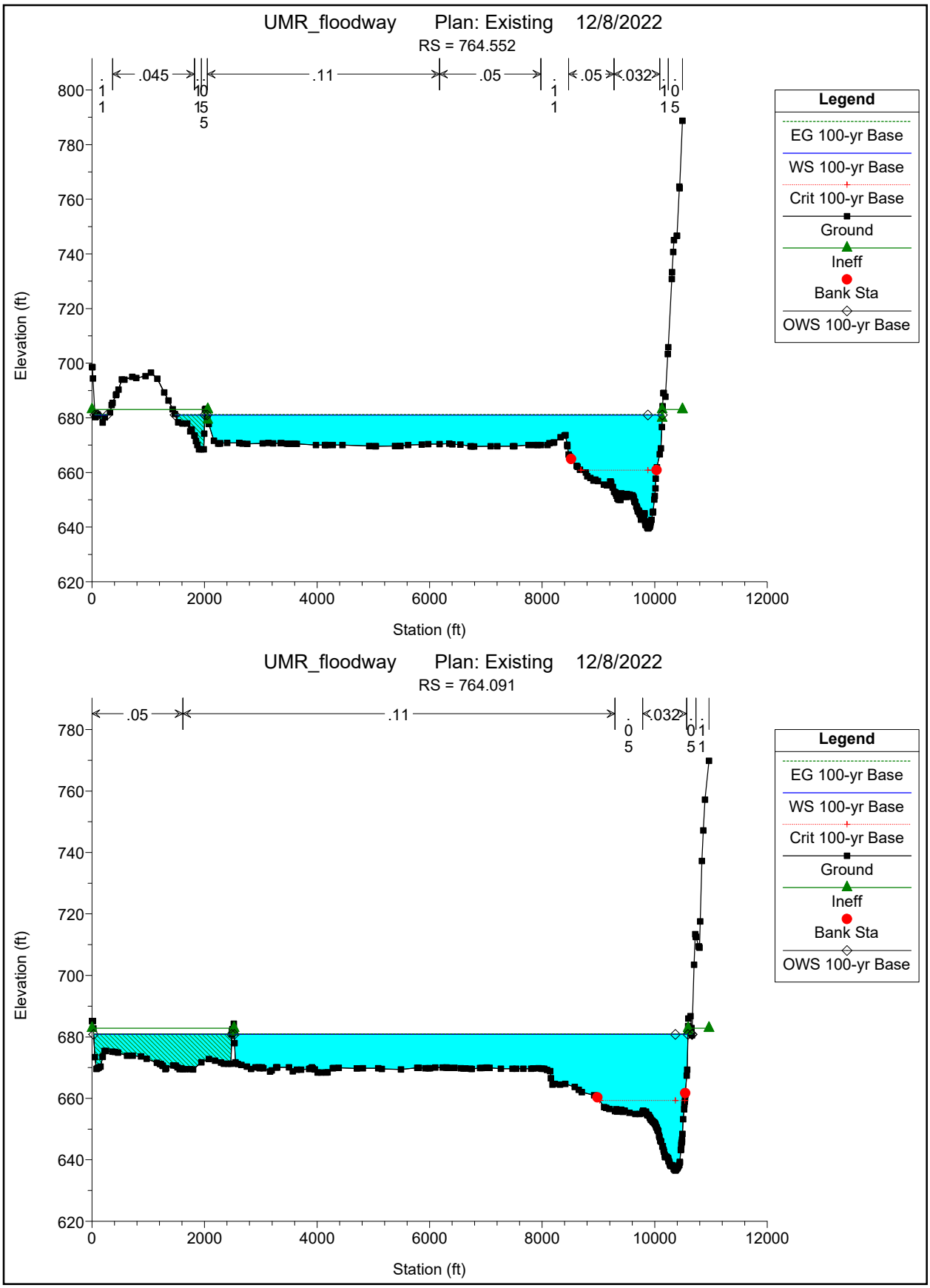

UMR_floodway Plan: Existing 12/8/2022
RS = 771.313
.032
.055
.01
51
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 770.876
.11
.03
.05
.05
.05
.1
1
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)

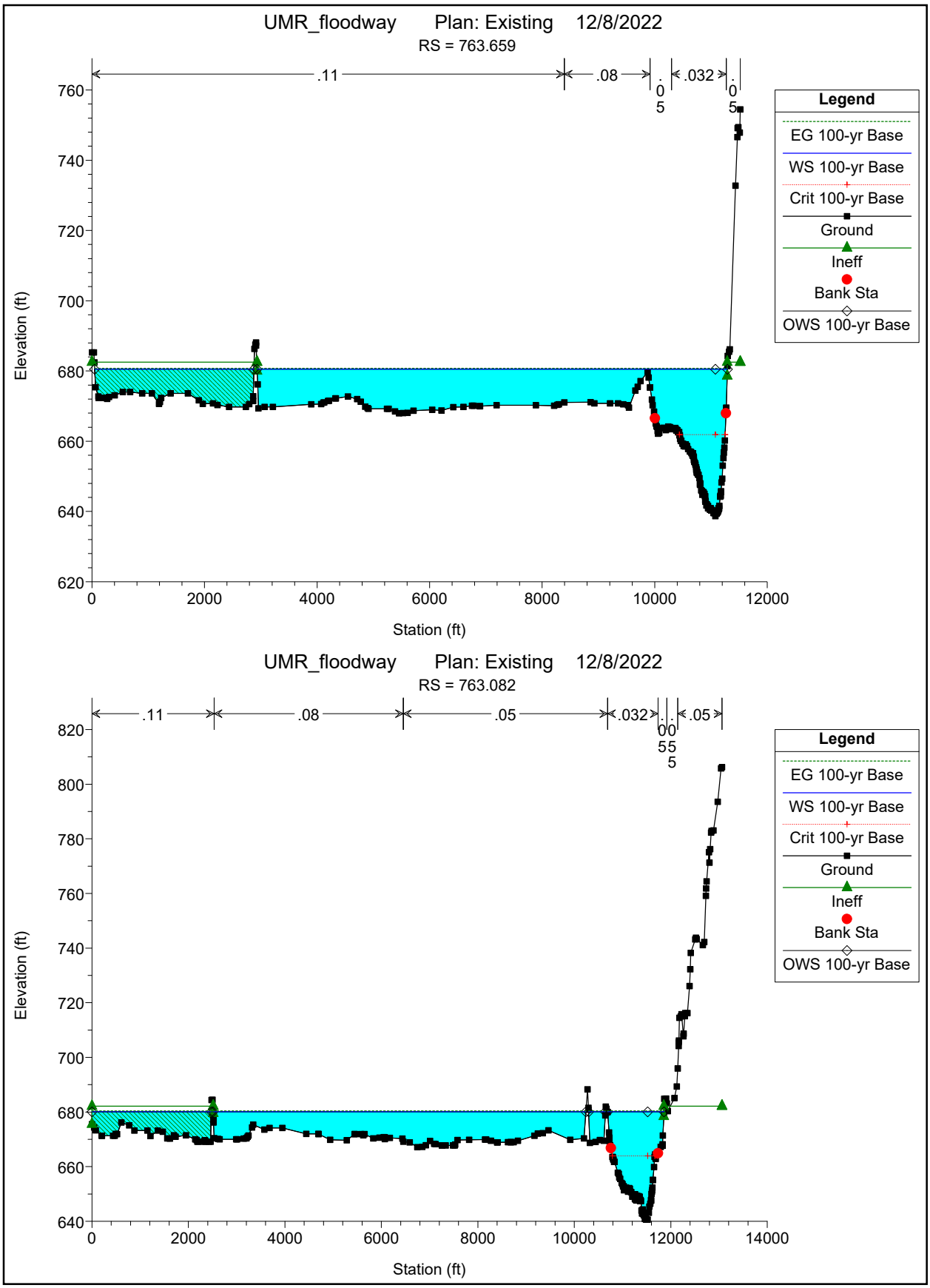

UMR_floodway Plan: Existing 12/8/2022
RS = 770.530
.05
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 769.696
.045
.05
.11
.055
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

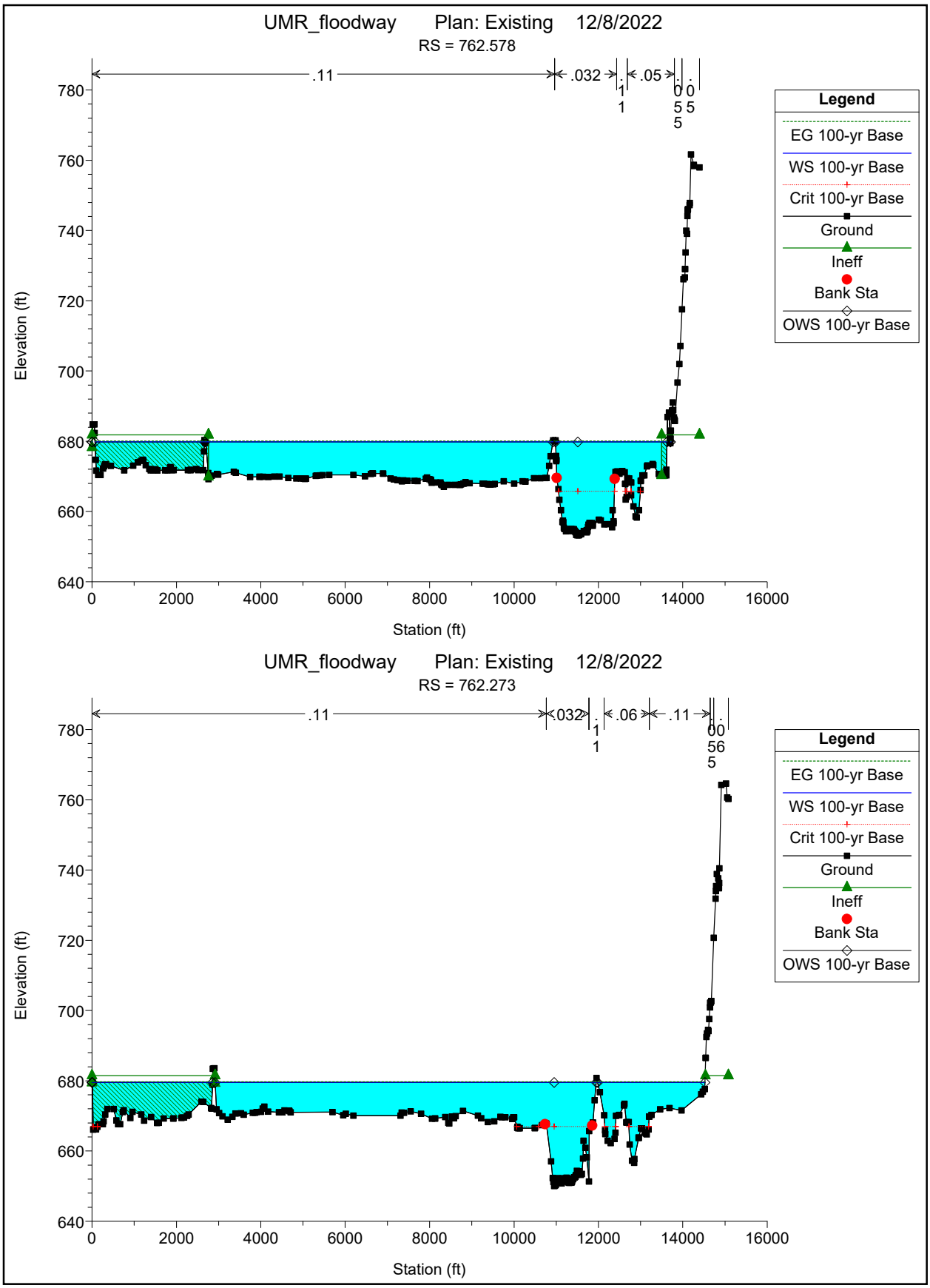

UMR_floodway Plan: Existing 12/8/2022
RS = 768.717
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
UMR_floodway Plan: Existing 12/8/2022
RS = 767.605
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000

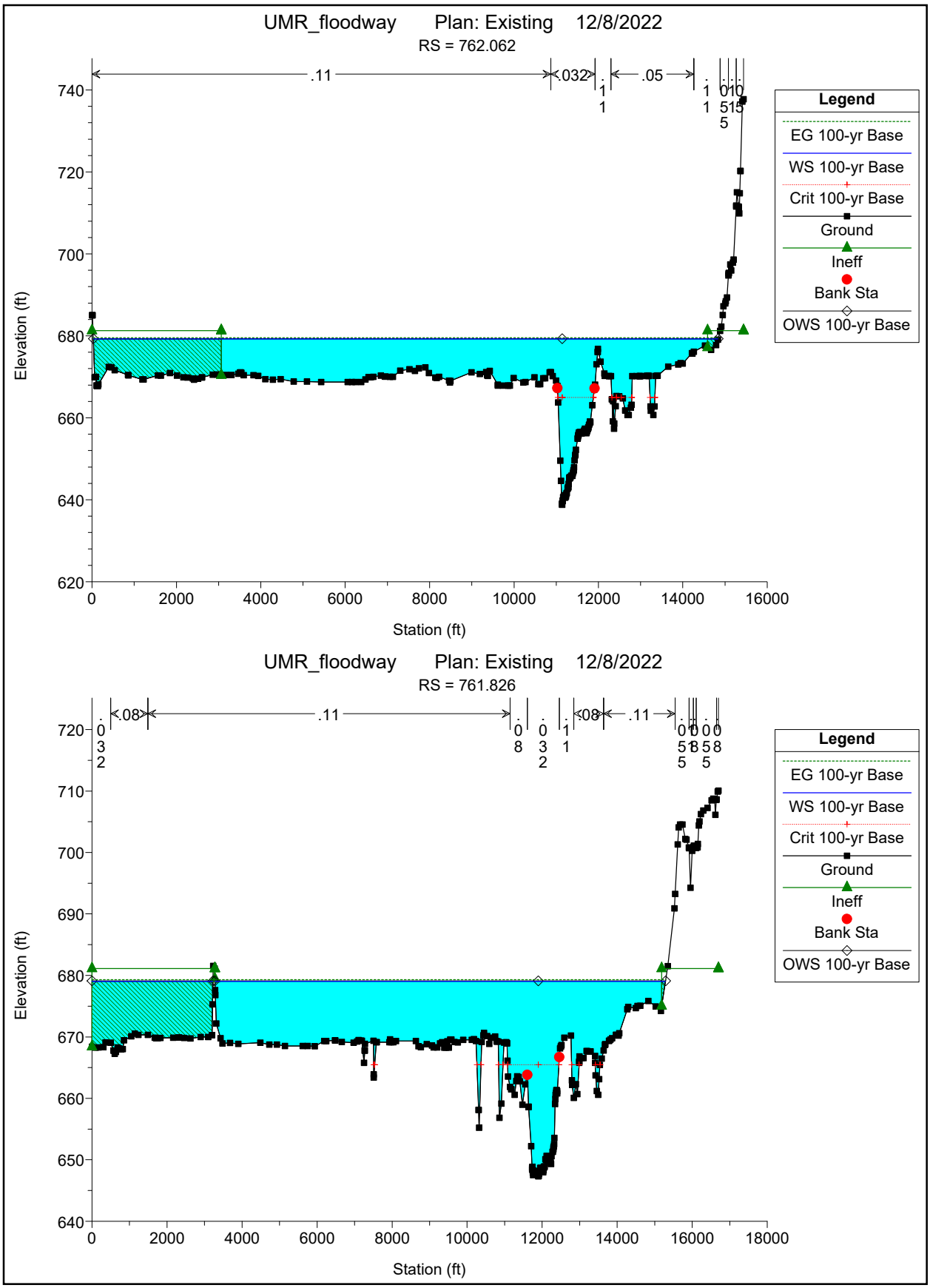

UMR_floodway Plan: Existing 12/8/2022
RS = 766.672
.055
.032
0 1 0
5 1 5
780
760
740
720
700
680
660
640
620
Elevation (ft)
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 765.995
.05
.032
0 1
5 1
5
0 1 0
5 1 5
780
760
740
720
700
680
660
640
620
Elevation (ft)
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

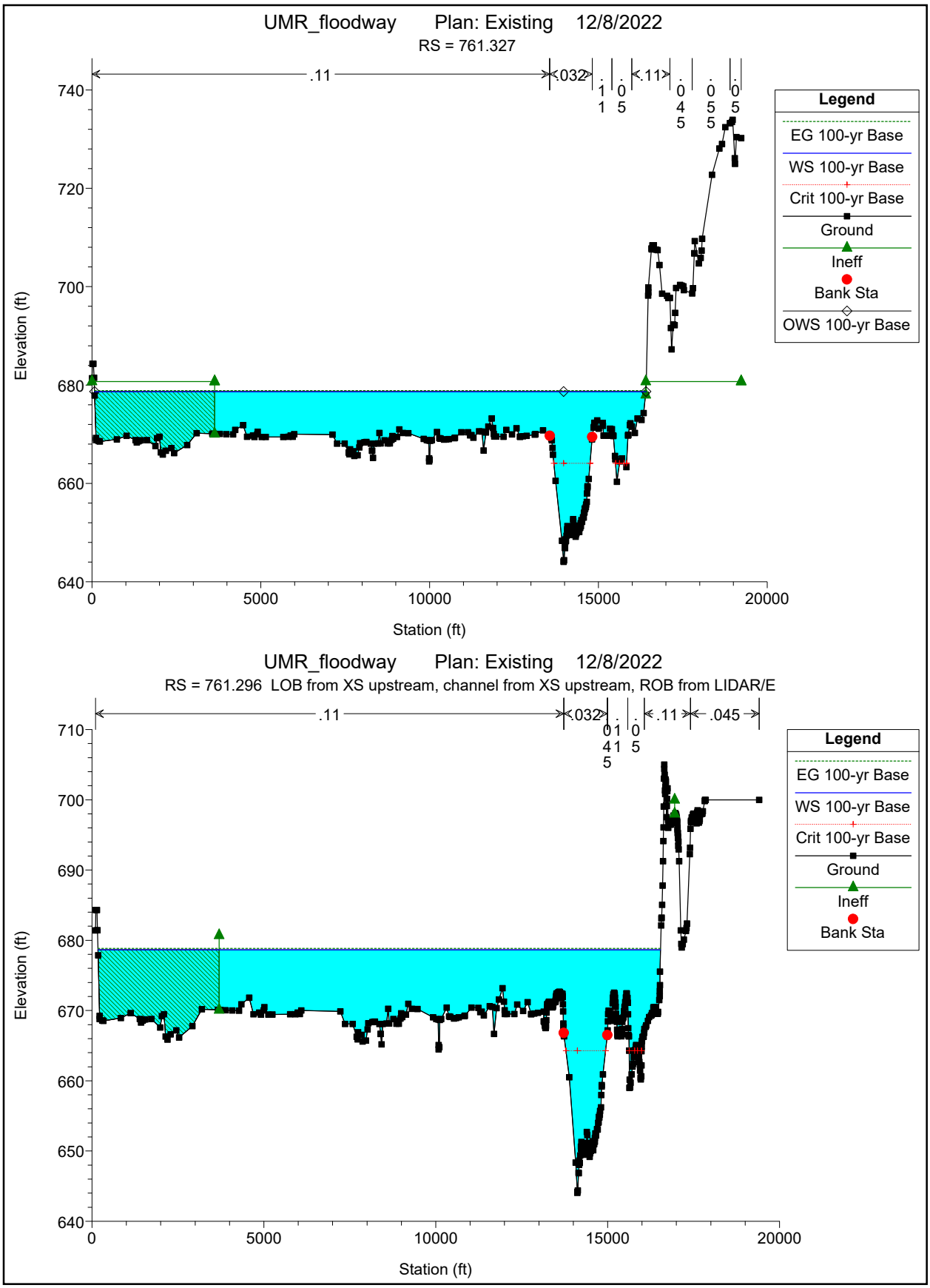

UMR_floodway Plan: Existing 12/8/2022
RS = 765.528
.045
.05
.055
.11
.05
.032
.015
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 765.103
.05
.045
.065
.11
.08
.032
.015
.11
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

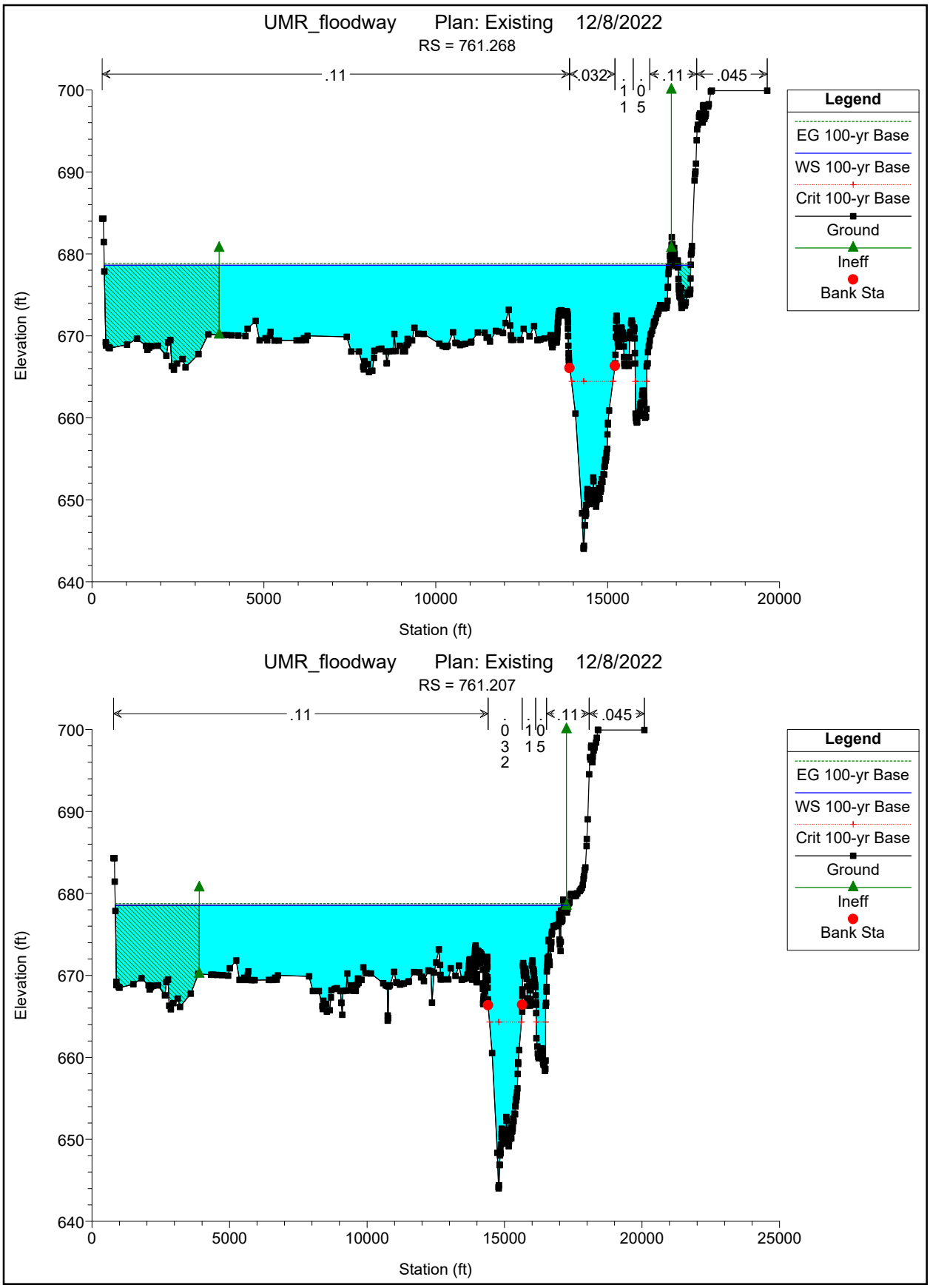

UMR_floodway Plan: Existing 12/8/2022
RS = 764.552
.045
.11
.05
.05
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 764.091
.05
.11
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

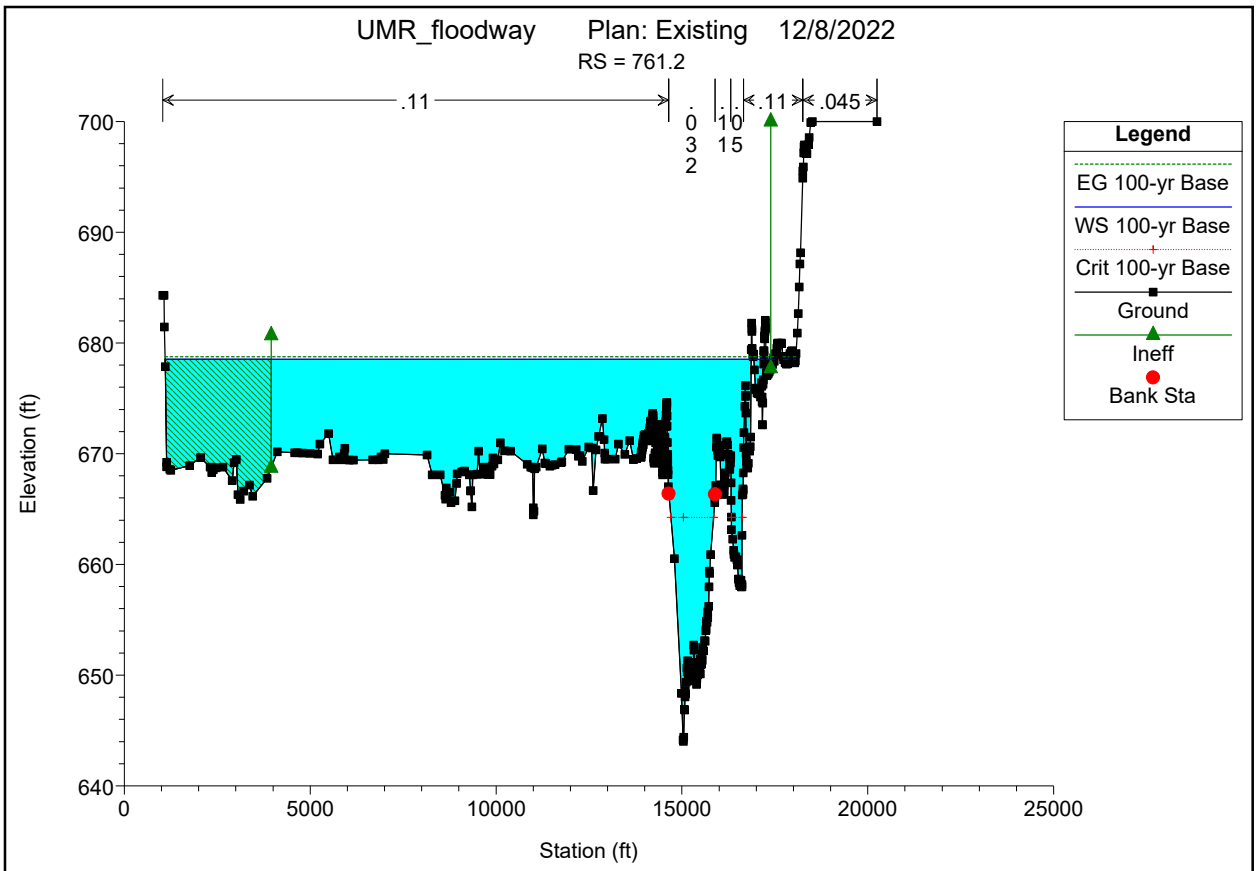

UMR_floodway Plan: Existing 12/8/2022
RS = 763.659
.11
.08
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 763.082
.11
.08
.05
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

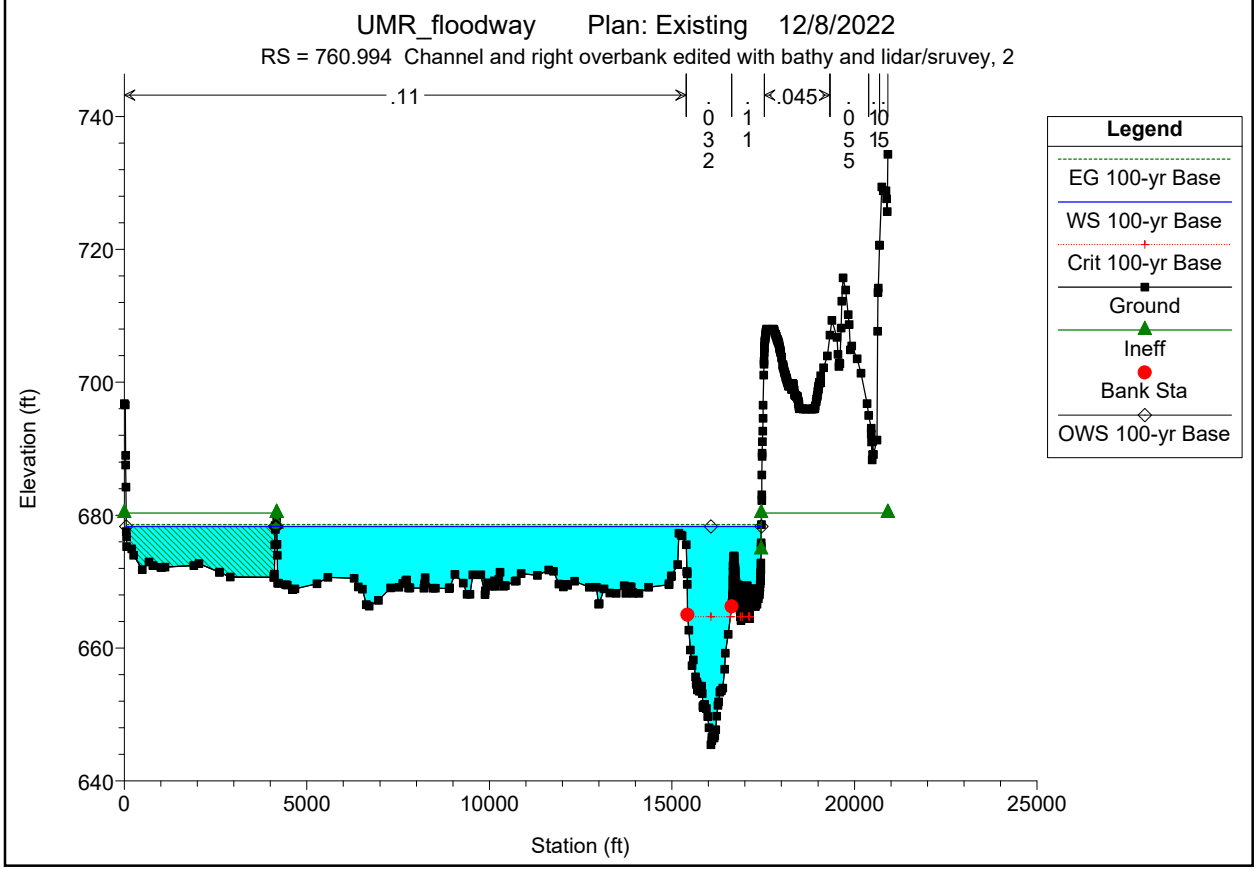

UMR_floodway Plan: Existing 12/8/2022
RS = 762.578
.11
.032
.05
.1
1
.0
5
.0
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 762.273
.11
.032
.06
.11
.1
1
.0
0
5
6
.0
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)

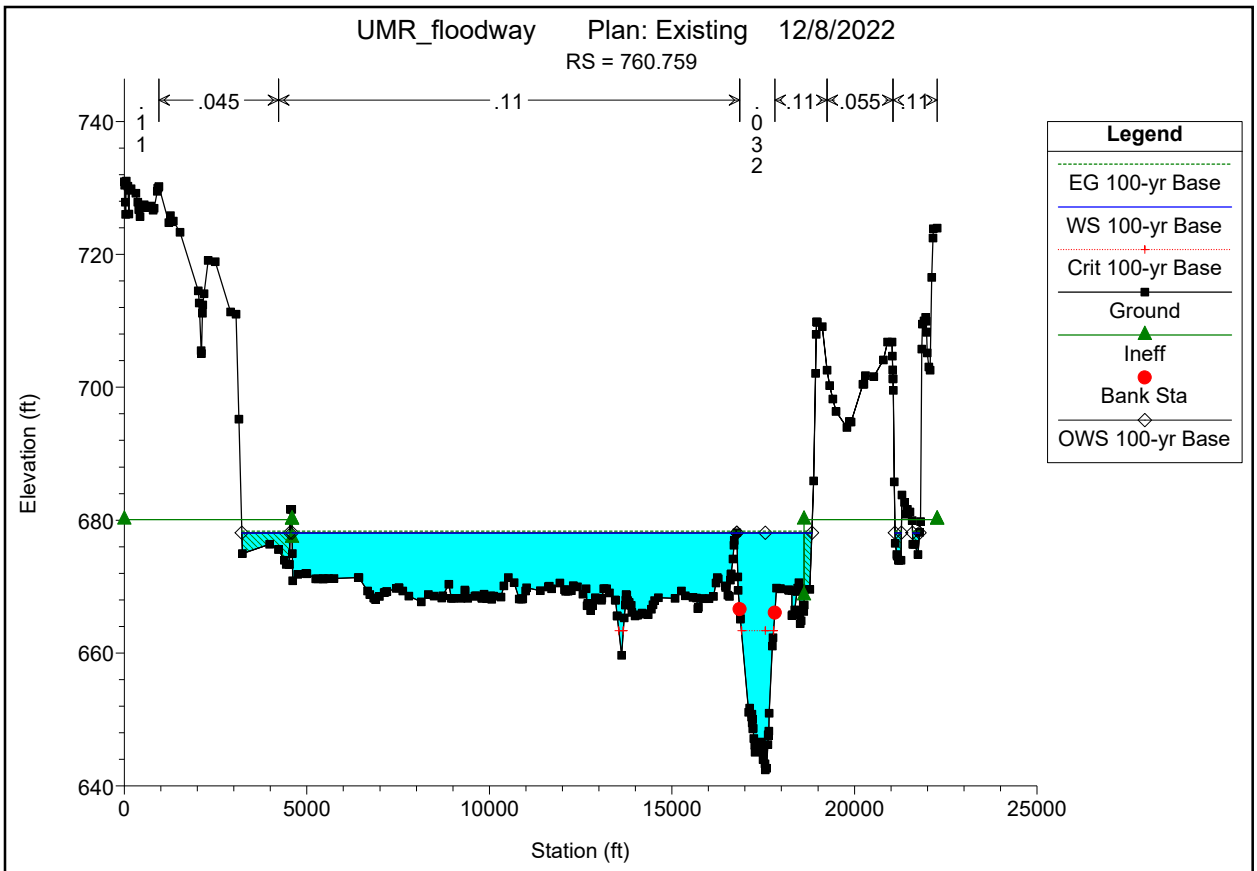

UMR_floodway Plan: Existing 12/8/2022
RS = 762.062
.11
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 761.826
.08
.11
.08
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

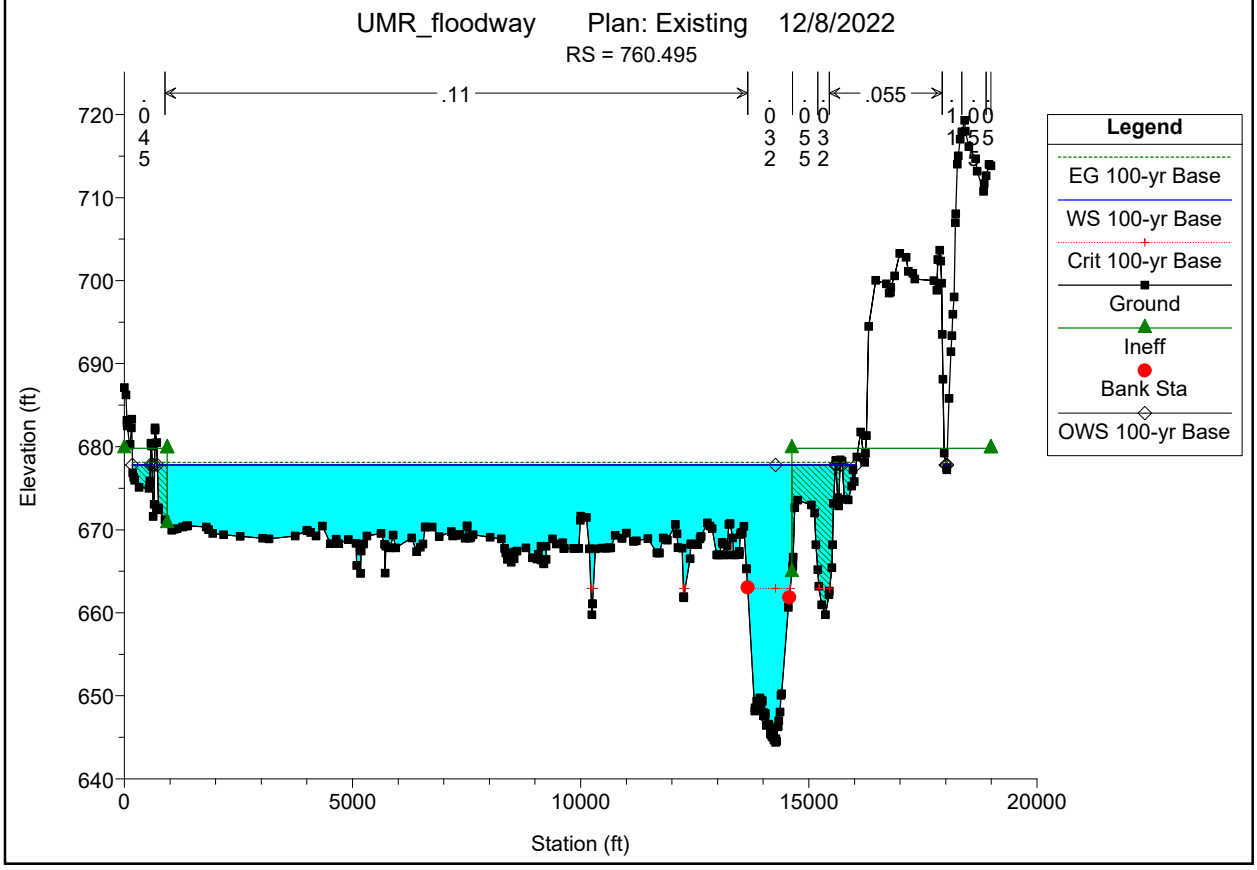

UMR_floodway Plan: Existing 12/8/2022
RS = 761.327
.11
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 761.296 LOB from XS upstream, channel from XS upstream, ROB from LIDAR/E
.11
.032
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

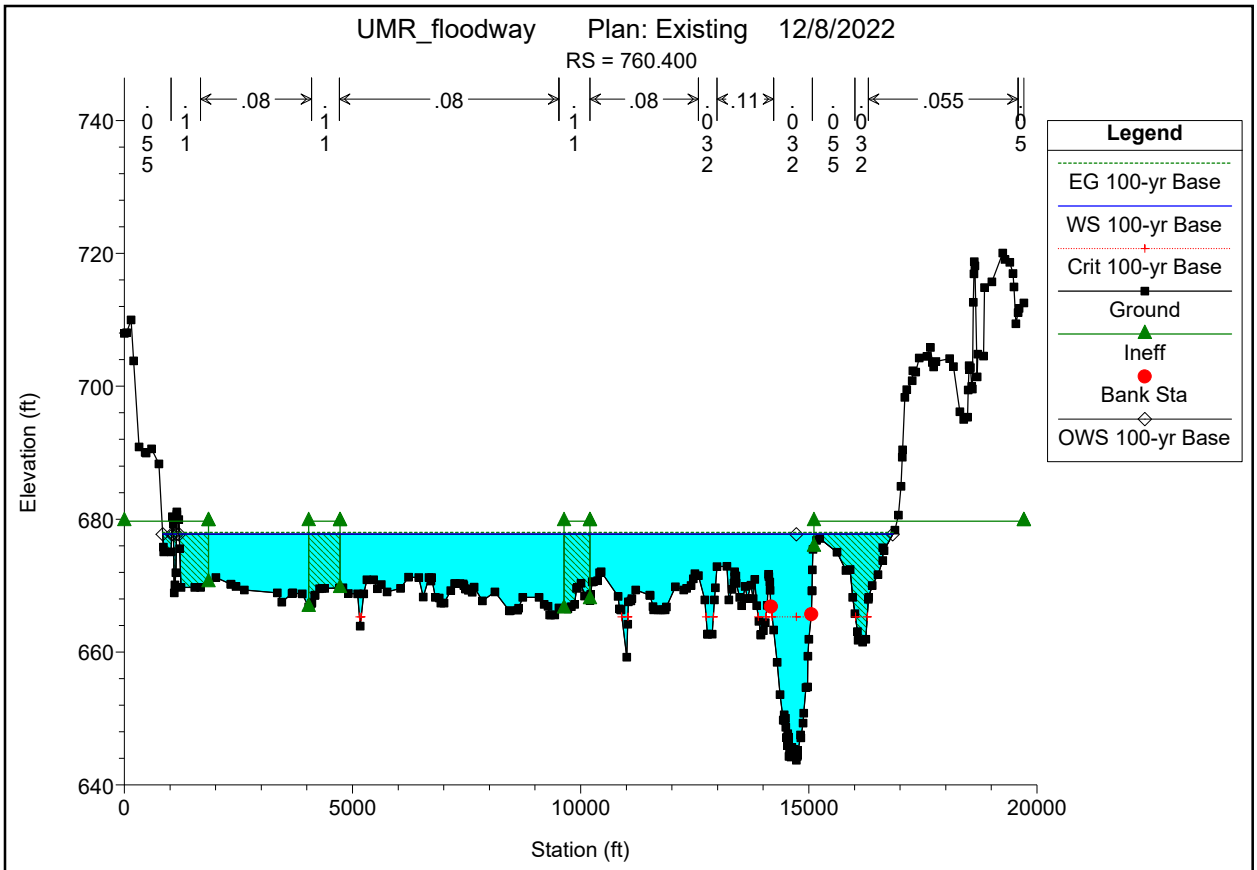

UMR_floodway Plan: Existing 12/8/2022
RS = 761.268
.11
.032
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 761.207
.11
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

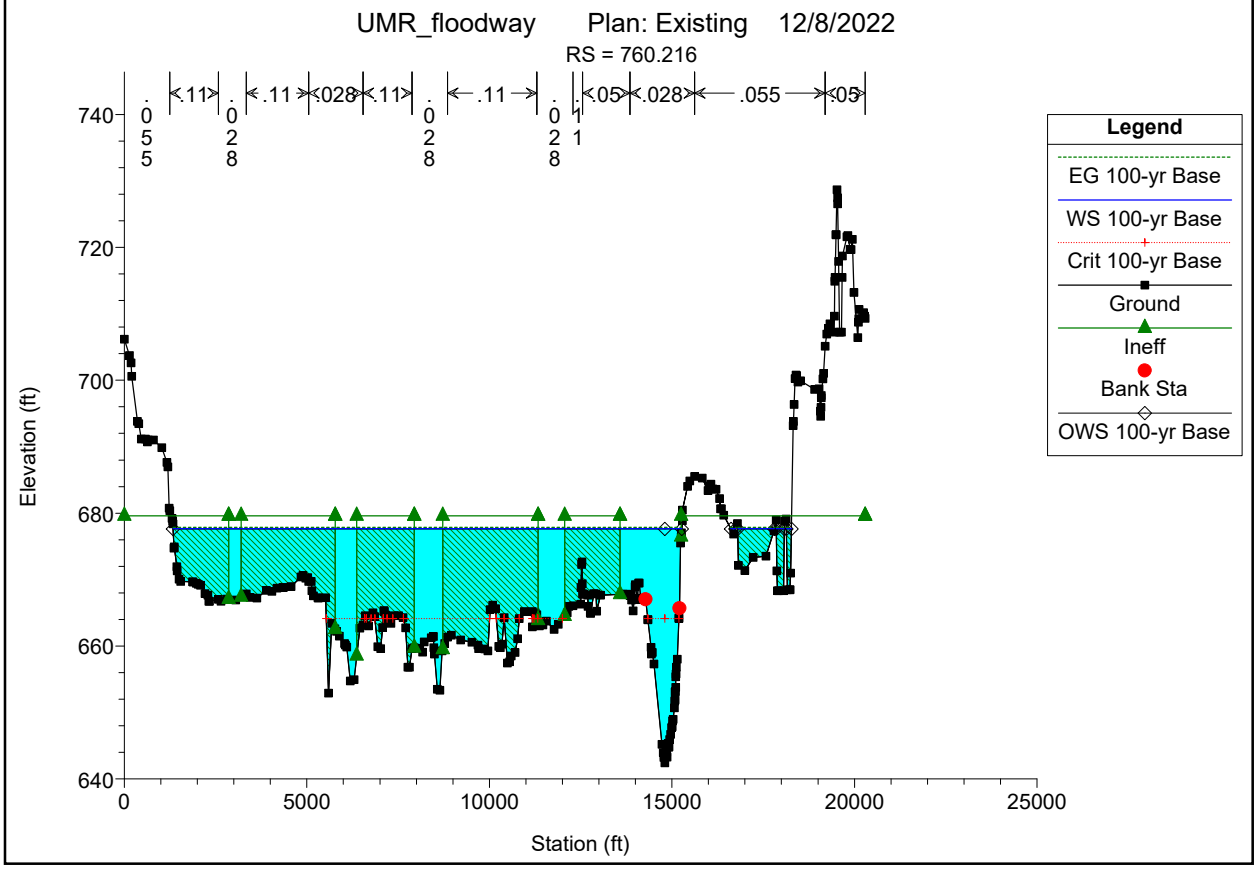

UMR_floodway Plan: Existing 12/8/2022
RS = 761.2
.11
.032
.1
.15
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
700
690
680
670
660
650
640
0
5000
10000
15000
20000
25000
Station (ft)

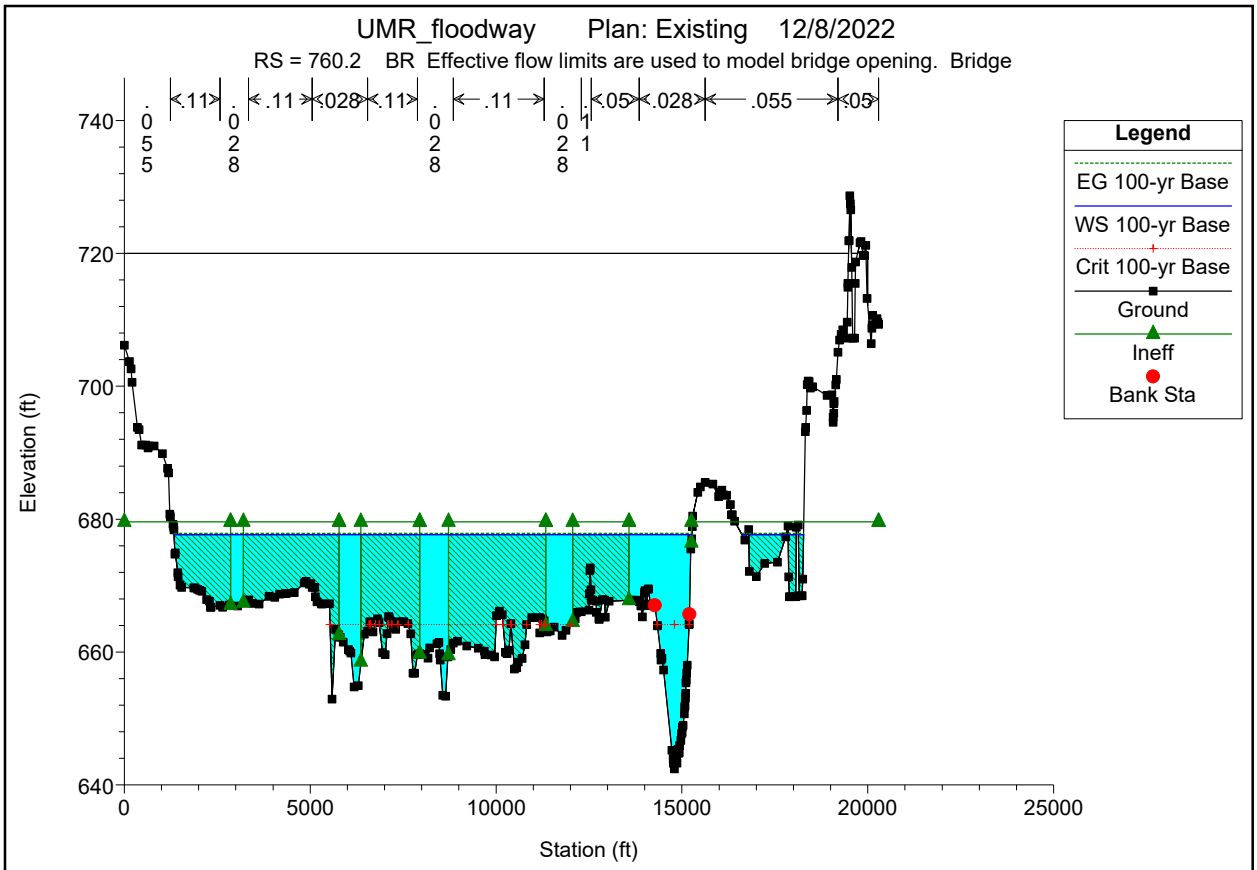

UMR_floodway Plan: Existing 12/8/2022
RS = 760.994 Channel and right overbank edited with bathy and lidar/sruvey, 2
.11
.032
.11
.045
.055
.1
.15
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)

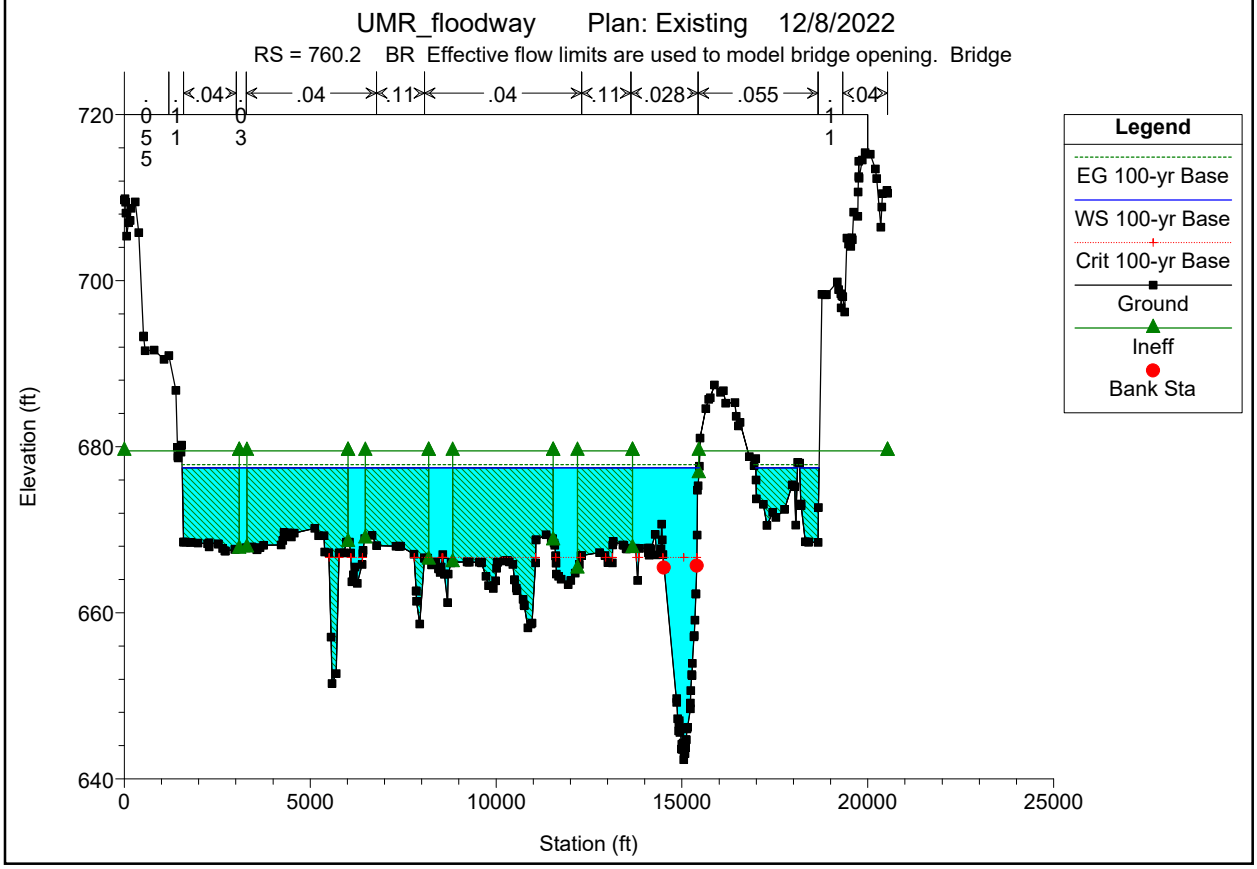

UMR_floodway Plan: Existing 12/8/2022
RS = 760.759
.045
.11
.11
.055
.11
.11
.032
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

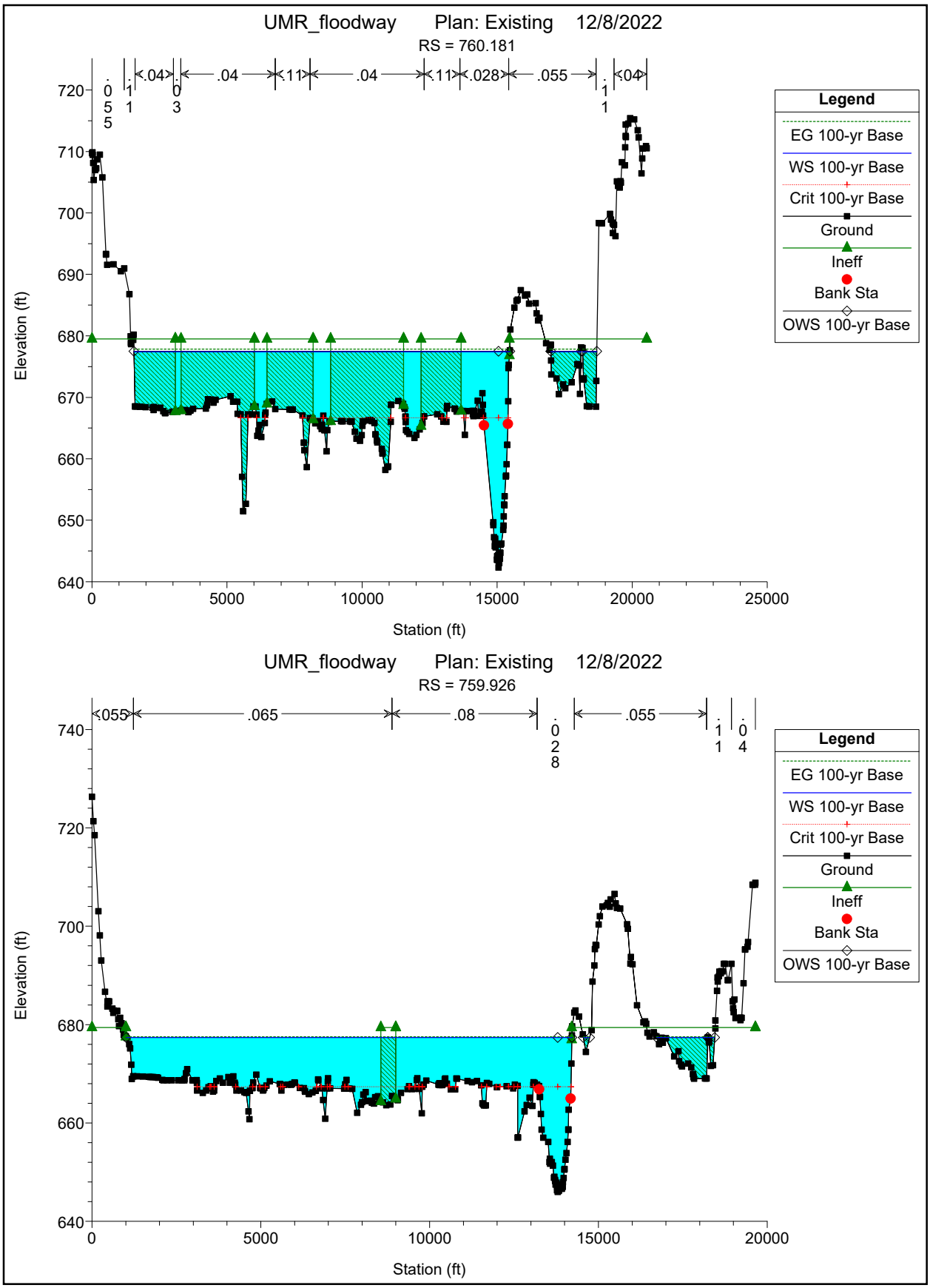

UMR_floodway Plan: Existing 12/8/2022
RS = 760.495
.11
.055
.045
.032
.0532
.1055
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

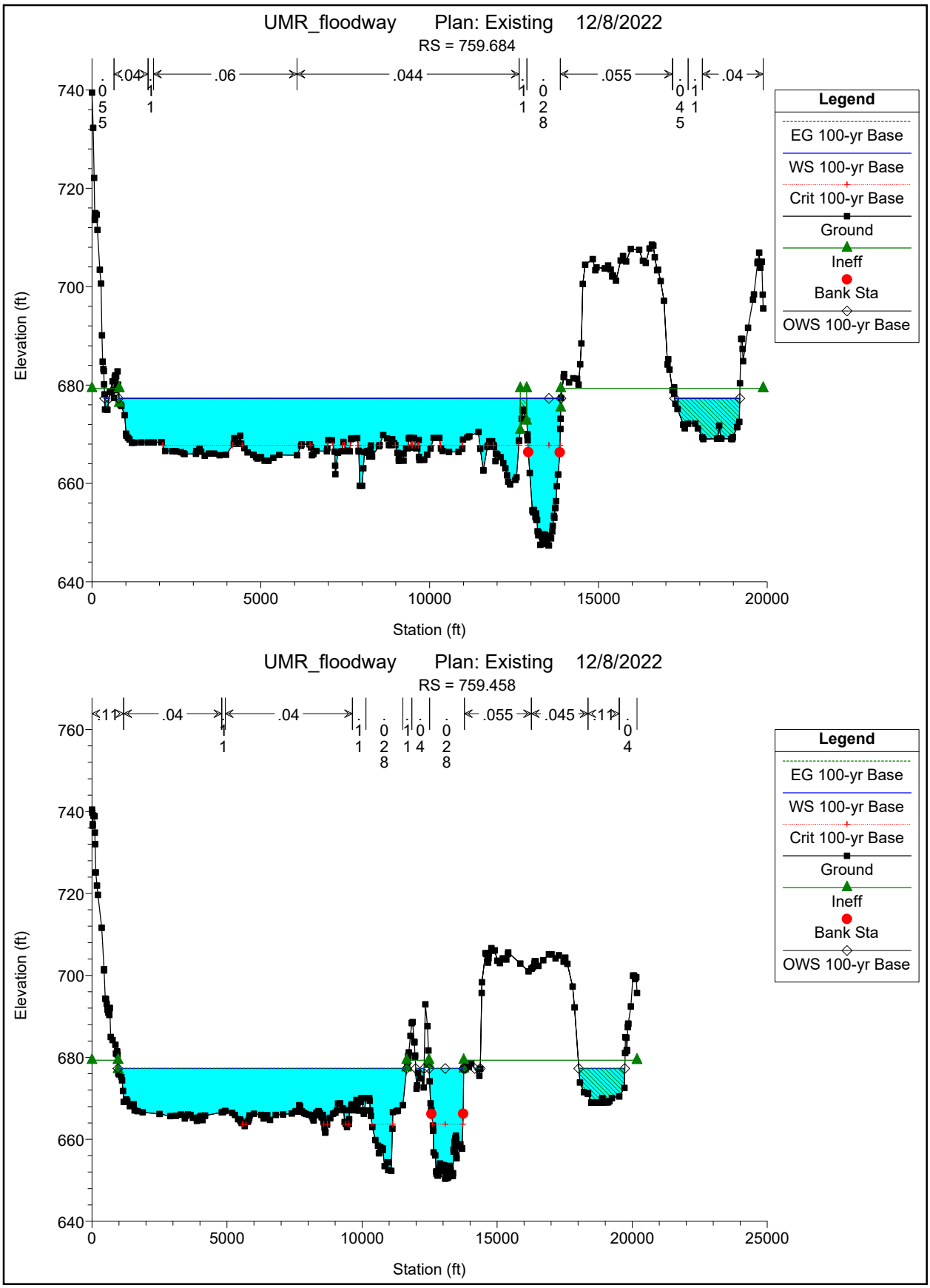

UMR_floodway Plan: Existing 12/8/2022
RS = 760.400
.055 .11 .08 .11 .08 .11 .08 .032 .11 .032 .055 .032 .055
740
720
700
680
660
640
0
5000
10000
15000
20000
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

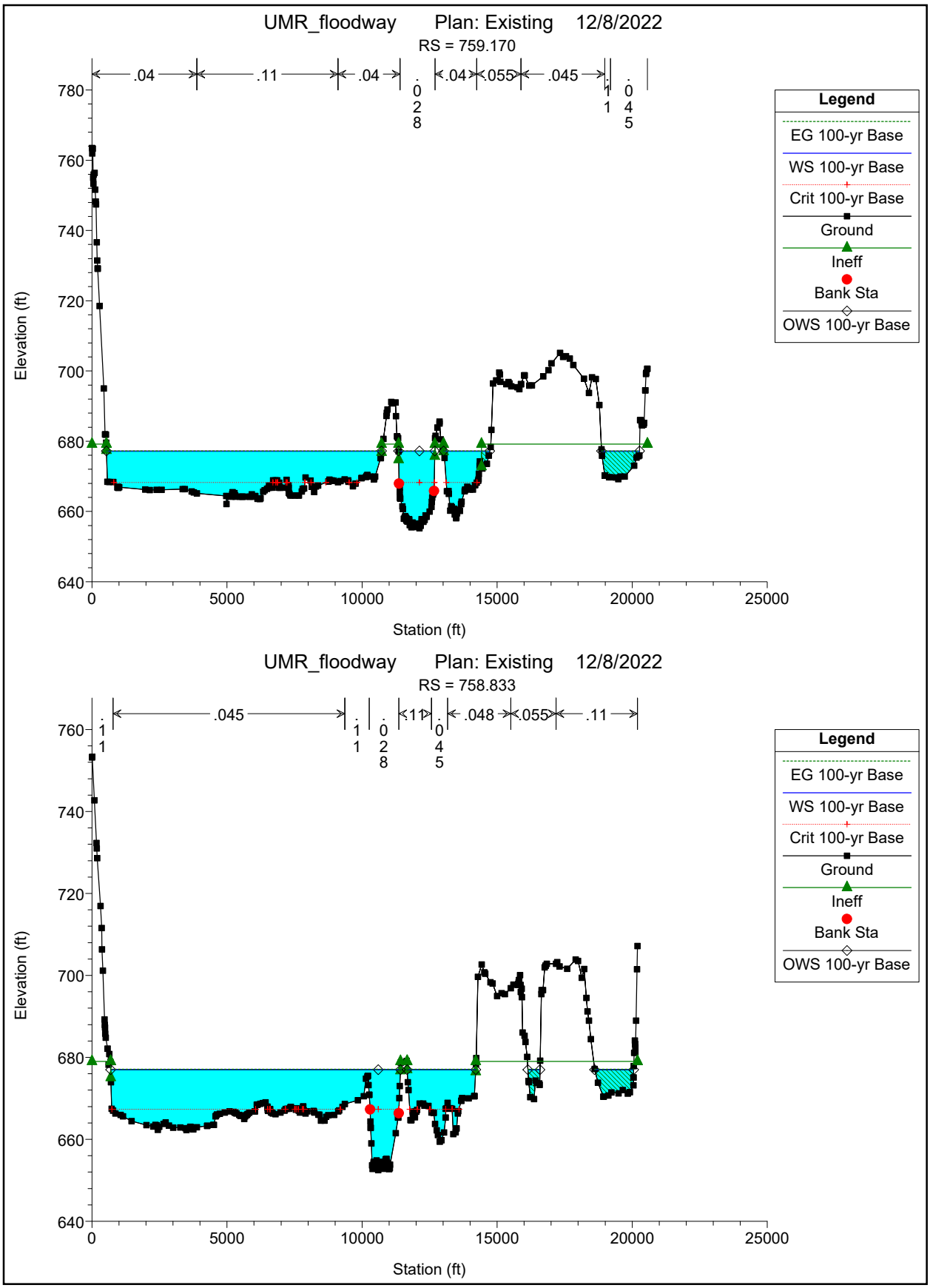

UMR_floodway Plan: Existing 12/8/2022
RS = 760.216
.055 .11 .028 .11 .028 .11 .028 .11 .028 .05 .028 .055 .05
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

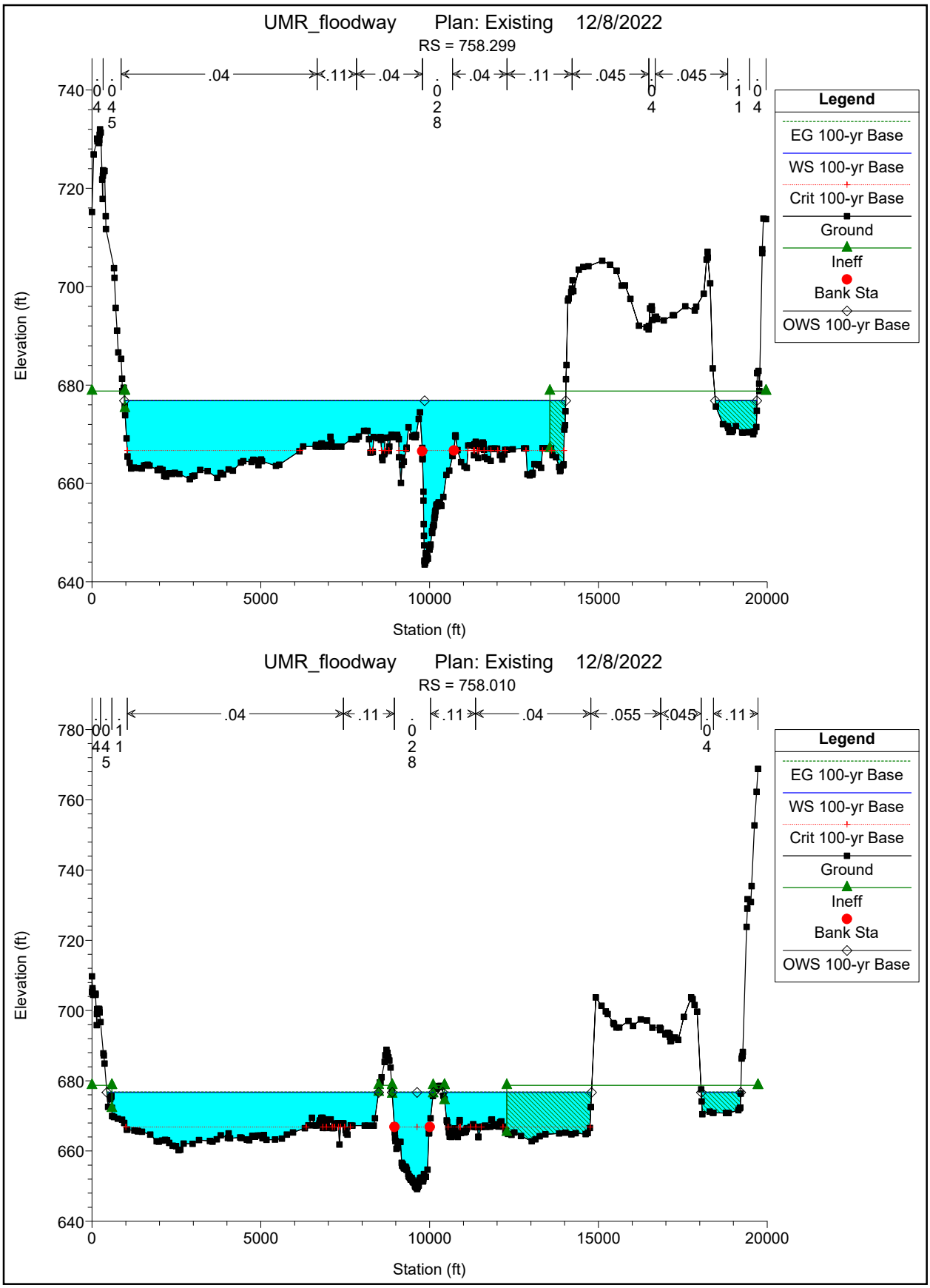

UMR_floodway Plan: Existing 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055 .11 .028 .11 .028 .11 .028 .11 .055 .05
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

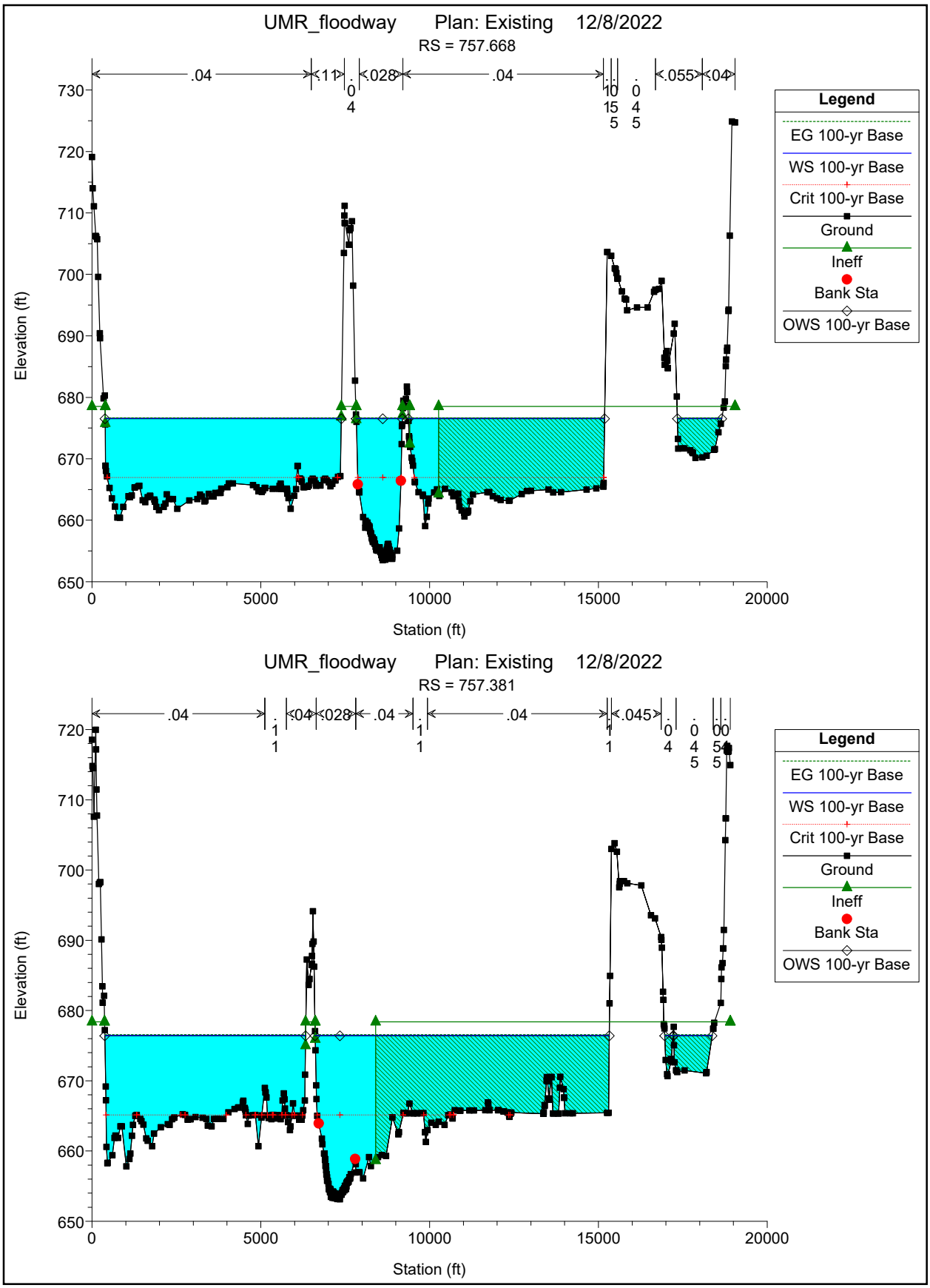

UMR_floodway Plan: Existing 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055 .11 .04 .03 .04 .11 .04 .11 .028 .055 .11 .04
Elevation (ft)
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

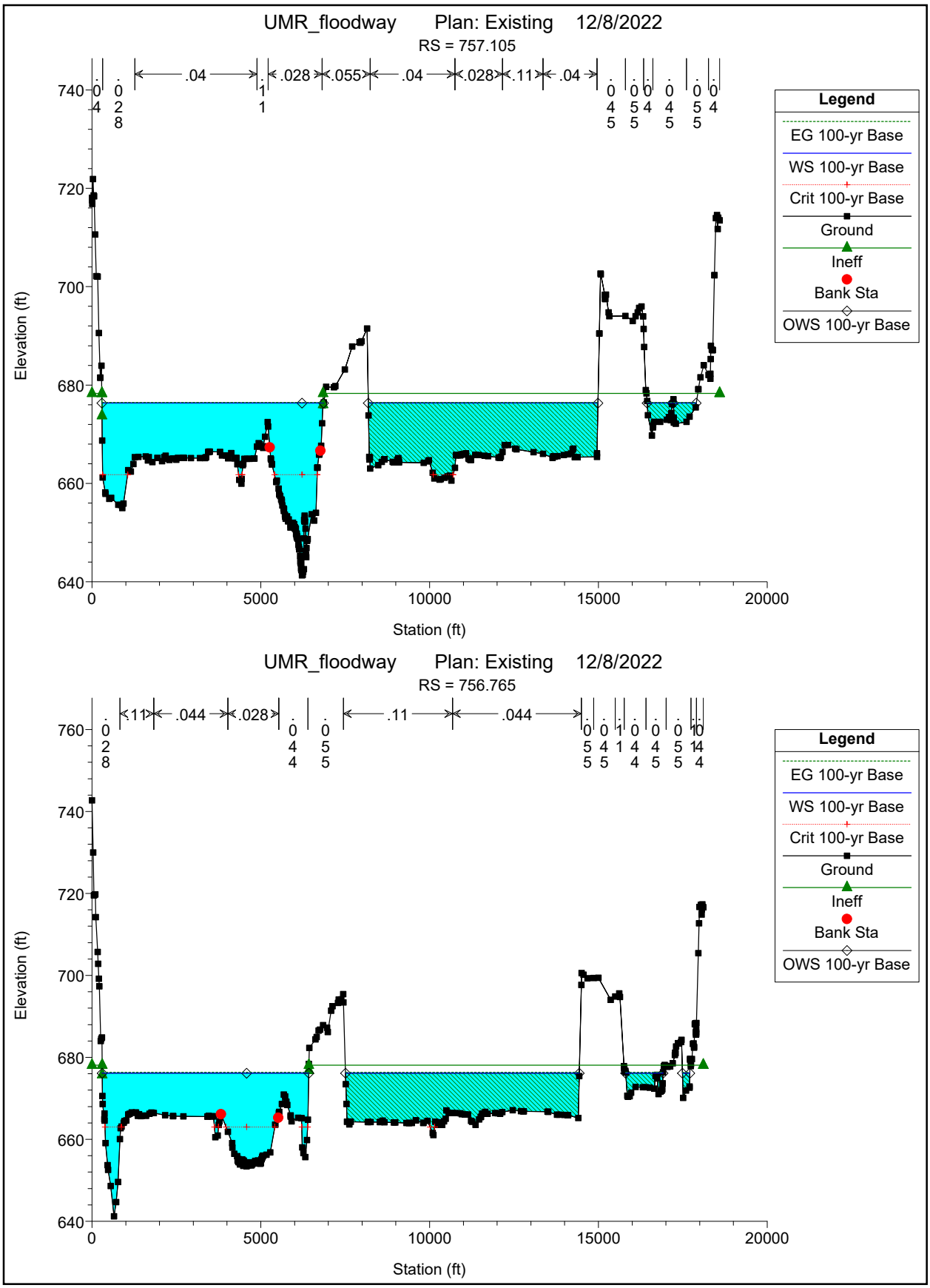

UMR_floodway Plan: Existing 12/8/2022
RS = 760.181
.055
.11
.04
.03
.04
.11
.04
.11
.028
.055
.11
.04
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 759.926
.055
.065
.08
.028
.055
.11
.04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

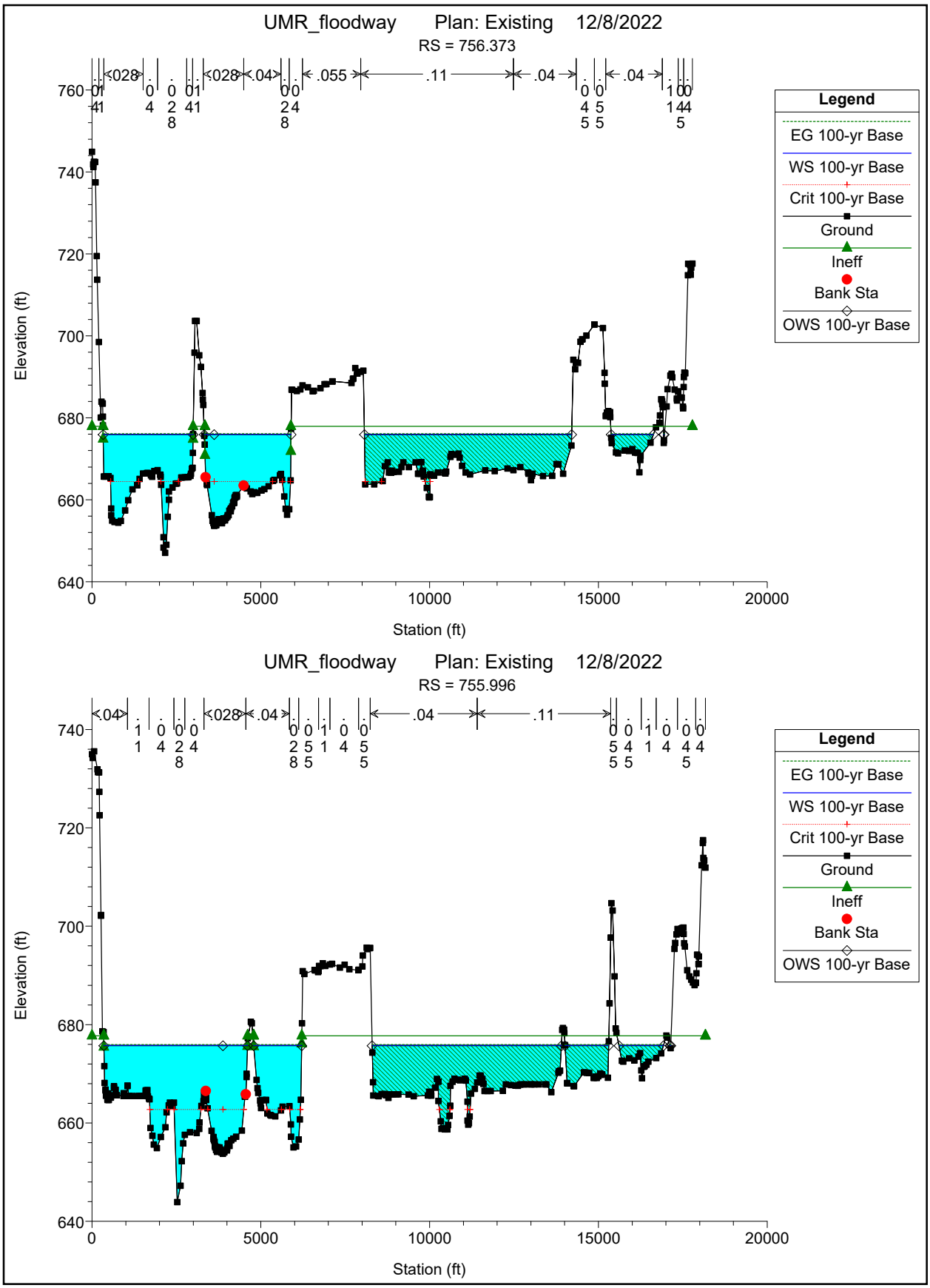

UMR_floodway Plan: Existing 12/8/2022
RS = 759.684
.055
.04
.06
.044
.055
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 759.458
.04
.04
.055
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

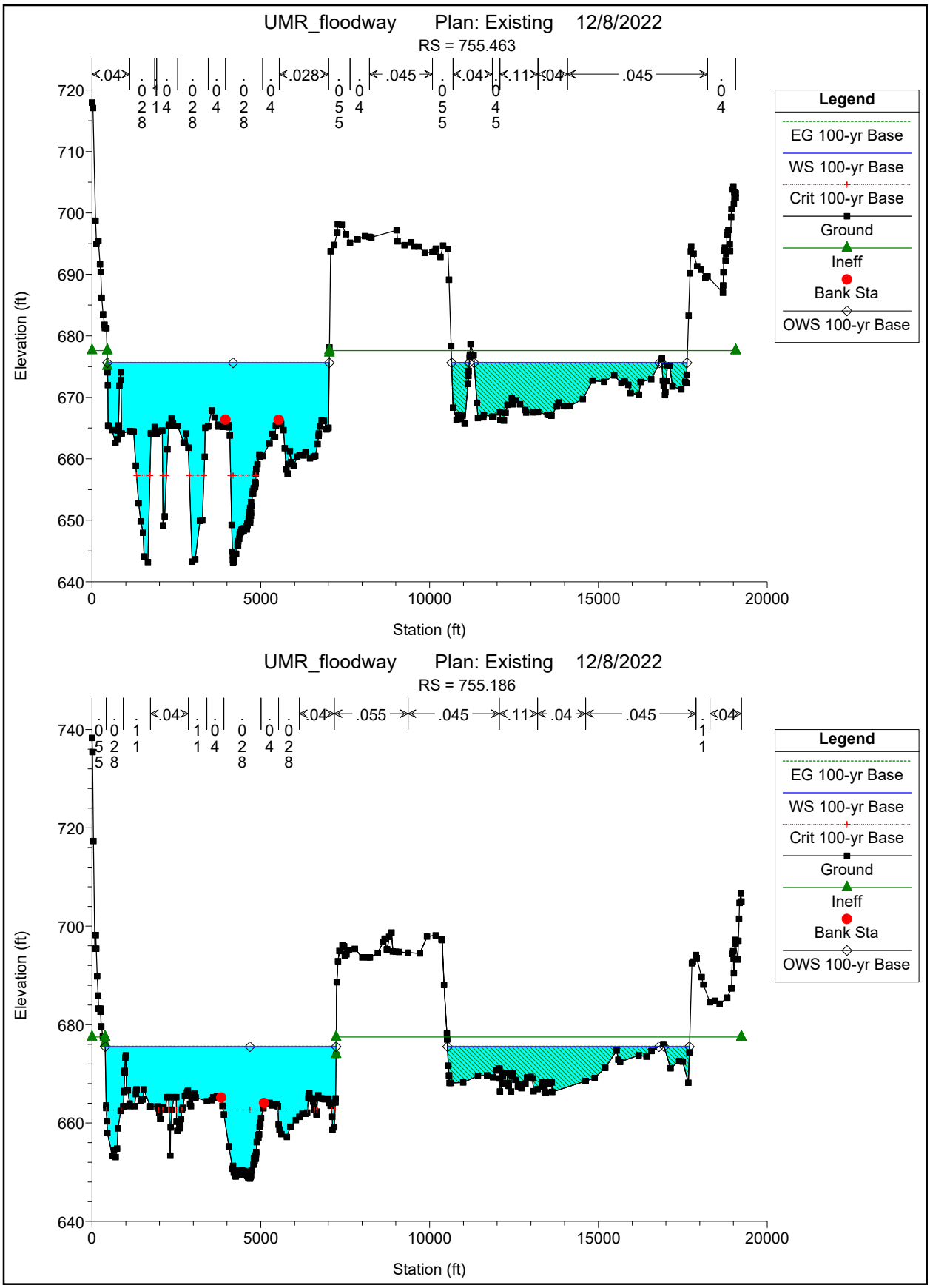

UMR_floodway Plan: Existing 12/8/2022
RS = 759.170
.04
.11
.04
.028
.04
.055
.045
.045
Elevation (ft)
780
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 758.833
.11
.045
.11
.028
.11
.048
.055
.11
.045
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

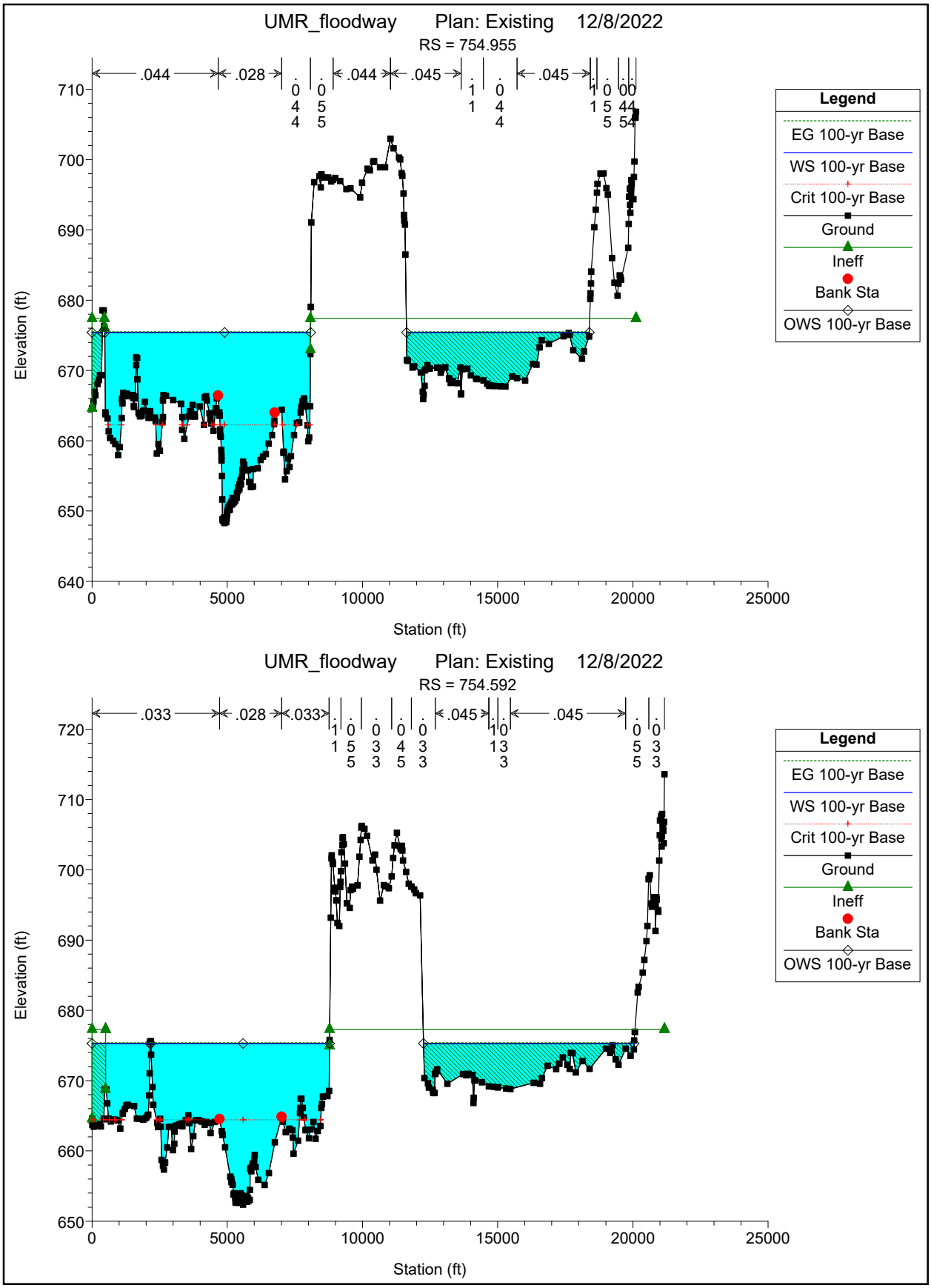

UMR_floodway Plan: Existing 12/8/2022
RS = 758.299
.04
.11
.04
.04
.11
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 758.010
.04
.11
.11
.04
.055
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

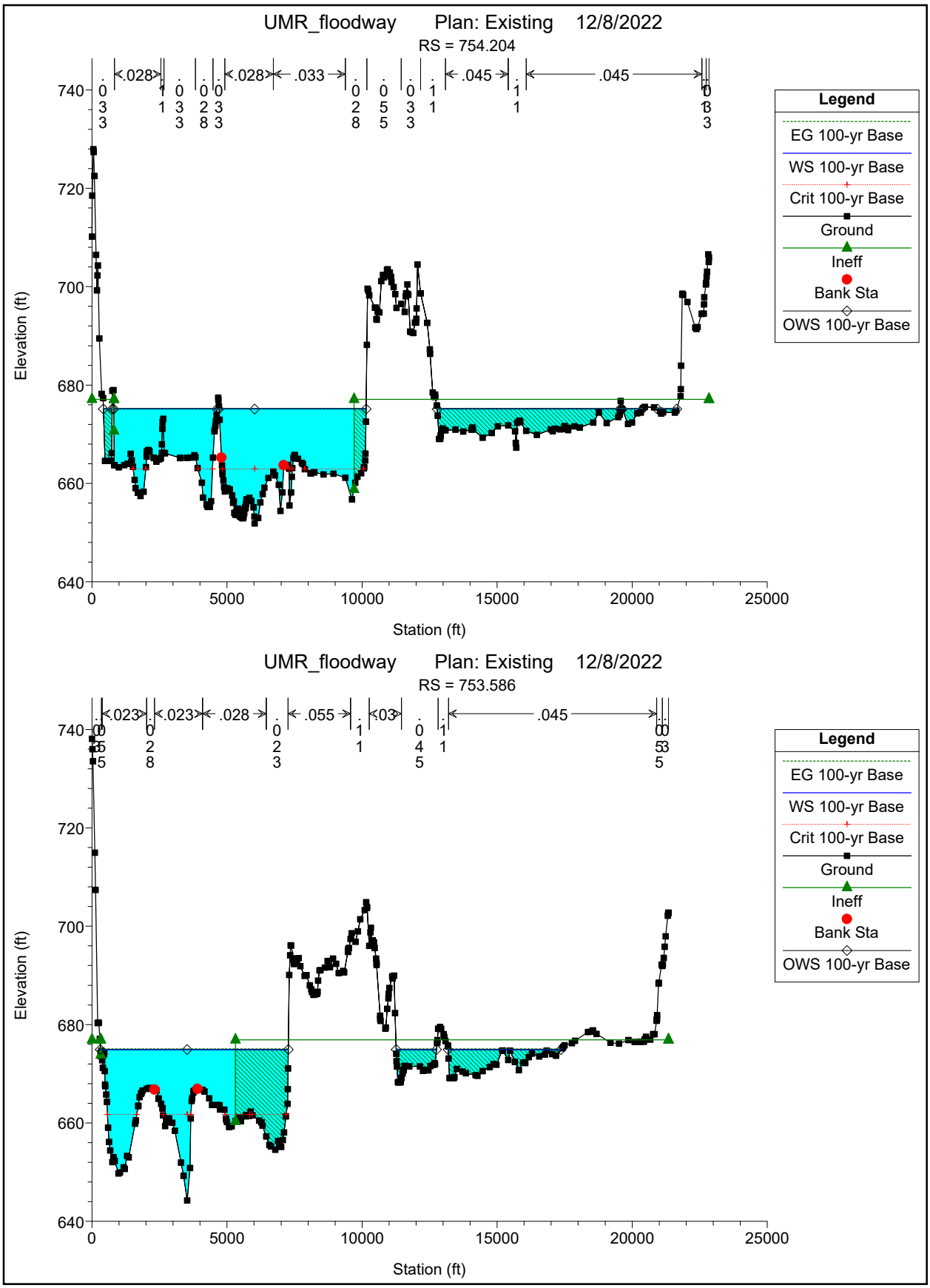

UMR_floodway Plan: Existing 12/8/2022
RS = 757.668
.04
.11
.028
.04
.055
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
730
720
710
700
690
680
670
660
650
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 757.381
.04
.04
.028
.04
.04
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
720
710
700
690
680
670
660
650
0
5000
10000
15000
20000
Station (ft)

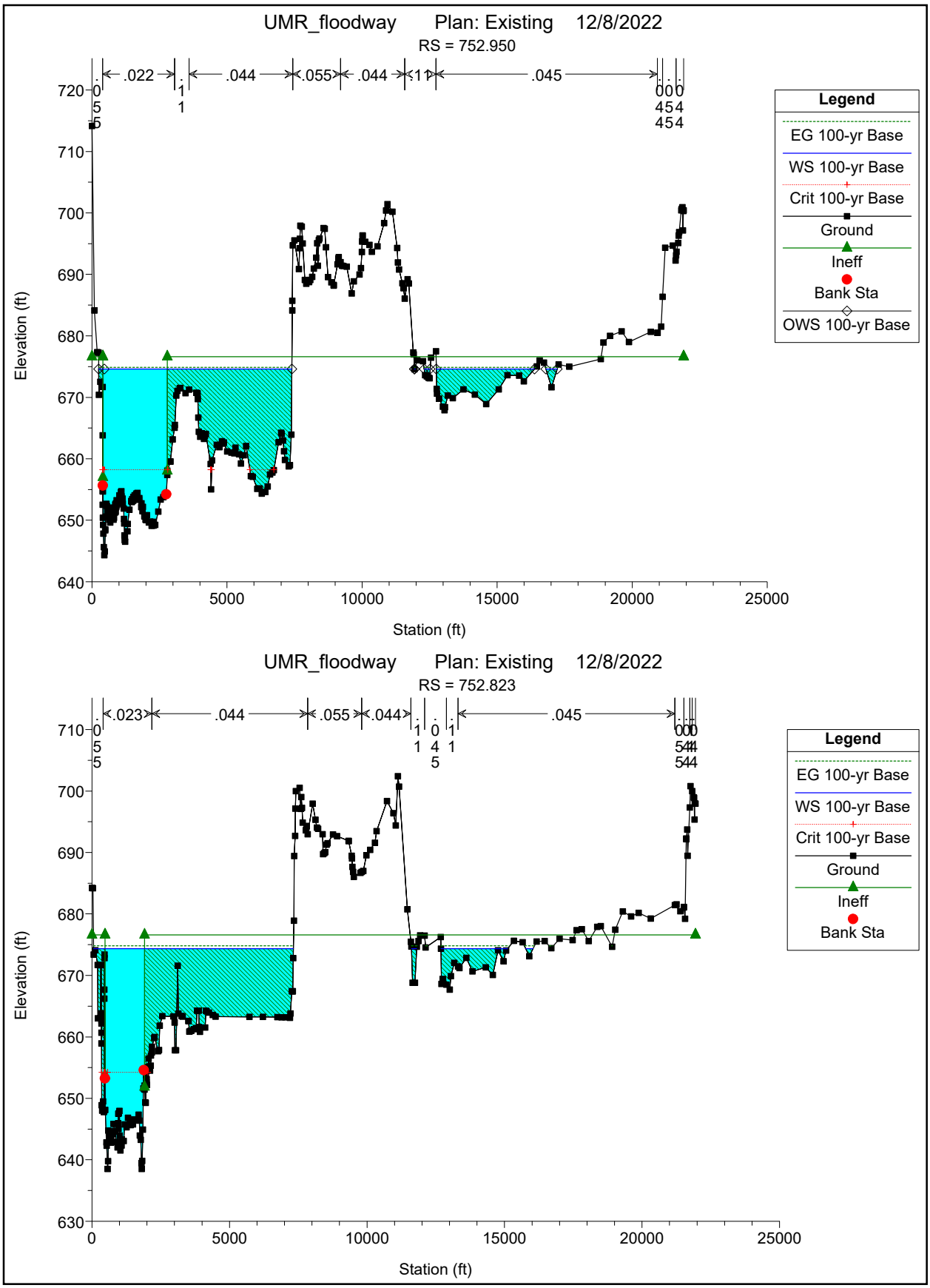

UMR_floodway Plan: Existing 12/8/2022
RS = 757.105
.04
.028
.055
.04
.028
.11
.04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 756.765
.11
.044
.028
.11
.044
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

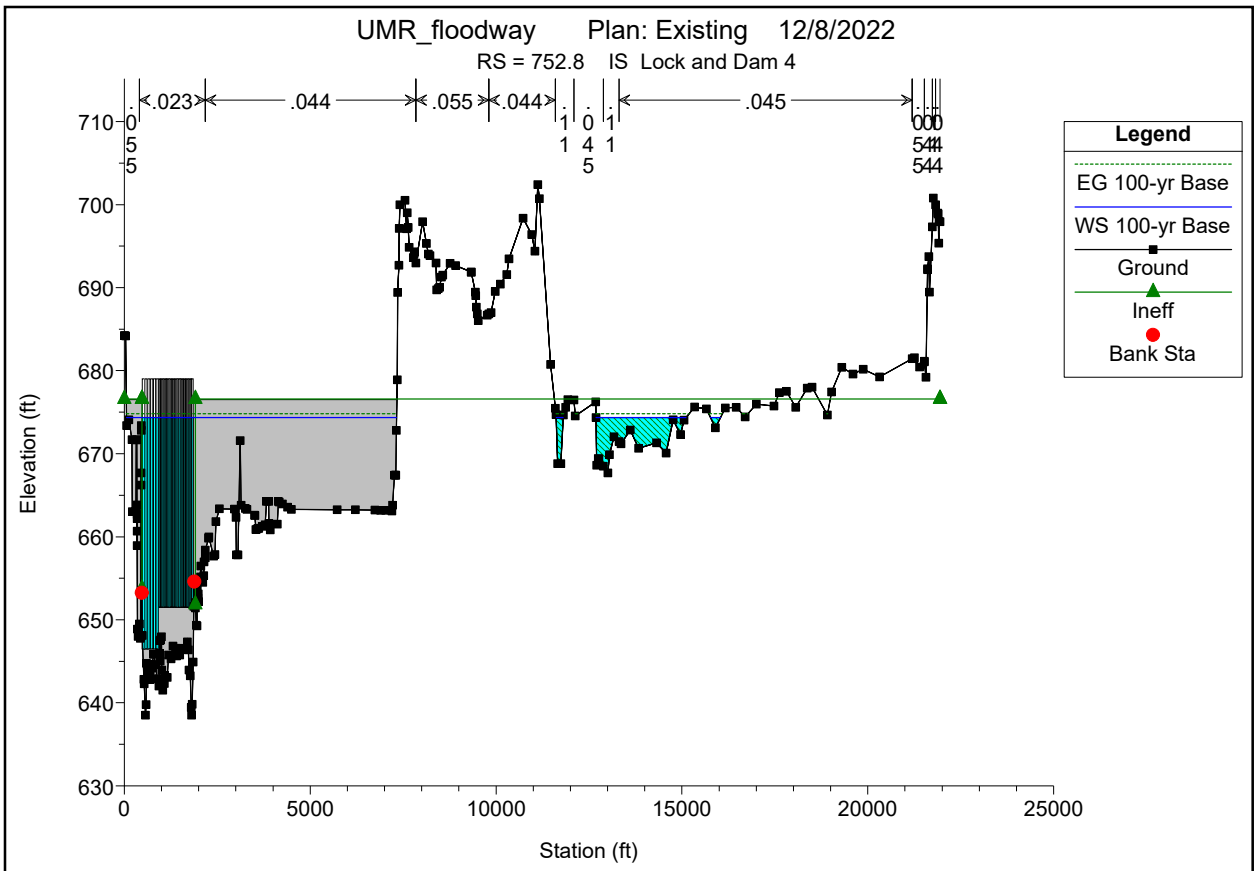

UMR_floodway Plan: Existing 12/8/2022
RS = 756.373
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 755.996
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

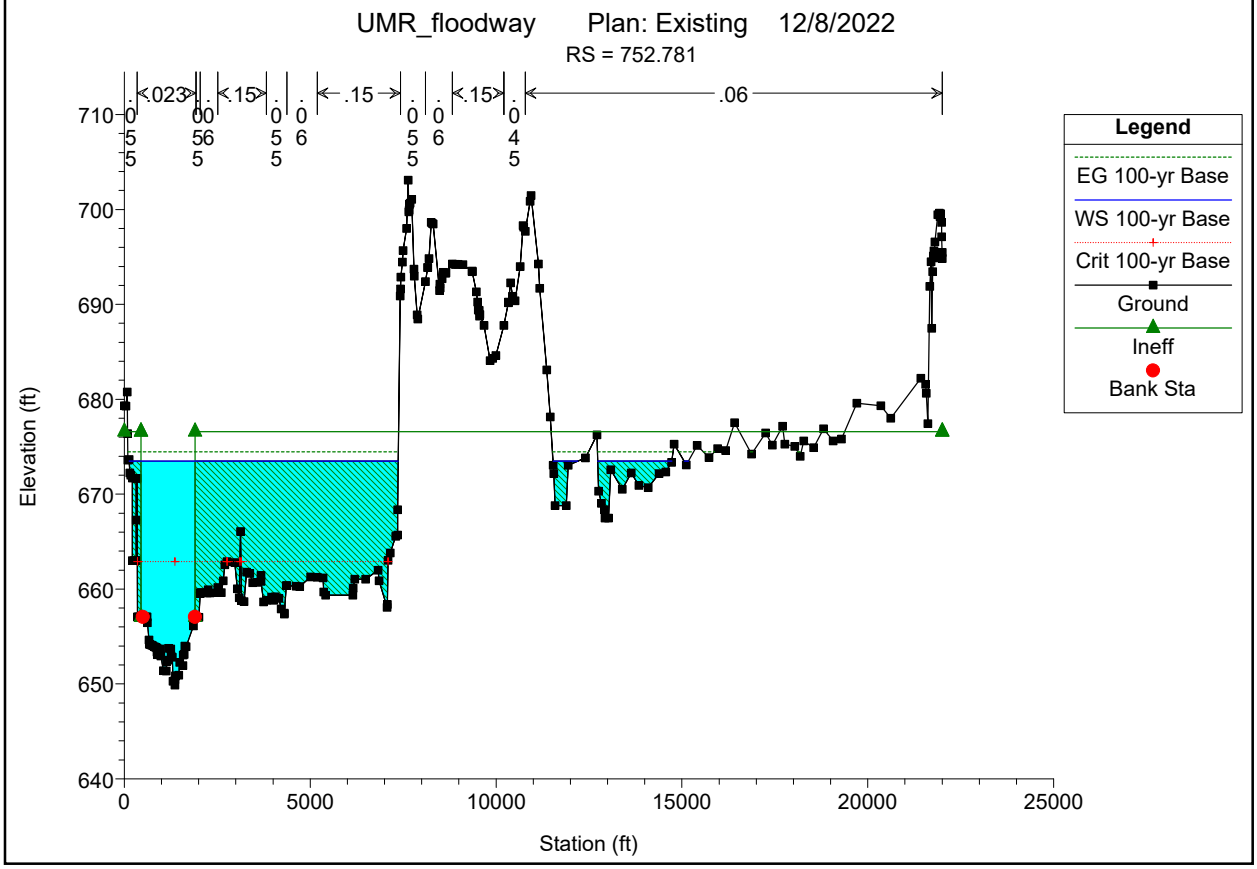

UMR_floodway Plan: Existing 12/8/2022
RS = 755.463
.04 .028 .045 .04 .11 .04 .045
.028 .14 .028 .04 .028 .04 .055 .04 .055 .045 .04
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Existing 12/8/2022
RS = 755.186
.055 .28 .11 .04 .11 .04 .055 .045 .11 .04 .045 .11 .04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

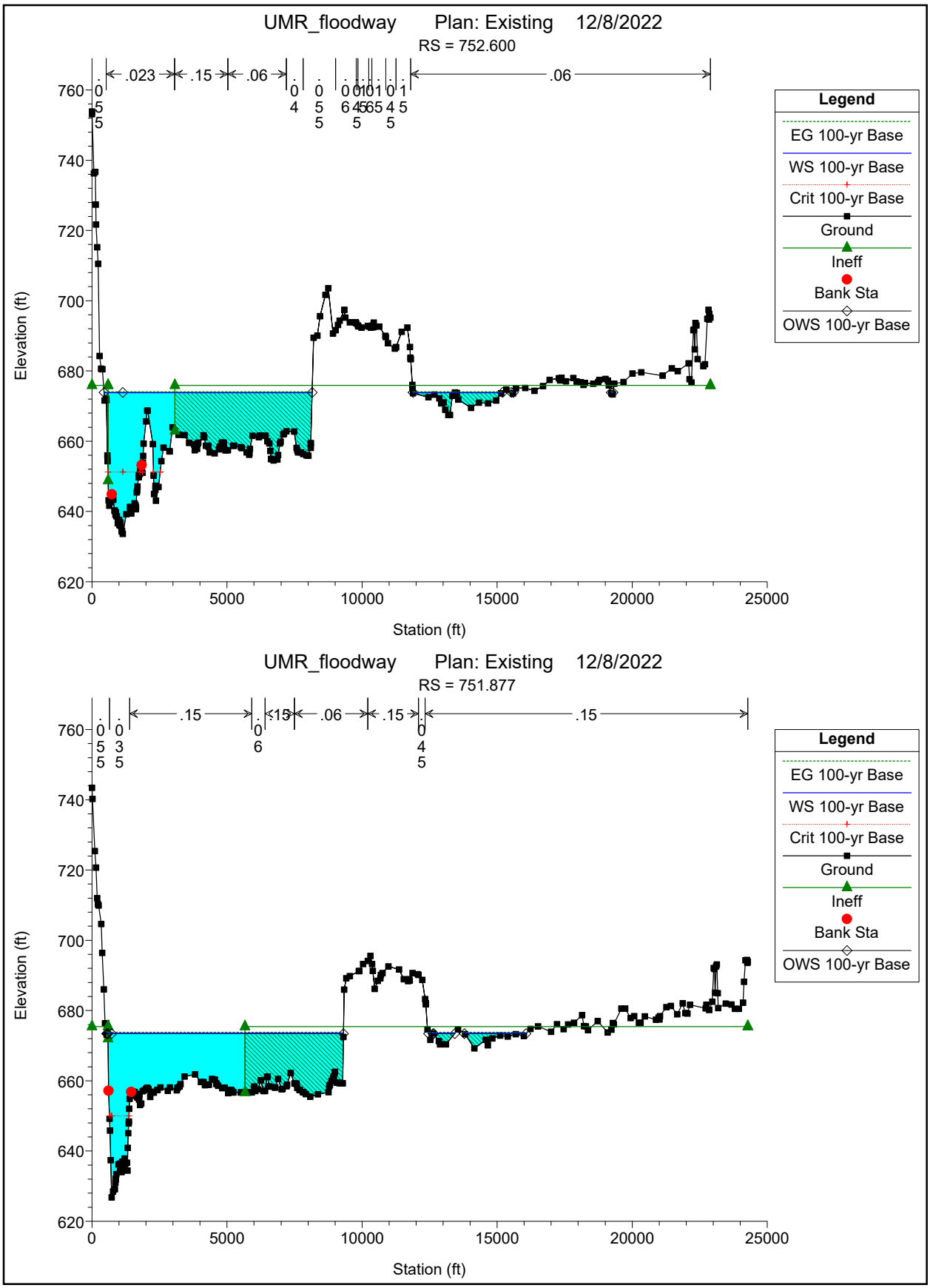

UMR_floodway Plan: Existing 12/8/2022
RS = 754.955
.044
.028
.044
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 754.592
.033
.028
.033
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)


UMR_floodway Plan: Existing 12/8/2022
RS = 754.204
.028
.028
.033
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 753.586
.023
.023
.028
.055
.03
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)


UMR_floodway Plan: Existing 12/8/2022
RS = 752.950
.022
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 752.823
.023
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


UMR_floodway Plan: Existing 12/8/2022
RS = 752.8 IS Lock and Dam 4
.023
.044
.055
.044
.045
Legend
EG 100-yr Base
WS 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
710
700
690
680
670
660
650
640
630
0
5000
10000
15000
20000
25000


UMR_floodway Plan: Existing 12/8/2022
RS = 752.781
.023
.15
.15
.15
.06
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
25000


UMR_floodway Plan: Existing 12/8/2022
RS = 752.600
.023
.15
.06
.06
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
5000
10000
15000
20000
25000
Station (ft)
UMR_floodway Plan: Existing 12/8/2022
RS = 751.877
.15
.15
.06
.15
.15
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
5000
10000
15000
20000
25000
Station (ft)

Appendix E:
Proposed Condition HEC-RAS

HEC-RAS Plan: Pr-Final Locations: User Defined Profile: 100-yr Base

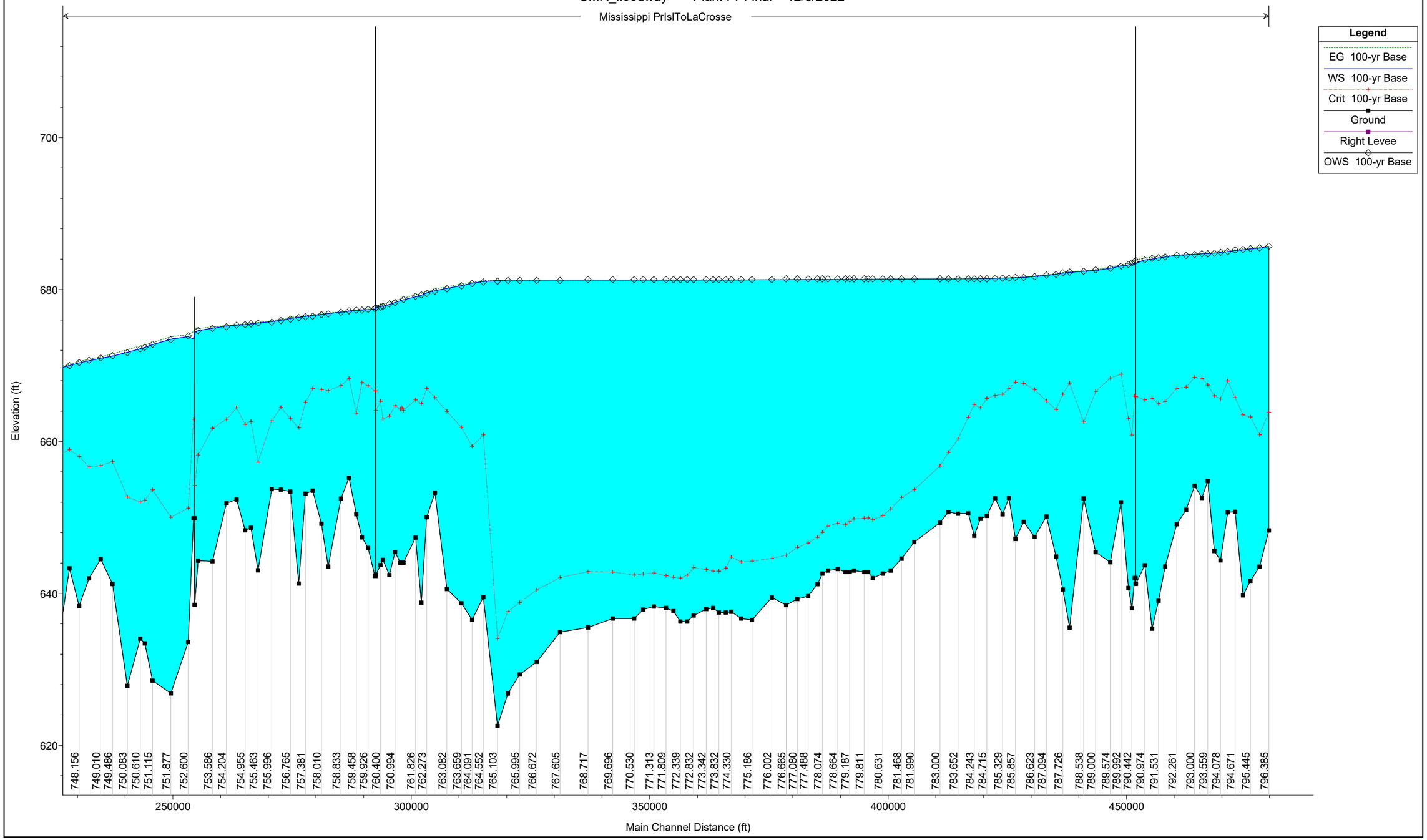
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	796.385	100-yr Base	192930.00	648.28	685.6722	663.85	685.73	0.000046	2.92	187512.80	14649.85	0.10
Mississippi	PrIslToLaCrosse	796.000	100-yr Base	192930.00	643.51	685.4578	660.87	685.59	0.000056	3.75	175721.50	13735.36	0.11
Mississippi	PrIslToLaCrosse	795.445	100-yr Base	192930.00	641.65	685.3458	663.22	685.47	0.000062	3.82	183954.60	19506.62	0.12
Mississippi	PrIslToLaCrosse	795.000	100-yr Base	192930.00	639.73	685.2301	663.51	685.37	0.000071	4.09	174128.90	14198.10	0.12
Mississippi	PrIslToLaCrosse	794.671	100-yr Base	196287.00	650.73	685.1453	665.78	685.25	0.000080	3.57	186379.30	14193.75	0.11
Mississippi	PrIslToLaCrosse	794.379	100-yr Base	196231.00	650.68	685.0093	667.96	685.14	0.000082	3.79	166520.40	13249.94	0.13
Mississippi	PrIslToLaCrosse	794.078	100-yr Base	196276.00	644.35	684.8959	665.58	685.04	0.000082	3.95	159732.60	12555.03	0.13
Mississippi	PrIslToLaCrosse	793.829	100-yr Base	196321.00	645.57	684.8000	666.01	684.93	0.000079	3.98	158481.50	12273.37	0.13
Mississippi	PrIslToLaCrosse	793.559	100-yr Base	196366.00	654.79	684.7501	667.42	684.82	0.000051	2.92	170989.90	11794.28	0.10
Mississippi	PrIslToLaCrosse	793.302	100-yr Base	196412.00	652.56	684.7176	668.29	684.76	0.000037	2.43	173937.90	11833.16	0.08
Mississippi	PrIslToLaCrosse	793.000	100-yr Base	196355.00	654.16	684.6478	668.44	684.70	0.000048	2.79	173326.00	11766.46	0.10
Mississippi	PrIslToLaCrosse	792.640	100-yr Base	196445.00	651.01	684.5644	667.14	684.62	0.000046	2.93	168560.30	11179.77	0.10
Mississippi	PrIslToLaCrosse	792.261	100-yr Base	196491.00	649.10	684.5012	666.99	684.56	0.000051	3.04	165318.70	12153.91	0.10
Mississippi	PrIslToLaCrosse	791.792	100-yr Base	196479.00	643.53	684.3033	665.27	684.45	0.000077	4.08	87112.88	6932.10	0.13
Mississippi	PrIslToLaCrosse	791.531	100-yr Base	196524.00	639.03	684.1603	664.97	684.35	0.000092	4.54	73096.38	5474.90	0.14
Mississippi	PrIslToLaCrosse	791.273	100-yr Base	196570.00	635.36	684.0085	665.67	684.25	0.000118	5.25	70295.23	5513.48	0.16
Mississippi	PrIslToLaCrosse	790.974	100-yr Base	196615.00	643.70	683.9065	665.49	684.14	0.000121	4.89	67782.63	6017.48	0.16
Mississippi	PrIslToLaCrosse	790.604	100-yr Base	196558.00	641.25	683.4734	665.90	683.91	0.000183	6.26	42257.64	8472.94	0.20
Mississippi	PrIslToLaCrosse	790.6		Bridge									
Mississippi	PrIslToLaCrosse	790.563	100-yr Base	196558.00	642.03	683.4482	665.98	683.86	0.000178	6.14	44252.83	8452.31	0.19
Mississippi	PrIslToLaCrosse	790.442	100-yr Base	196604.00	638.05	683.3463	660.85	683.55	0.000087	4.76	103666.30	7528.14	0.14
Mississippi	PrIslToLaCrosse	790.302	100-yr Base	196604.00	640.72	683.2388	663.03	683.41	0.000087	4.44	102729.30	6408.90	0.14
Mississippi	PrIslToLaCrosse	789.992	100-yr Base	196649.00	652.00	683.1122	668.86	683.23	0.000111	3.78	102166.70	6271.34	0.13
Mississippi	PrIslToLaCrosse	789.574	100-yr Base	196739.00	644.09	682.7988	668.35	682.96	0.000116	4.51	92365.86	6593.66	0.15
Mississippi	PrIslToLaCrosse	789.000	100-yr Base	196728.00	645.43	682.5208	666.57	682.64	0.000084	3.72	117063.10	7798.16	0.13
Mississippi	PrIslToLaCrosse	788.538	100-yr Base	196819.00	652.50	682.4036	662.57	682.46	0.000045	2.76	133146.70	8108.44	0.09
Mississippi	PrIslToLaCrosse	787.988	100-yr Base	196807.00	635.48	682.2679	667.70	682.33	0.000059	2.99	117557.60	7465.79	0.10
Mississippi	PrIslToLaCrosse	787.726	100-yr Base	196852.00	640.50	682.1490	666.21	682.24	0.000067	3.47	106920.10	7360.28	0.11
Mississippi	PrIslToLaCrosse	787.466	100-yr Base	196898.00	644.85	682.0060	664.20	682.08	0.000058	3.21	114450.20	7641.68	0.11
Mississippi	PrIslToLaCrosse	787.094	100-yr Base	196943.00	650.12	681.8635	665.34	681.95	0.000069	3.42	122751.90	7668.48	0.12
Mississippi	PrIslToLaCrosse	786.623	100-yr Base	196932.00	647.42	681.7122	666.85	681.80	0.000070	3.48	124728.40	8330.47	0.12
Mississippi	PrIslToLaCrosse	786.191	100-yr Base	197022.00	649.40	681.6062	667.63	681.65	0.000045	2.69	153382.20	9456.08	0.09
Mississippi	PrIslToLaCrosse	785.857	100-yr Base	197068.00	647.16	681.5588	667.79	681.59	0.000022	2.05	166677.60	11945.81	0.07
Mississippi	PrIslToLaCrosse	785.584	100-yr Base	197011.00	652.56	681.5380	666.97	681.56	0.000015	1.41	177578.50	11191.62	0.05
Mississippi	PrIslToLaCrosse	785.329	100-yr Base	197056.00	650.40	681.5134	666.22	681.54	0.000014	1.46	166693.60	10502.10	0.05
Mississippi	PrIslToLaCrosse	785.017	100-yr Base	197102.00	652.52	681.4806	666.06	681.51	0.000017	1.59	148236.50	9162.83	0.06
Mississippi	PrIslToLaCrosse	784.715	100-yr Base	197147.00	650.20	681.4459	665.65	681.48	0.000018	1.63	138918.60	8268.53	0.06
Mississippi	PrIslToLaCrosse	784.471	100-yr Base	197090.00	649.82	681.4325	664.44	681.46	0.000013	1.42	157319.90	8355.13	0.05
Mississippi	PrIslToLaCrosse	784.243	100-yr Base	197136.00	647.59	681.4158	664.87	681.44	0.000013	1.49	152575.20	8071.91	0.05
Mississippi	PrIslToLaCrosse	784.020	100-yr Base	197181.00	650.53	681.4091	663.18	681.43	0.000009	1.20	179984.70	8796.41	0.04
Mississippi	PrIslToLaCrosse	783.652	100-yr Base	197226.00	650.49	681.4010	660.33	681.41	0.000005	0.91	217800.50	9686.13	0.03
Mississippi	PrIslToLaCrosse	783.304	100-yr Base	197170.00	650.69	681.3939	658.55	681.41	0.000004	0.88	232304.10	9984.62	0.03
Mississippi	PrIslToLaCrosse	783.000	100-yr Base	197215.00	649.31	681.3906	656.78	681.40	0.000003	0.73	271884.80	10415.20	0.02
Mississippi	PrIslToLaCrosse	781.990	100-yr Base	197294.00	646.75	681.3793	653.65	681.38	0.000002	0.62	335800.30	11492.00	0.02
Mississippi	PrIslToLaCrosse	781.468	100-yr Base	197385.00	644.58	681.3748	652.63	681.38	0.000002	0.61	350813.30	11860.57	0.02
Mississippi	PrIslToLaCrosse	780.984	100-yr Base	197476.00	643.00	681.3683	651.11	681.37	0.000002	0.70	317119.40	11414.77	0.02
Mississippi	PrIslToLaCrosse	780.631	100-yr Base	197419.00	642.60	681.3605	650.23	681.37	0.000003	0.84	277049.30	13165.86	0.03
Mississippi	PrIslToLaCrosse	780.191	100-yr Base	197510.00	642.01	681.3538	649.67	681.36	0.000003	0.83	273253.40	11036.70	0.03
Mississippi	PrIslToLaCrosse	779.984	100-yr Base	198626.00	642.80	681.3521	649.94	681.36	0.000002	0.74	292670.10	10639.55	0.02
Mississippi	PrIslToLaCrosse	779.811	100-yr Base	198615.00	642.80	681.3512	649.88	681.36	0.000002	0.66	317437.60	10485.81	0.02
Mississippi	PrIslToLaCrosse	779.388	100-yr Base	198832.00	643.00	681.3467	649.80	681.35	0.000002	0.67	307774.70	9928.39	0.02
Mississippi	PrIslToLaCrosse	779.187	100-yr Base	198866.00	642.80	681.3441	649.46	681.35	0.000002	0.71	293484.80	12154.13	0.02
Mississippi	PrIslToLaCrosse	779.000	100-yr Base	198900.00	642.80	681.3420	649.02	681.35	0.000002	0.70	288101.60	8854.01	0.02
Mississippi	PrIslToLaCrosse	778.664	100-yr Base	199026.00	643.20	681.3380	649.19	681.35	0.000002	0.73	278740.20	8443.37	0.02
Mississippi	PrIslToLaCrosse	778.290	100-yr Base	199152.00	643.00	681.3306	648.85	681.34	0.000003	0.85	252807.80	8401.98	0.02
Mississippi	PrIslToLaCrosse	778.074	100-yr Base	199186.00	642.60	681.3235	648.04	681.34	0.000003	0.96	227552.10	8275.67	0.03
Mississippi	PrIslToLaCrosse	777.875	100-yr Base	199232.00	641.22	681.3204	647.37	681.33	0.000003	0.94	228905.80	8214.85	0.03
Mississippi	PrIslToLaCrosse	777.488	100-yr Base	199232.00	639.64	681.3054	646.63	681.32	0.000005	1.18	200751.20	8529.87	0.03
Mississippi	PrIslToLaCrosse	777.080	100-yr Base	199232.00	639.25	681.3018	646.05	681.31	0.000003	0.93	239403.50	8219.75	0.03
Mississippi	PrIslToLaCrosse	776.665	100-yr Base	199232.00	638.46	681.2955	645.03	681.31	0.000003	0.87	235152.40	6741.74	0.02
Mississippi	PrIslToLaCrosse	776.002	100-yr Base	199232.00	639.45	681.2891	644.60	681.30	0.000002	0.82	256235.60	7015.01	0.02
Mississippi	PrIslToLaCrosse	775.186	100-yr Base	199232.00	636.49	681.2809	644.23	681.29	0.000002	0.75	285457.40	8317.79	0.02
Mississippi	PrIslToLaCrosse	774.739	100-yr Base	199232.00	636.68	681.2737	644.14	681.28	0.000003	0.81	261953.40	8224.20	0.02
Mississippi	PrIslToLaCrosse	774.330	100-yr Base	199232.00	637.58	681.2620	644.78	681.28	0.000003	1.02	217234.50	8547.67	0.03
Mississippi	PrIslToLaCrosse	774.110	100-yr Base	199232.00	637.48	681.2636	643.30	681.27	0.000002	0.74	294421.40	9495.68	0.02
Mississippi	PrIslToLaCrosse	773.832	100-yr Base	199232.00	637.48	681.2626	642.91	681.27	0.000001	0.64	328697.10	9883.54	0.02
Mississippi	PrIslToLaCrosse	773.623	100-yr Base	199232.00	638.07	681.2620	642.94	681.27	0.000001	0.57	366709.50	10392.43	0.02
Mississippi	PrIslToLaCrosse	773.342	100-yr Base	199232.00	637.94	681.2605	643.11	681.27	0.000001	0.56	370021.20	10624.26	0.02
Mississippi	PrIslToLaCrosse	772.832	100-yr Base	199232.00	637.08	681.2551	643.38	681.26	0.000001	0.66	313775.90	9562.56	0.02
Mississippi	PrIslToLaCrosse	772.560	100-yr Base	199232.00	636.29	681.2545	642.39	681.26	0.000001	0.58	355921.40	10877.79	0.02
Mississippi	PrIslToLaCrosse	772.339	100-yr Base	199232.00	636.29	681.2540	642.02	681.26	0.000001	0.50	412621.00	11546.52	0.01
Mississippi	PrIslToLaCrosse	772.092	100-yr Base	199232.00	637.67	681.2534	642.09	681.26	0.000001	0.46	452789.70	11919.25	0.01
Mississippi	PrIslToLaCrosse	771.809	100-yr Base	199232.00	638.07	681.2526	642.33	681.26	0.000001	0.44	476764.30	13982.90	0.01
Mississippi	PrIslToLaCrosse	771.313	100-yr Base	199232.00	638.26	681.2511	642.68	681.25	0.000001	0.42	495981.10	13716.06	0.01
Mississippi	PrIslToLaCrosse	770.876	100-yr Base	199232.00	637.87	681.2494	642.56	681.25	0.000001	0.45	476078.70	14553.42	0.01
Mississippi	PrIslToLaCrosse	770.530	100-yr Base	199232.00	636.69	681.2482	642.40	681.25	0.000001	0.45	472040.40	13811.46	0.01
Mississippi	PrIslToLaCrosse	769.696	100-yr Base	199232.00	636.69	681.2452	642.80	681.25	0.000001	0.45	482299.50	14291.96	0.01
Mississippi	PrIslToLaCrosse	768.717	100-yr Base	199232.00	635.50	681.2407	642.85	681.24	0.000001	0.49	434805.70	11581.13	0.01
Mississippi	PrIslToLaCrosse	767.605	100-yr Base	199232.00	634.91	681.2355	642.08	681.24	0.000001	0.51	409794.50	10764.52	0.01
Mississippi	PrIslToLaCrosse	766.672	100-yr Base	199232.00	630.97	681.2296	640.45	681.23	0.000001	0.60	358428.30	9429.36	0.02
Mississippi	PrIslToLaCrosse	765.995	100-yr Base	199232.00	629.32	681.2232	638.79	681.23	0.000001	0.74	313698.80	8697.42	0.02
Mississippi	PrIslToLaCrosse	765.528	100-yr Base	199232.00	626.80	681.2151	637.59	681.22	0.000002	0.91	273702.70	8769.84	0.02
Mississippi	PrIslToLaCrosse	765.103	100-yr Base	199232.00	622.56	681.1797	634.06	681.22	0.000006	1.68	215072.50	9096.51	0.04
Mississippi	PrIslToLaCrosse	764.552	100-yr Base	199232.00	639.50	681.0485	660.87	681.17	0.000078	3.34	113281.40	8823.91	0.11
Mississippi	PrIslToLaCrosse	764.091	100-yr Base	199232.00	636.52	680.8549	659.34	680.98	0.000079	3.26	123757.50	10520.26	0.11
Mississippi	PrIslToLaCrosse	763.659	100-yr Base	199232.00	638.70	680.5264	661.86	680.75	0.000124	4.43	103968.60	11188.49	0.15
Mississippi	PrIslToLaCrosse	763.082	100-yr Base	229611.00	640.57	680.1607	663.96	680.37	0.000124	4.73	106134.70	11722.95	0.16

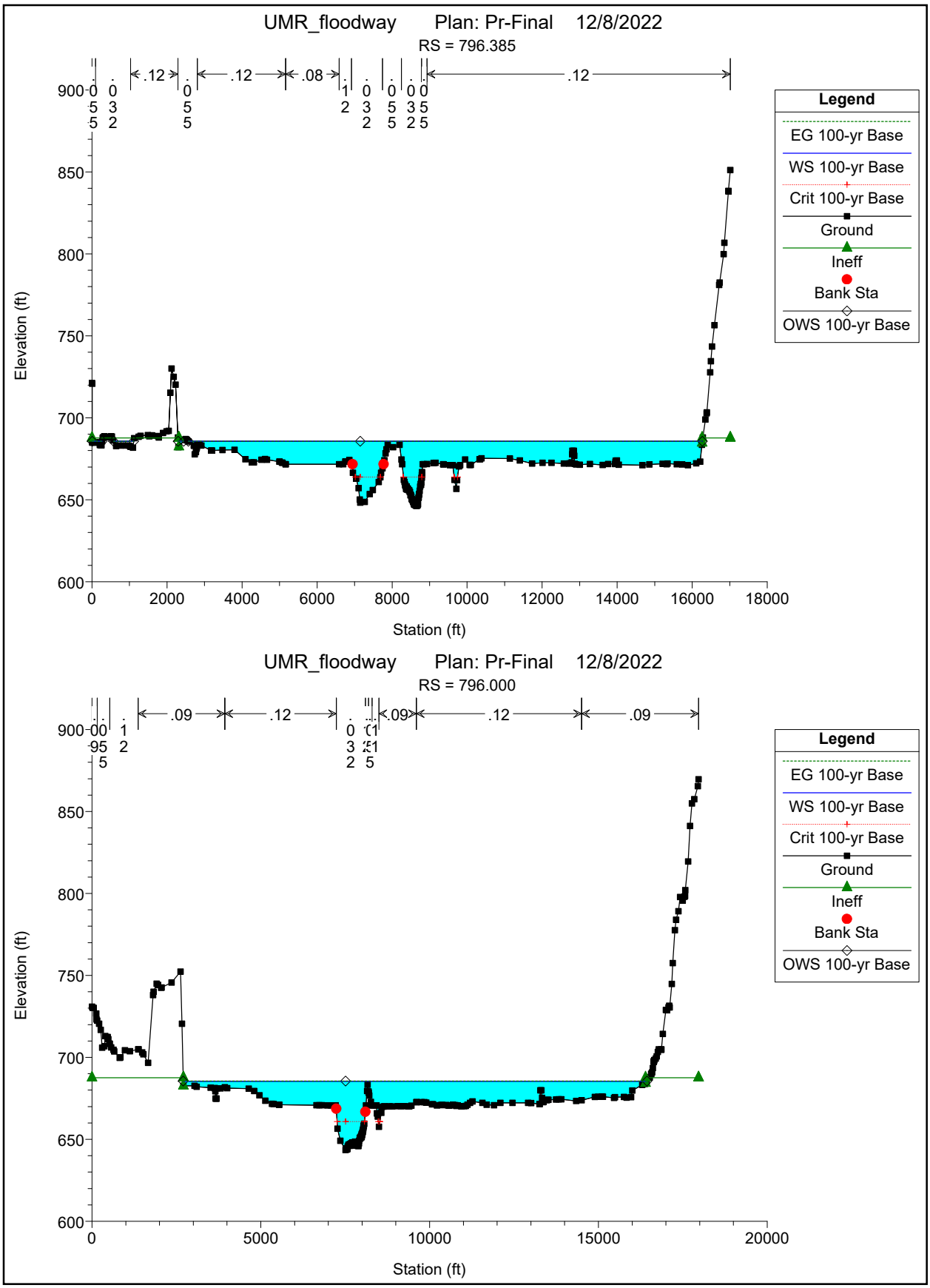
HEC-RAS Plan: Pr-Final Locations: User Defined Profile: 100-yr Base (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Mississippi	PrIslToLaCrosse	762.578	100-yr Base	229611.00	653.24	679.8478	665.76	680.05	0.000143	4.52	129185.30	13484.81	0.16
Mississippi	PrIslToLaCrosse	762.273	100-yr Base	229611.00	650.04	679.5850	666.97	679.75	0.000236	4.40	127106.70	14423.33	0.16
Mississippi	PrIslToLaCrosse	762.062	100-yr Base	229611.00	638.79	679.2454	664.97	679.51	0.000169	5.42	122937.00	14803.85	0.18
Mississippi	PrIslToLaCrosse	761.826	100-yr Base	229611.00	647.34	679.0425	665.46	679.30	0.000170	5.44	136147.20	15237.20	0.18
Mississippi	PrIslToLaCrosse	761.327	100-yr Base	229611.00	644.03	678.6475	664.10	678.88	0.000157	4.81	134676.00	16334.60	0.17
Mississippi	PrIslToLaCrosse	760.994	100-yr Base	229611.00	645.42	678.3035	664.70	678.57	0.000179	5.14	134245.60	17374.84	0.19
Mississippi	PrIslToLaCrosse	760.759	100-yr Base	229611.00	642.41	678.0528	663.34	678.34	0.000178	5.47	142371.60	15918.74	0.19
Mississippi	PrIslToLaCrosse	760.495	100-yr Base	229611.00	644.41	677.8153	662.94	678.10	0.000170	5.50	141621.90	15728.67	0.18
Mississippi	PrIslToLaCrosse	760.400	100-yr Base	229611.00	643.73	677.7733	665.31	678.00	0.000173	5.25	122586.30	15909.14	0.18
Mississippi	PrIslToLaCrosse	760.216	100-yr Base	229611.00	642.43	677.6870	664.11	677.87	0.000079	4.02	70217.59	15434.44	0.14
Mississippi	PrIslToLaCrosse	760.2		Bridge									
Mississippi	PrIslToLaCrosse	760.181	100-yr Base	229611.00	642.30	677.4159	666.65	677.82	0.000185	6.20	54347.52	15557.62	0.22
Mississippi	PrIslToLaCrosse	759.926	100-yr Base	229611.00	645.99	677.3667	667.35	677.53	0.000113	4.66	140750.90	15098.92	0.17
Mississippi	PrIslToLaCrosse	759.684	100-yr Base	229611.00	647.38	677.3054	667.75	677.39	0.000066	3.61	147763.40	15160.14	0.13
Mississippi	PrIslToLaCrosse	759.458	100-yr Base	229611.00	650.43	677.2606	663.72	677.31	0.000041	2.67	148451.40	14237.99	0.10
Mississippi	PrIslToLaCrosse	759.170	100-yr Base	229611.00	655.22	677.1453	668.29	677.23	0.000090	3.51	147218.40	14647.94	0.14
Mississippi	PrIslToLaCrosse	758.833	100-yr Base	229611.00	652.49	677.0261	667.37	677.09	0.000060	3.13	155104.20	15160.93	0.12
Mississippi	PrIslToLaCrosse	758.299	100-yr Base	229611.00	643.54	676.8544	666.70	676.91	0.000057	3.01	152263.80	14301.85	0.11
Mississippi	PrIslToLaCrosse	758.010	100-yr Base	229611.00	649.15	676.7234	666.84	676.80	0.000068	3.39	133920.50	14848.46	0.13
Mississippi	PrIslToLaCrosse	757.668	100-yr Base	229611.00	653.51	676.5935	666.97	676.68	0.000073	3.26	119497.60	15488.71	0.13
Mississippi	PrIslToLaCrosse	757.381	100-yr Base	229611.00	653.12	676.4689	665.14	676.57	0.000080	3.53	107455.30	16049.33	0.14
Mississippi	PrIslToLaCrosse	757.105	100-yr Base	229611.00	641.29	676.3539	661.79	676.47	0.000067	3.43	94481.04	14793.31	0.13
Mississippi	PrIslToLaCrosse	756.765	100-yr Base	229611.00	653.40	676.1973	663.00	676.34	0.000098	3.67	86410.75	14366.27	0.15
Mississippi	PrIslToLaCrosse	756.373	100-yr Base	229611.00	653.66	675.9711	664.47	676.13	0.000104	3.70	75525.72	12656.26	0.15
Mississippi	PrIslToLaCrosse	755.996	100-yr Base	229611.00	653.73	675.7877	662.73	675.92	0.000099	3.68	84299.00	13938.42	0.15
Mississippi	PrIslToLaCrosse	755.463	100-yr Base	229611.00	643.03	675.6042	657.27	675.68	0.000045	2.55	104051.30	13327.38	0.10
Mississippi	PrIslToLaCrosse	755.186	100-yr Base	229611.00	648.65	675.4694	662.62	675.59	0.000077	3.61	97485.73	13844.89	0.14
Mississippi	PrIslToLaCrosse	754.955	100-yr Base	229611.00	648.31	675.3977	662.26	675.50	0.000065	3.15	108445.30	14745.09	0.12
Mississippi	PrIslToLaCrosse	754.592	100-yr Base	229611.00	652.36	675.2984	664.44	675.38	0.000058	2.77	108146.10	16529.92	0.12
Mississippi	PrIslToLaCrosse	754.204	100-yr Base	231280.00	651.87	675.2051	662.92	675.27	0.000042	2.31	120203.60	17923.70	0.10
Mississippi	PrIslToLaCrosse	753.586	100-yr Base	231280.00	644.22	674.9178	661.74	675.09	0.000072	3.50	71972.00	12640.25	0.15
Mississippi	PrIslToLaCrosse	752.950	100-yr Base	231280.00	644.31	674.5962	658.21	674.87	0.000059	4.21	55018.50	11437.57	0.15
Mississippi	PrIslToLaCrosse	752.823	100-yr Base	231280.00	638.50	674.3370	654.22	674.80	0.000080	5.49	42262.00	10128.84	0.18
Mississippi	PrIslToLaCrosse	752.8		Inl Struct									
Mississippi	PrIslToLaCrosse	752.781	100-yr Base	231280.00	649.88	673.4761	662.91	674.47	0.000286	8.03	28904.10	10012.96	0.32
Mississippi	PrIslToLaCrosse	752.600	100-yr Base	231280.00	633.59	673.8111	651.22	674.06	0.000044	4.37	60690.73	11106.44	0.13
Mississippi	PrIslToLaCrosse	751.877	100-yr Base	231280.00	626.83	673.4516	650.02	673.80	0.000274	5.56	94419.30	11983.71	0.16

UMR_floodway Plan: Pr-Final 12/8/2022

Mississippi PrIslToLaCrosse

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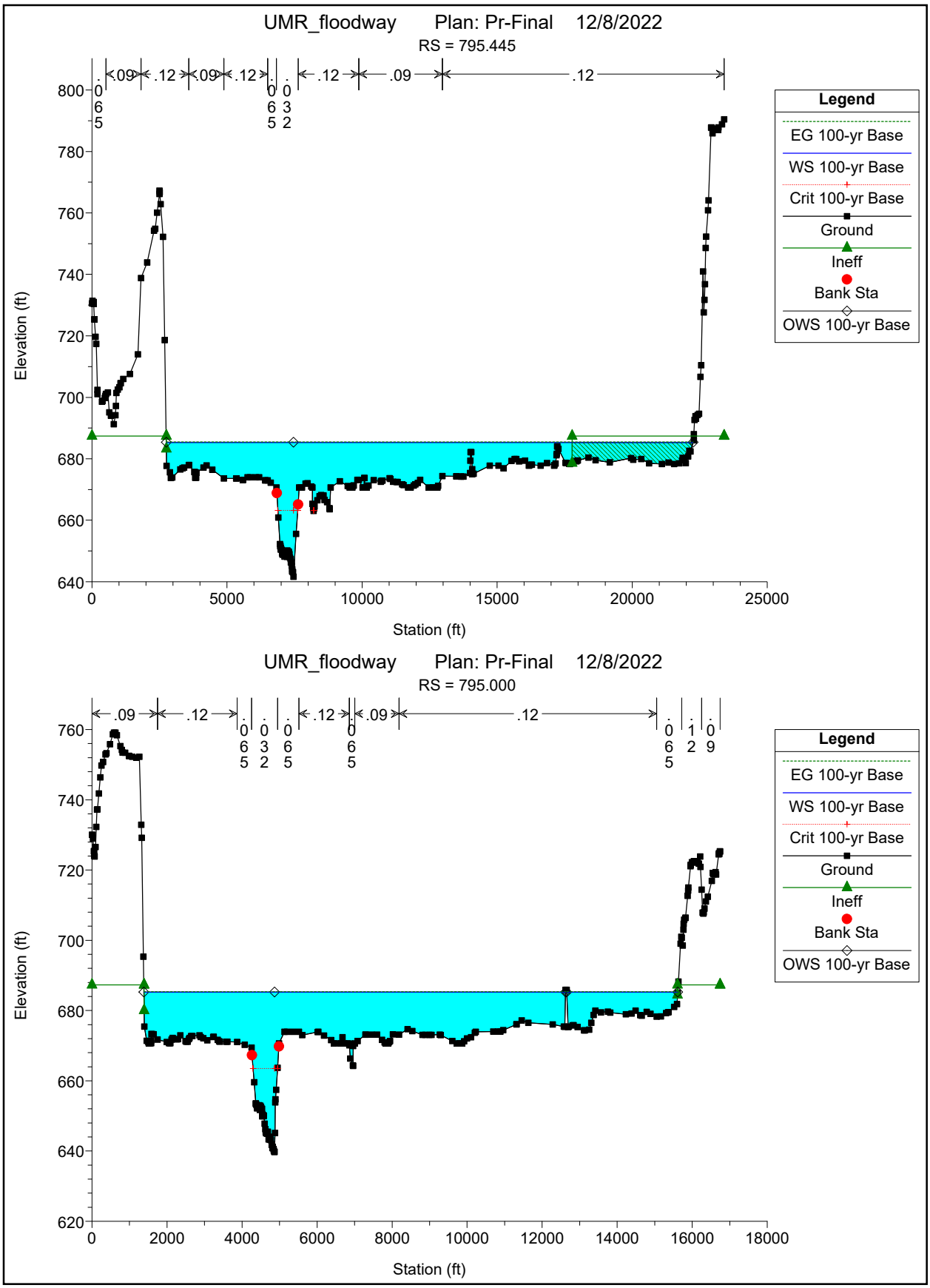
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Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
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Station (ft)
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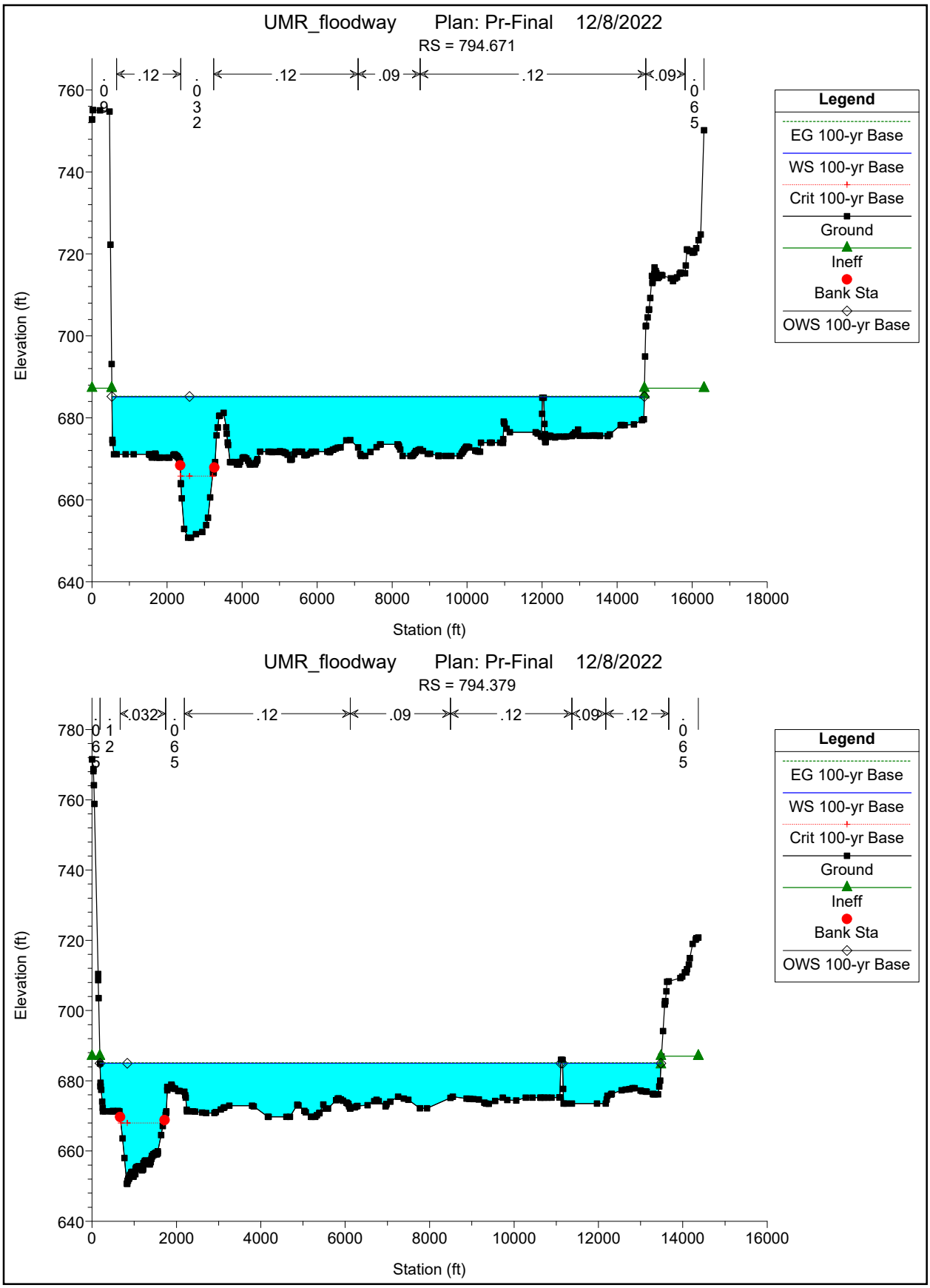
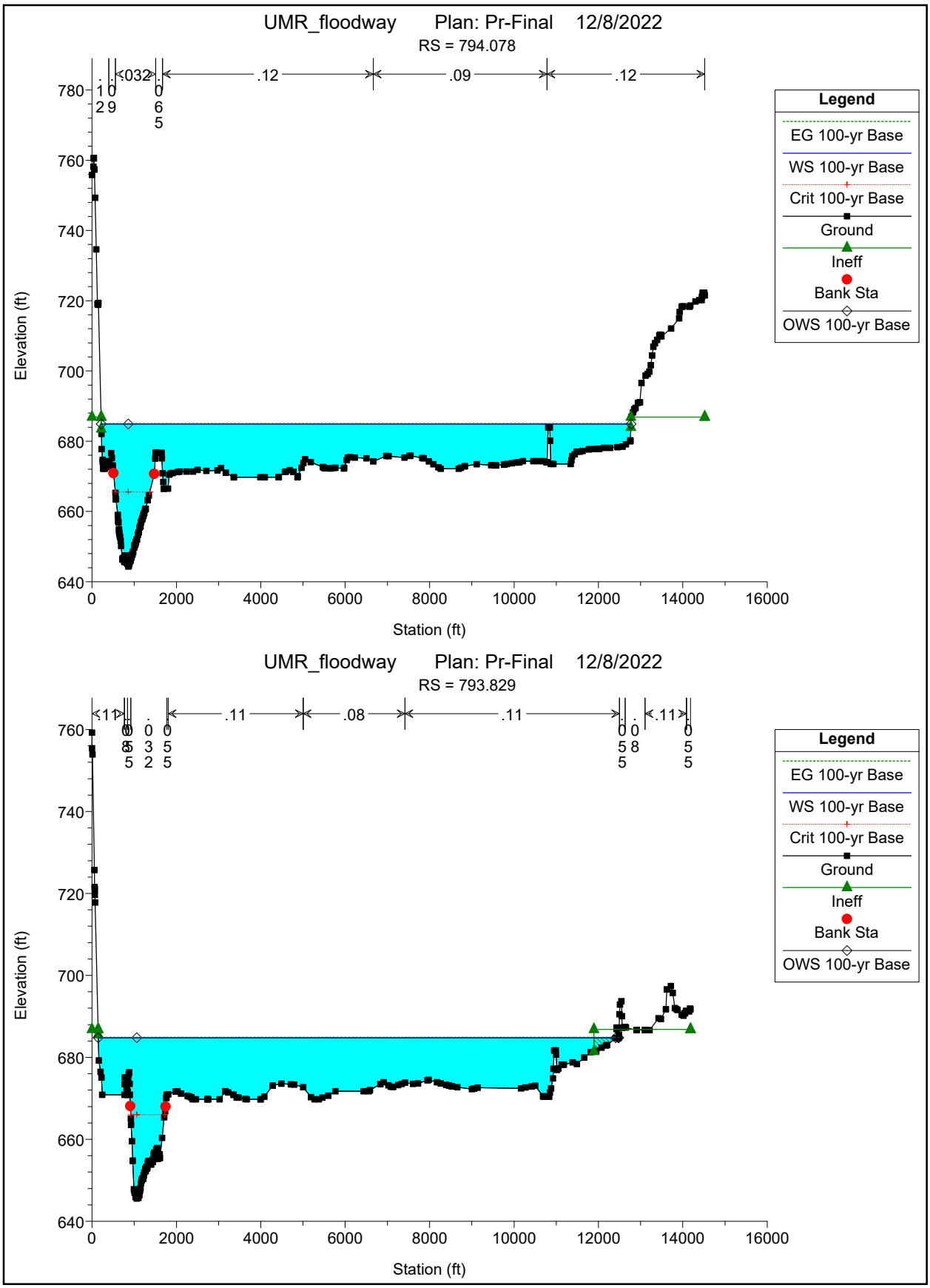
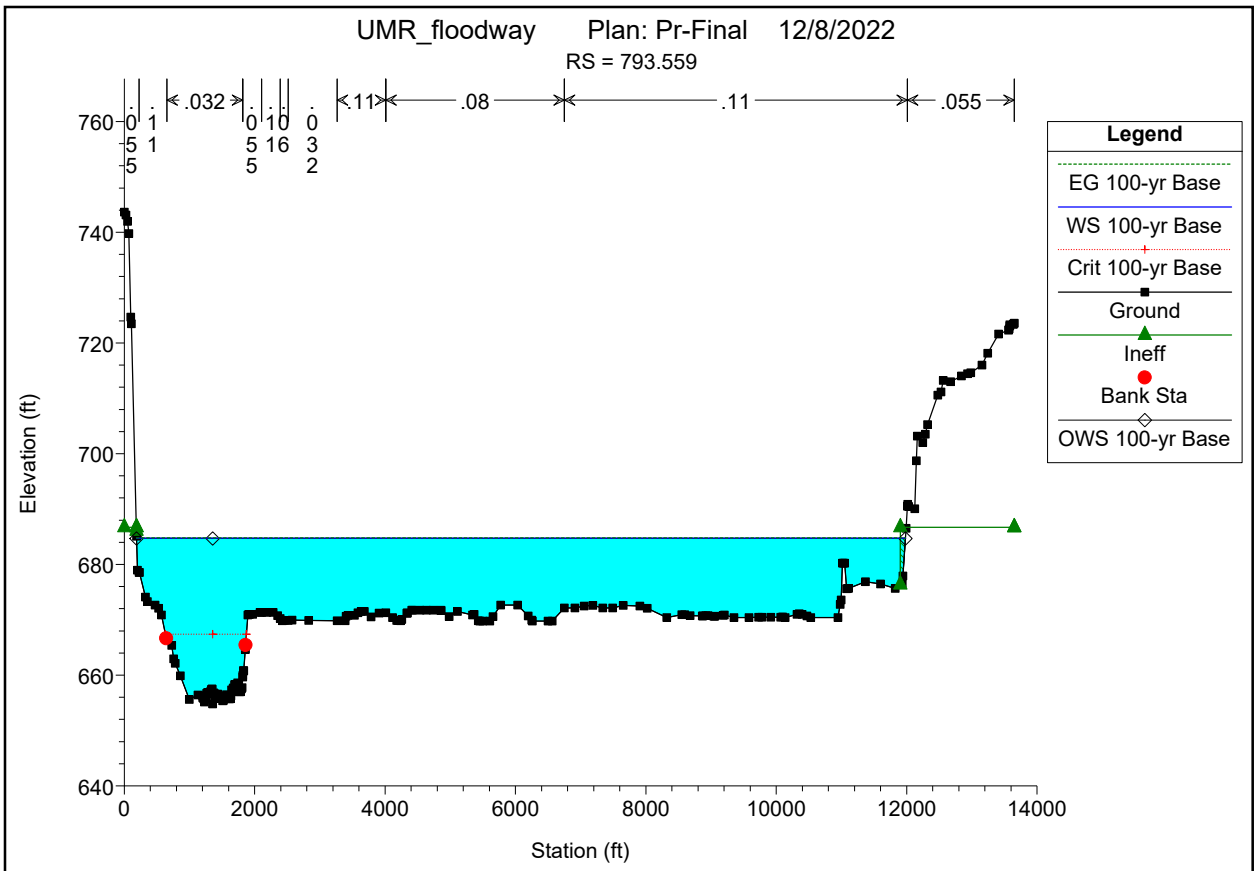
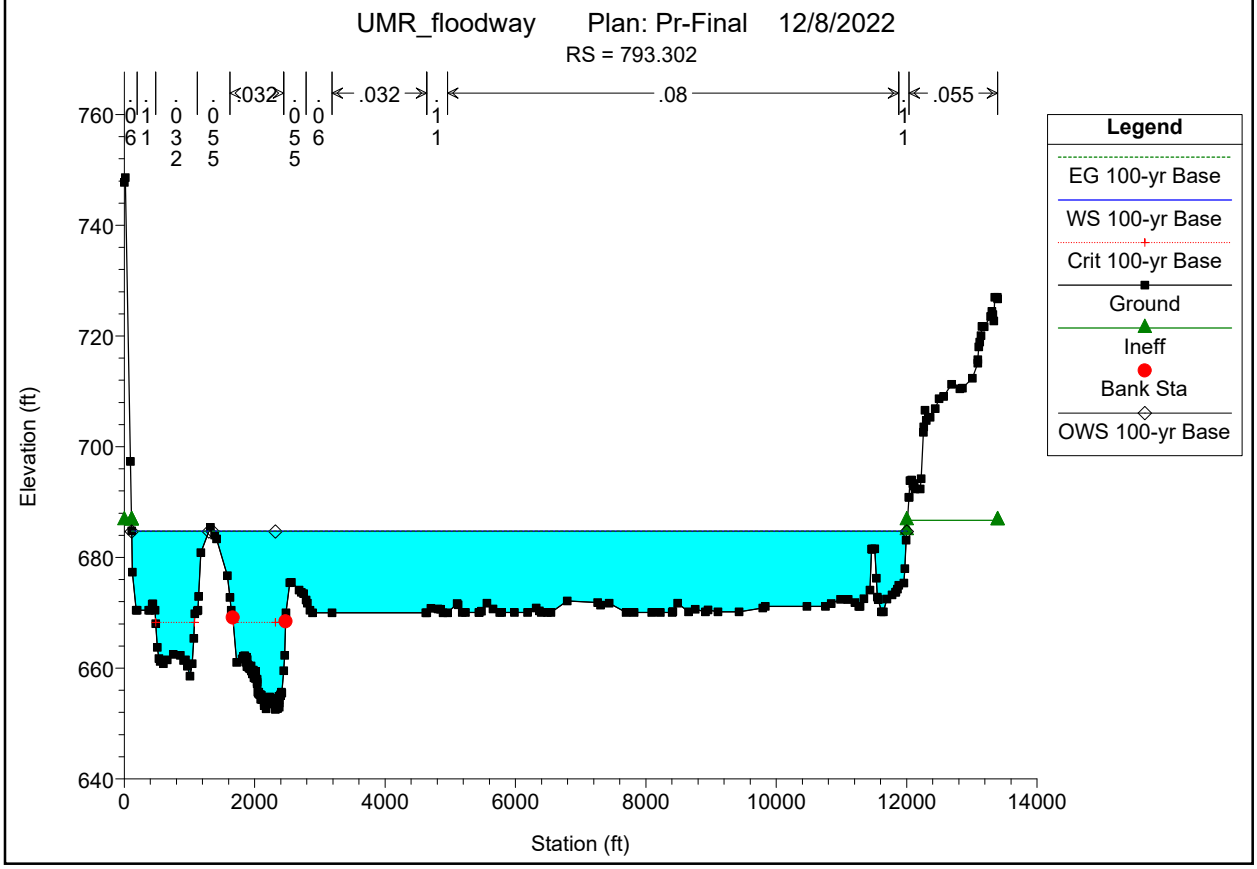
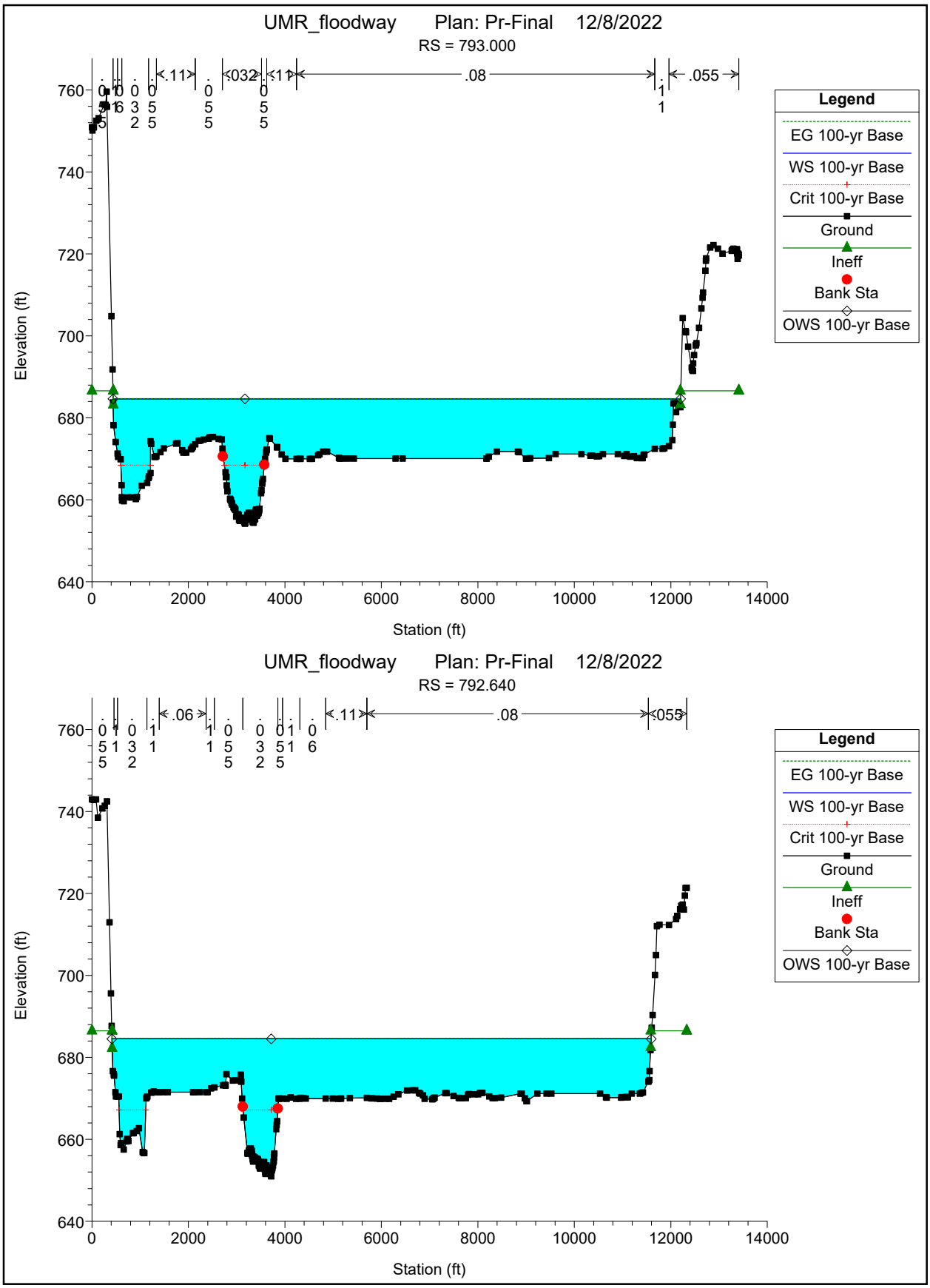
RS = 795.000
.09
.12
.12
.09
.12
.065
.032
.065
.065
.065
.129
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)

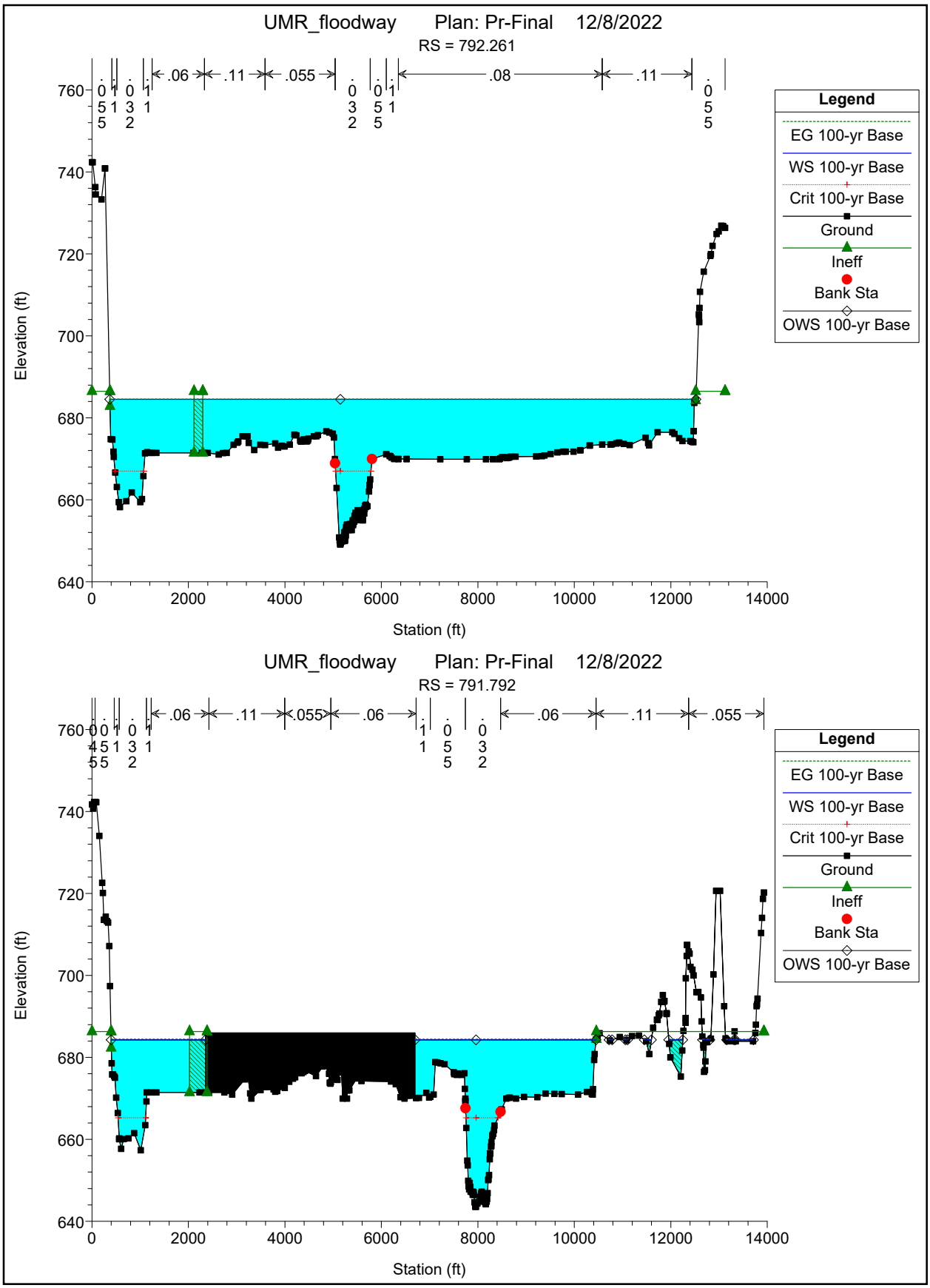

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 794.671
.09
.12
.032
.12
.09
.12
.065
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 794.379
.065
.12
.032
.12
.09
.12
.09
.12
.065
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

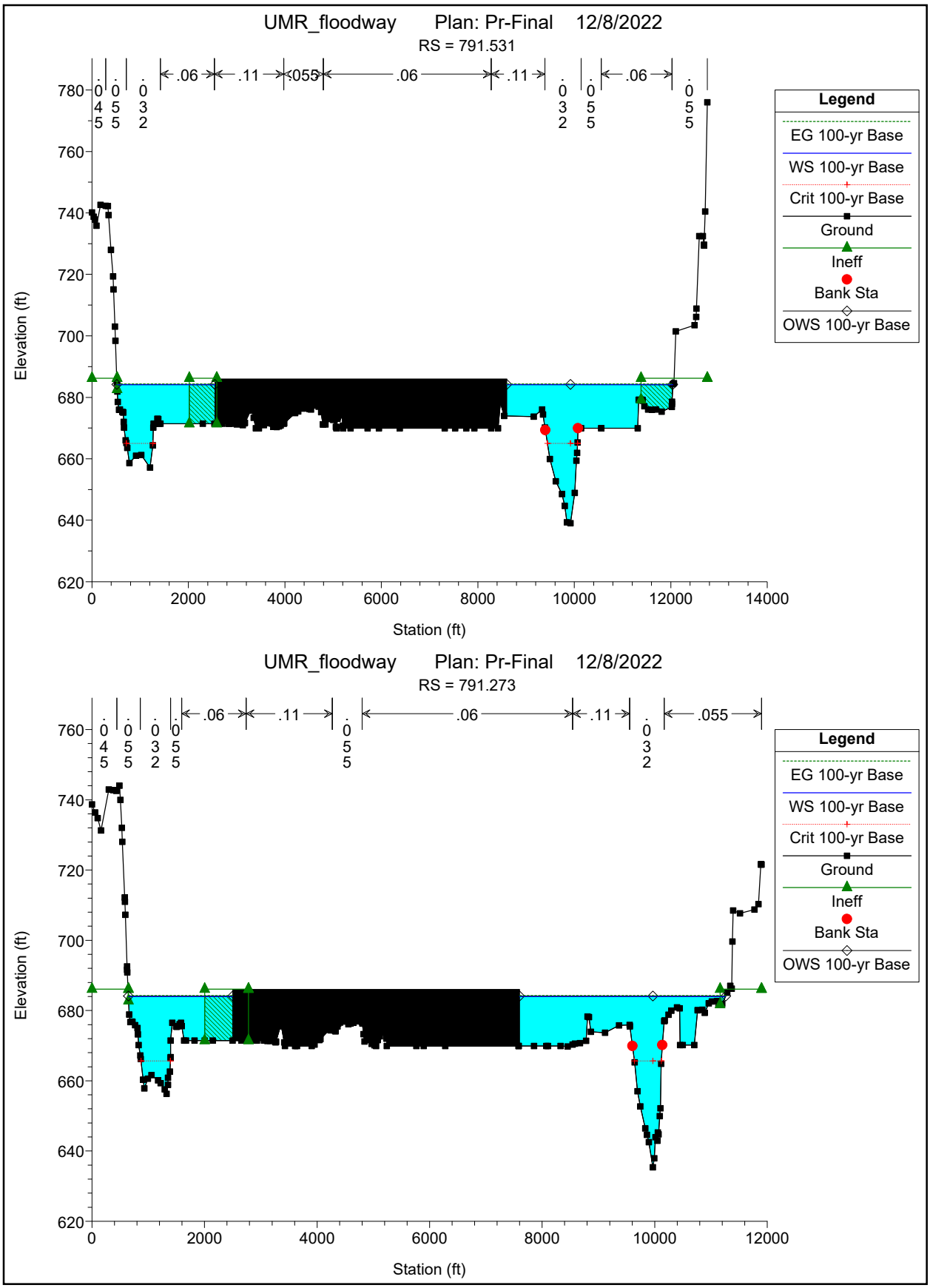

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 794.078
.12
.09
.12
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 793.829
.11
.08
.11
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

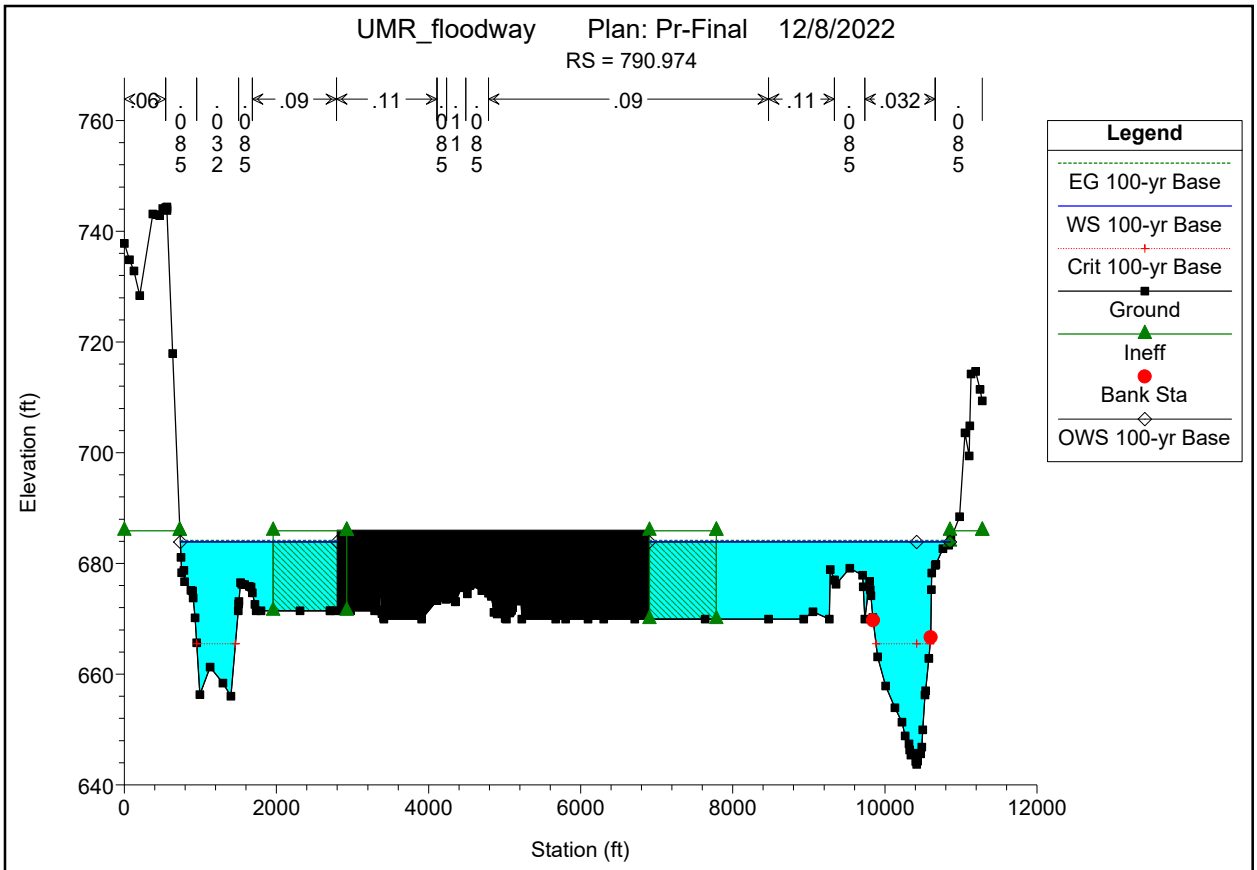

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 793.559
.032
.11
.08
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

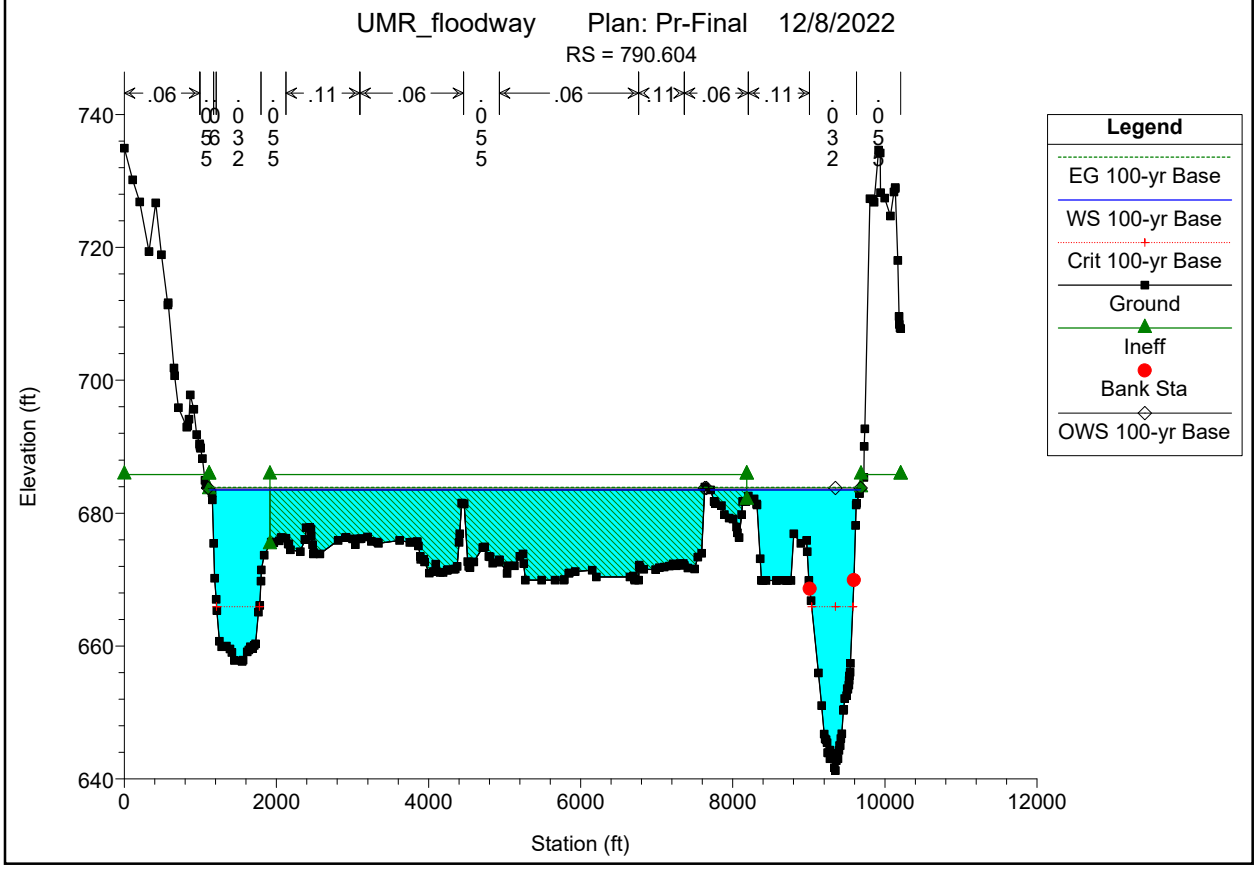

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 793.302
.032
.032
.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

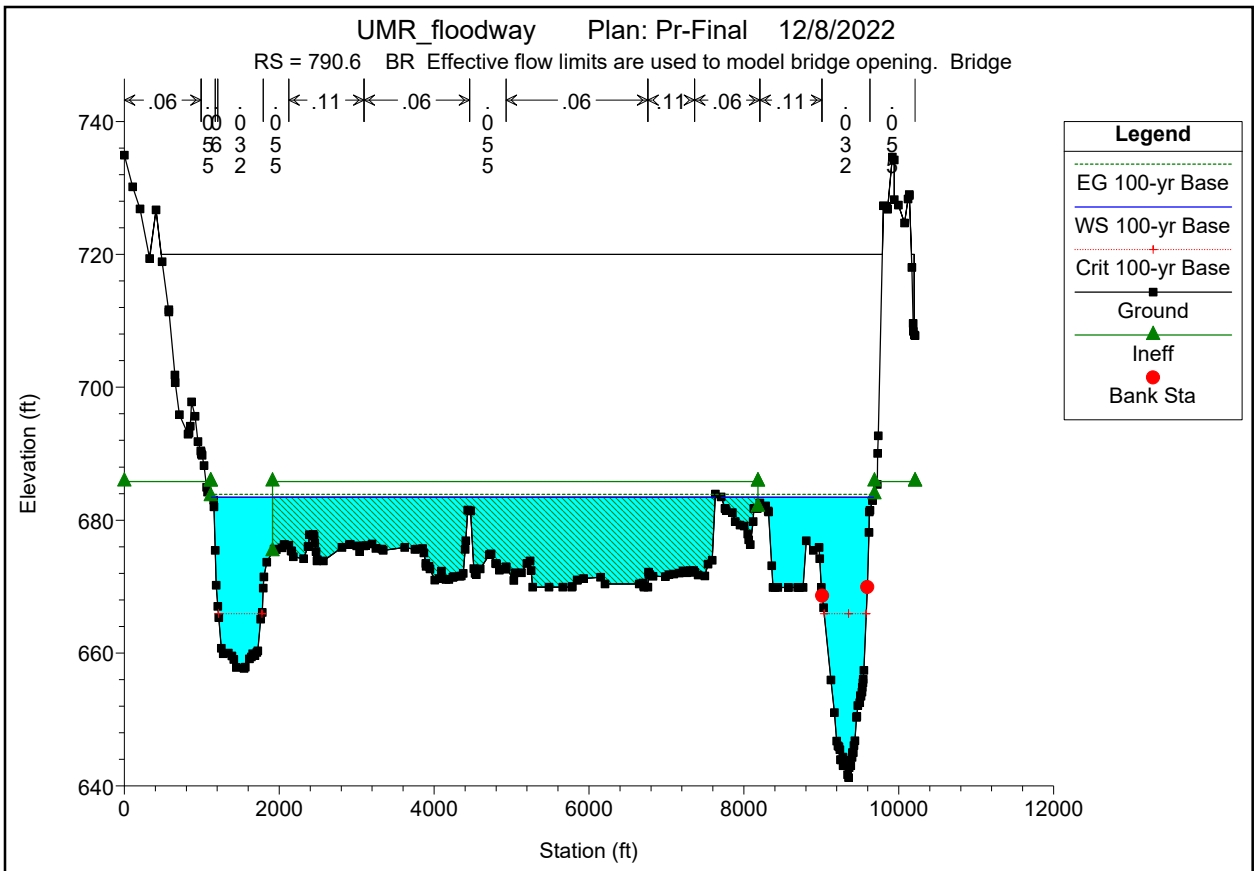

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 793.000
.11
.032
.11
.08
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 792.640
.06
.11
.08
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)

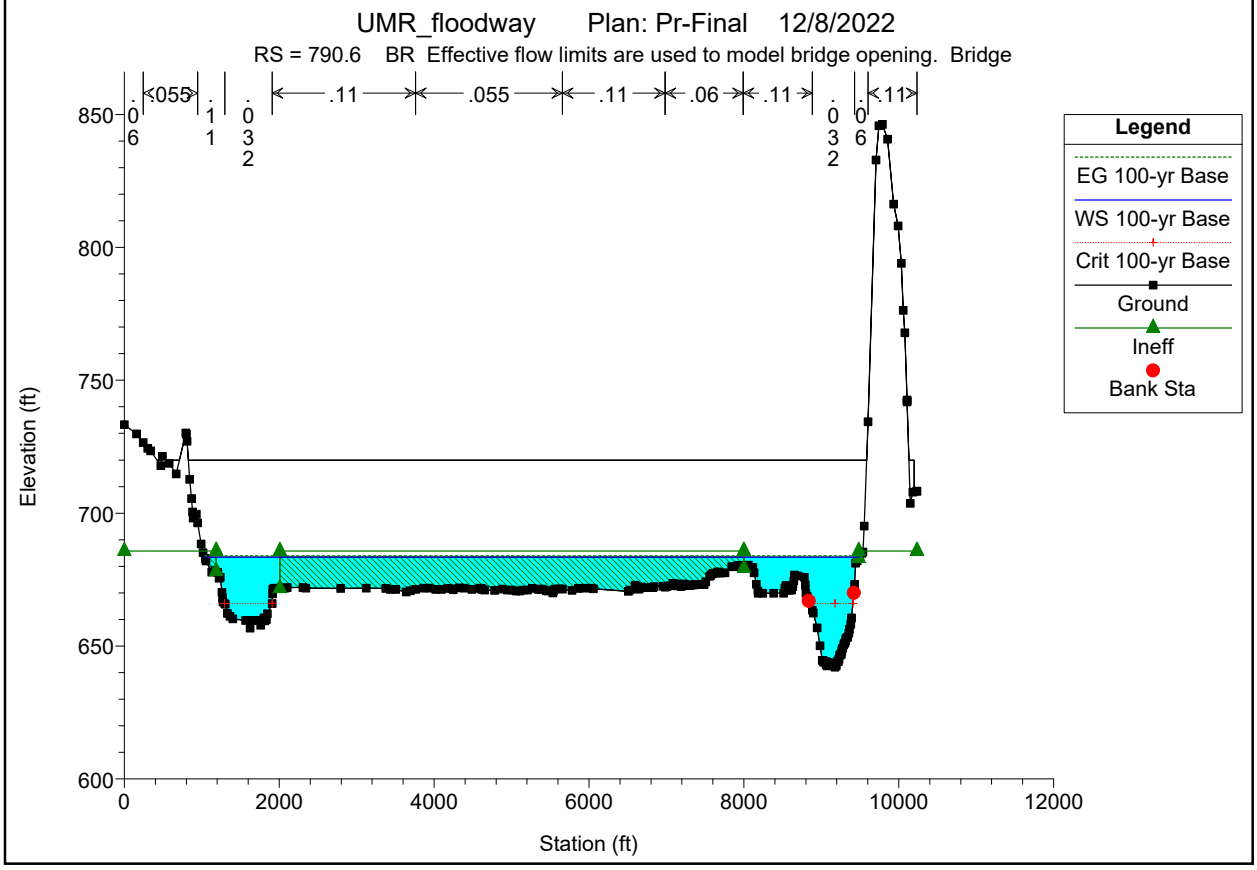

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 792.261
.045 .015 .013 .011 .06 .11 .055 .032 .015 .011 .08 .11 .055
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 791.792
.045 .015 .013 .011 .06 .11 .055 .06 .011 .055 .032 .06 .11 .055
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

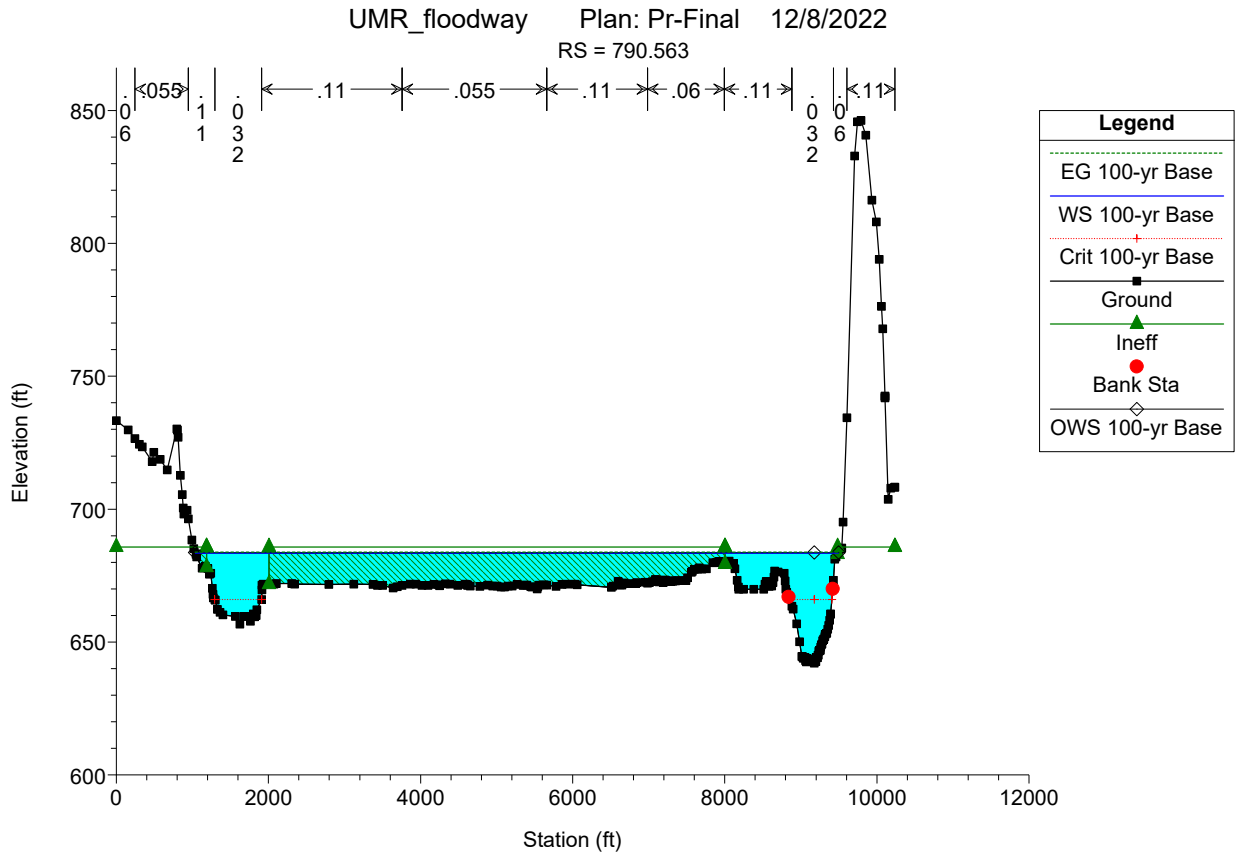

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 791.531
.045
.055
.032
.06
.11
.055
.06
.11
.032
.055
.06
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 791.273
.045
.055
.032
.055
.06
.11
.055
.06
.11
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

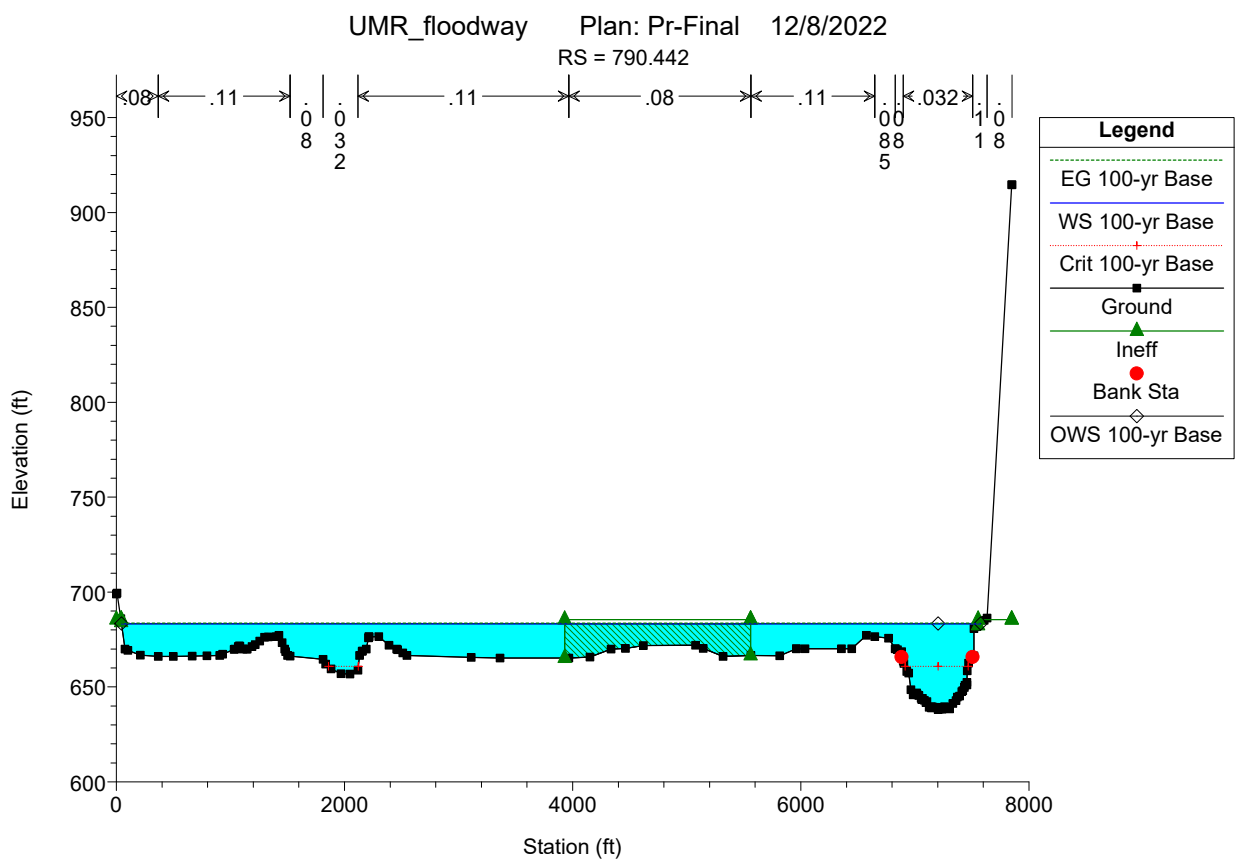

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.974
.06
.09
.11
.09
.11
.032
.085
.032
.085
.015
.085
.085
760
740
720
700
680
660
640
Elevation (ft)
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

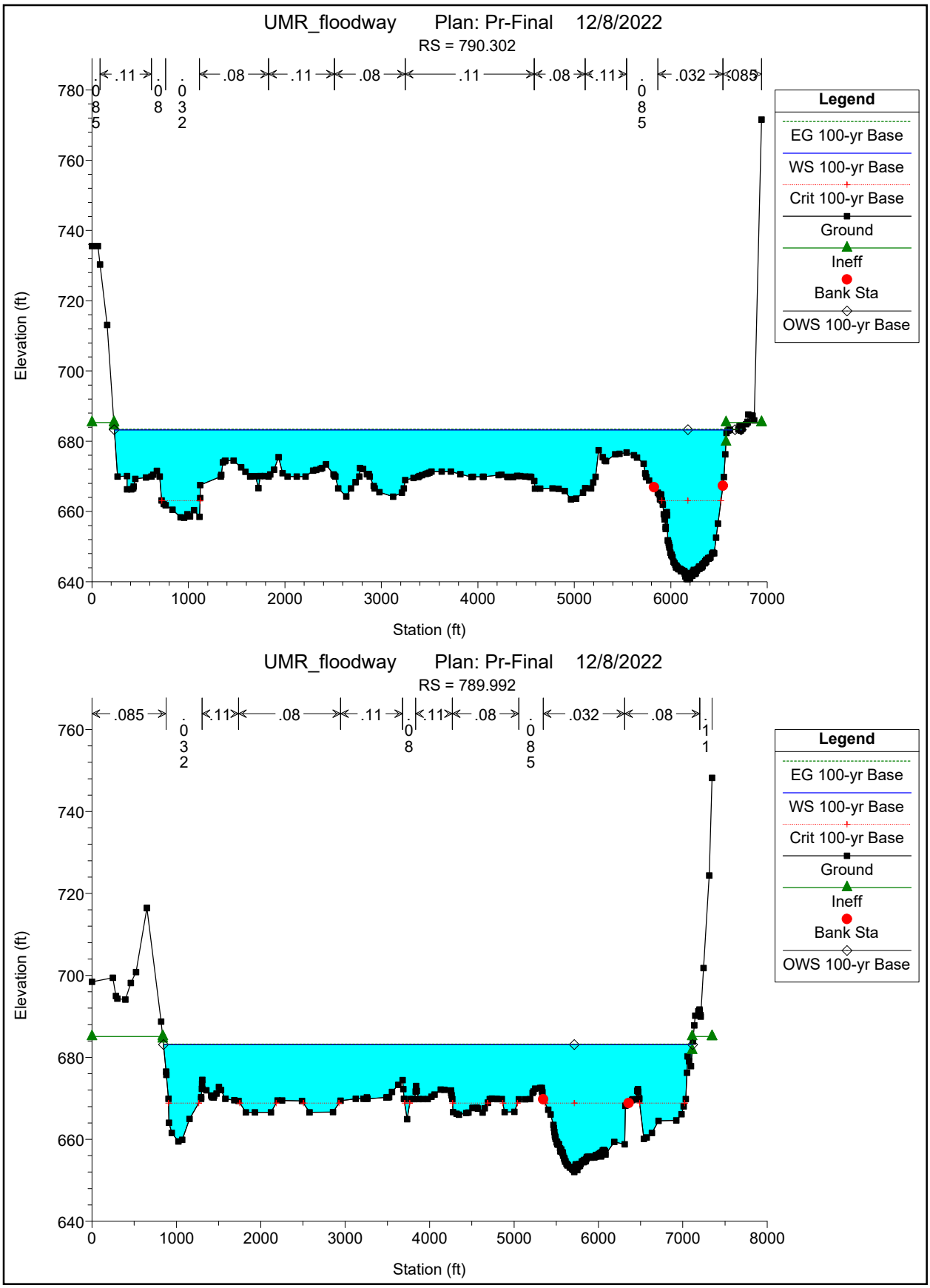

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.604
.06
.11
.06
.06
.11
.06
.11
.055
.032
.055
.055
.032
.055
740
720
700
680
660
640
Elevation (ft)
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

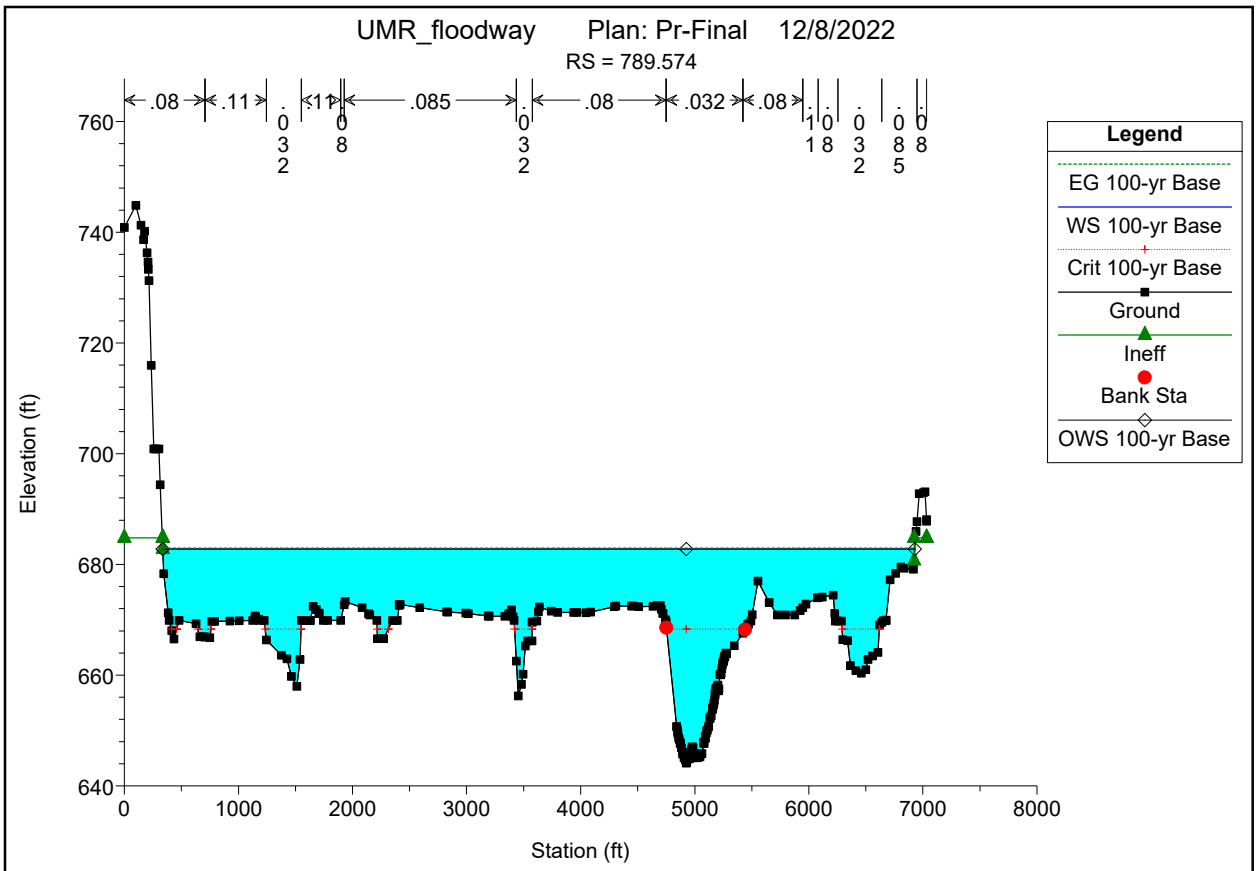

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.032
.055
.11
.06
.055
.06
.11
.06
.11
.032
.055
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

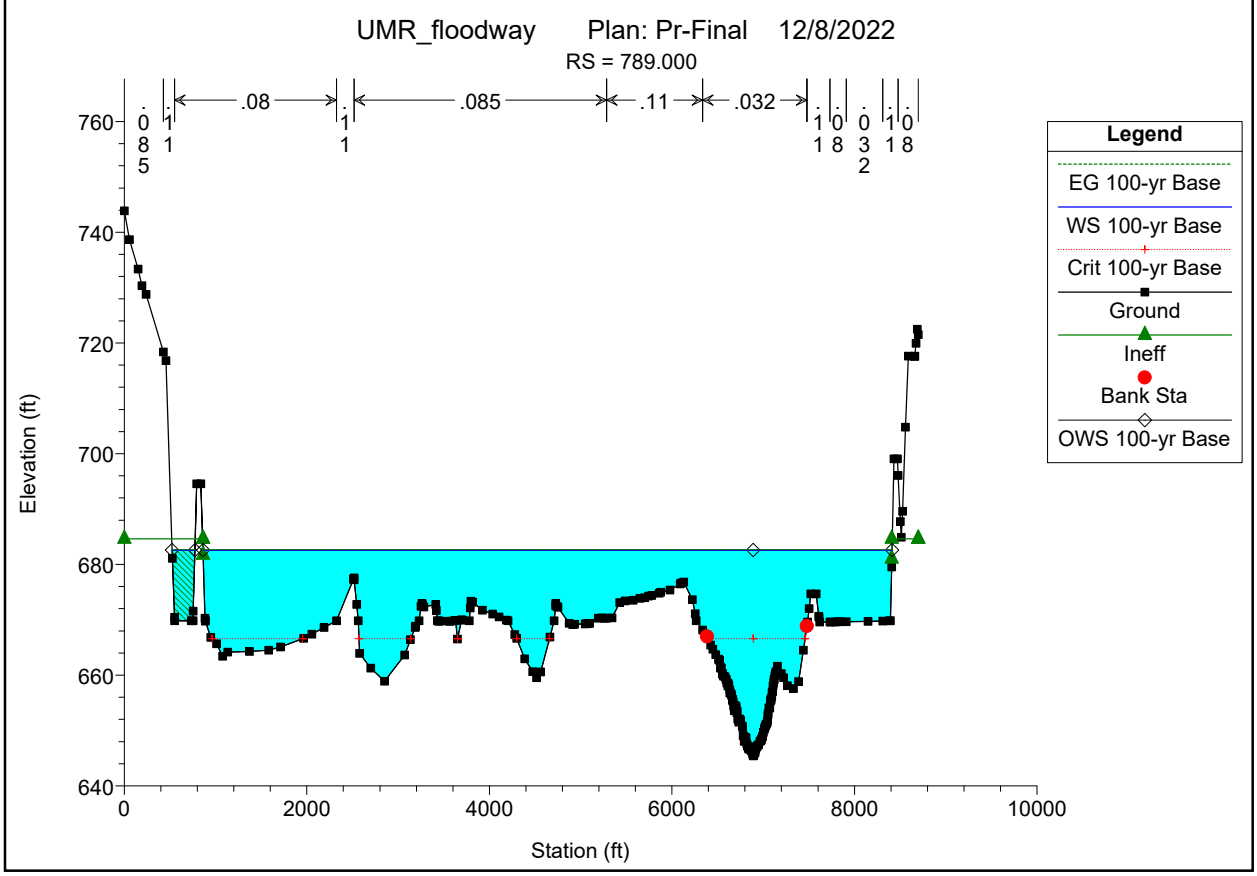

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.6 BR Effective flow limits are used to model bridge opening. Bridge
.06
.055
.11
.032
.11
.055
.11
.06
.11
.032
.06
.11
Elevation (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta

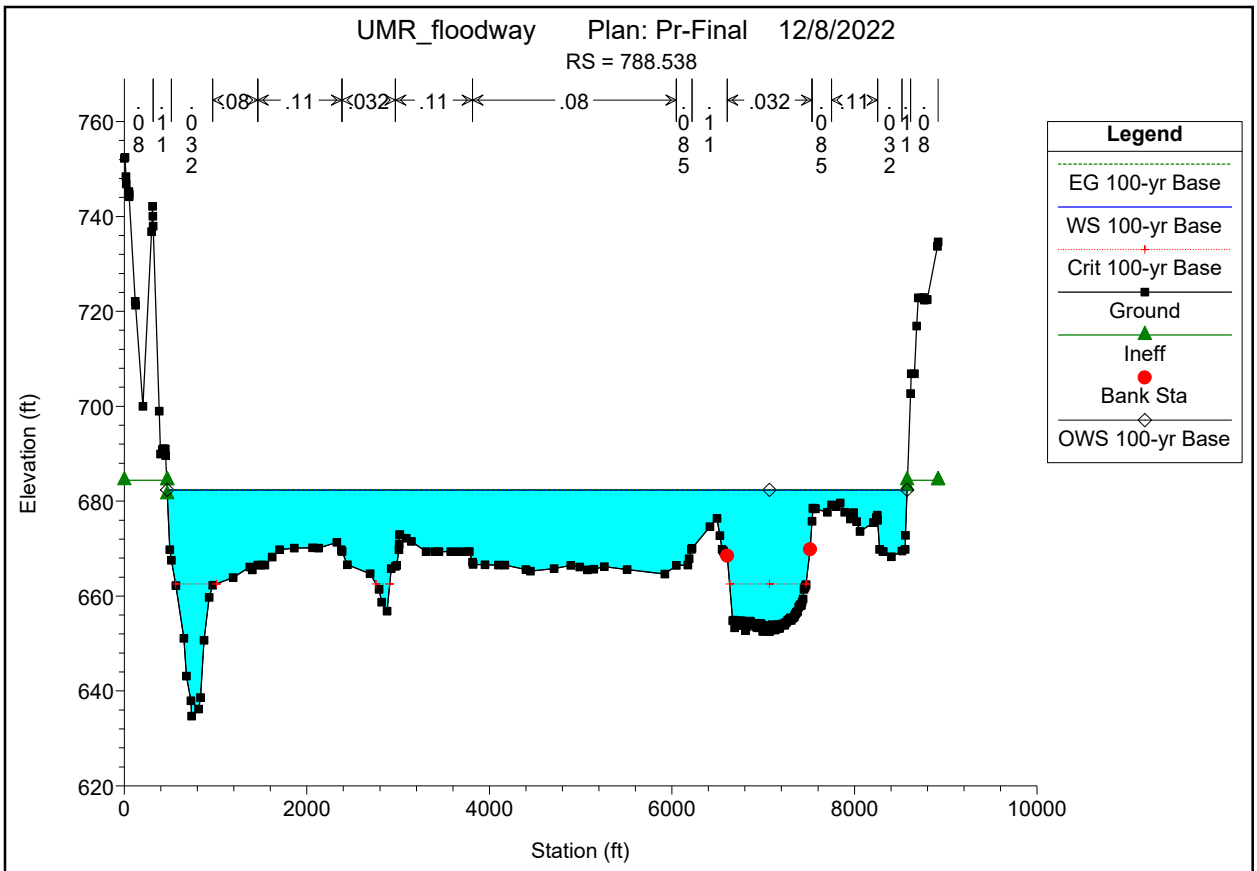

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.563
.06
.055
.11
.032
.11
.055
.11
.06
.11
.032
.06
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

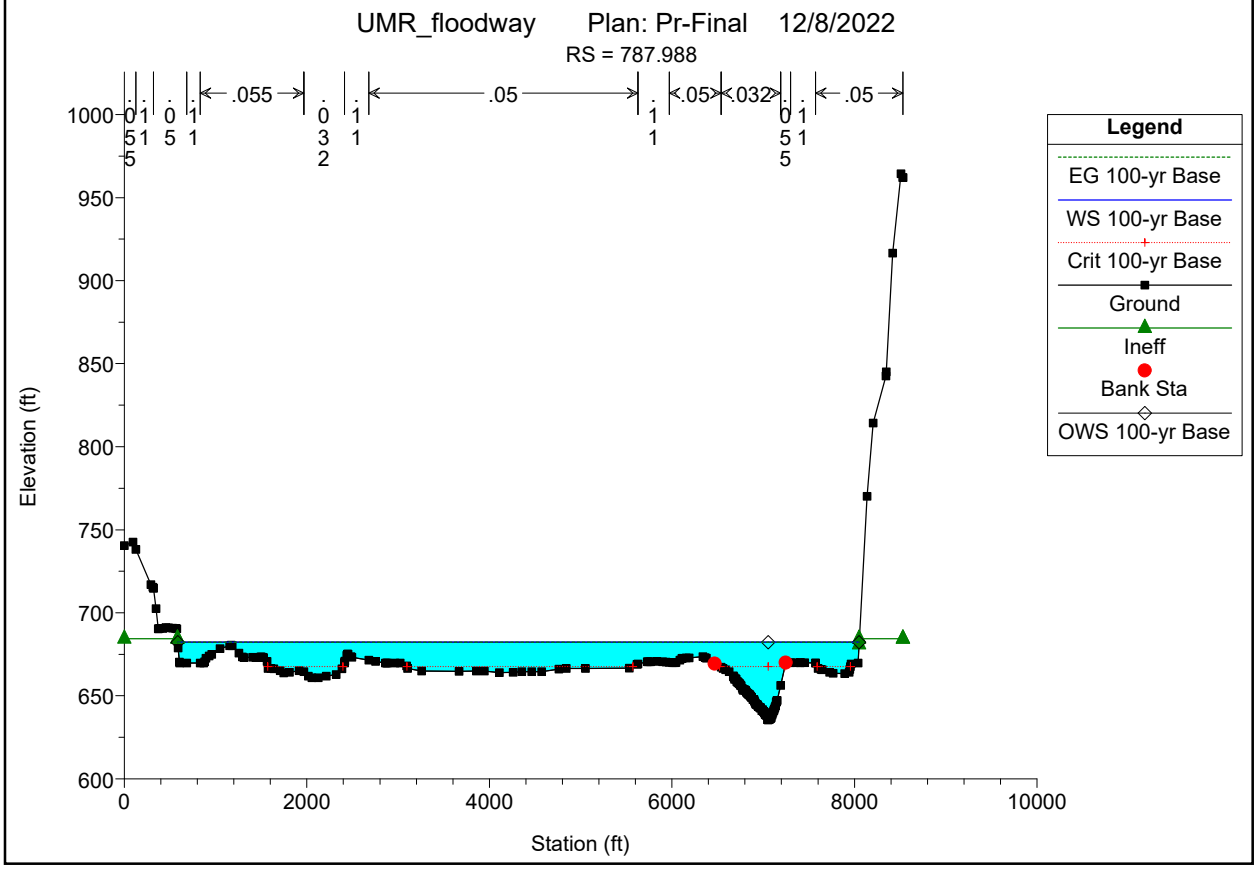

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.442
.08
.11
.08
.032
.11
.08
.11
.085
.088
.032
.11
.08
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

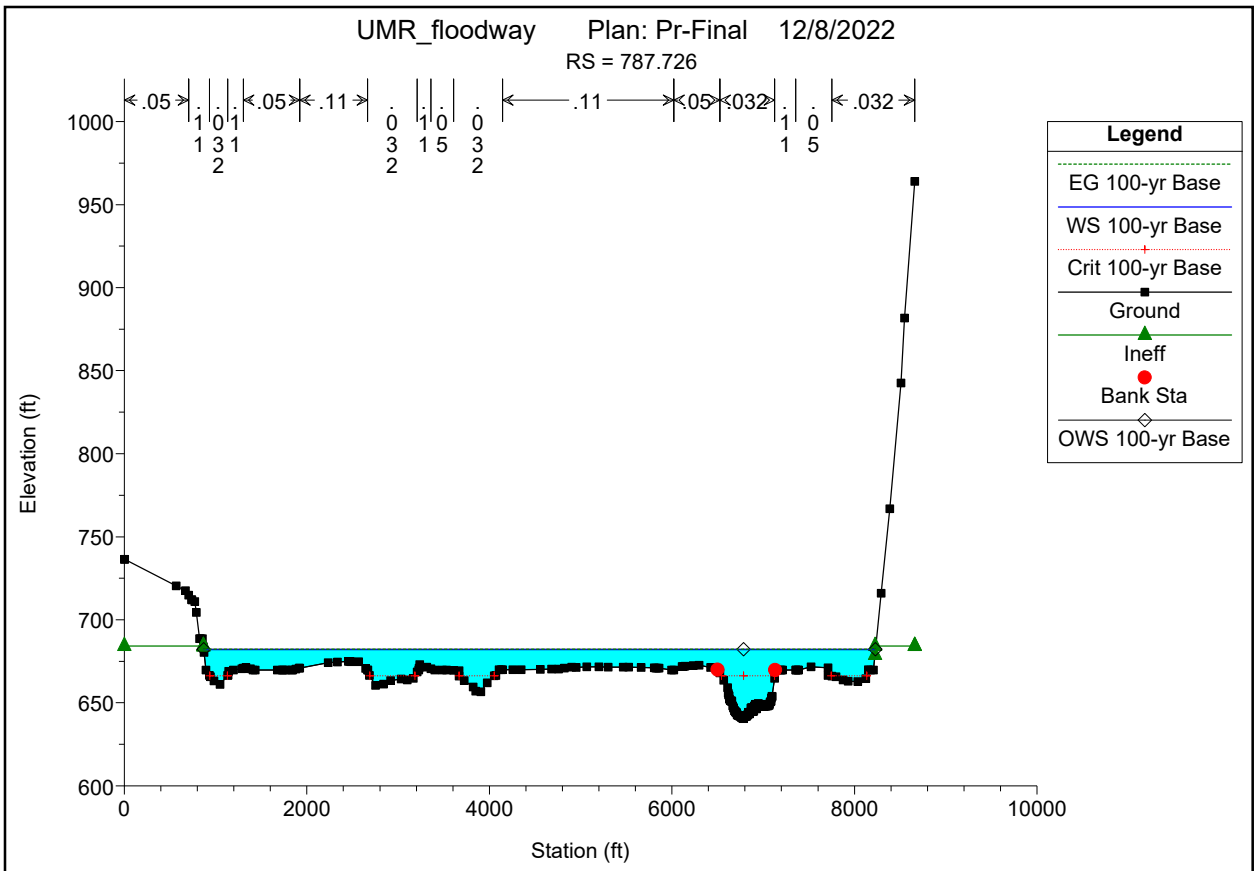

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 790.302
.085
.11
.08
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 789.992
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

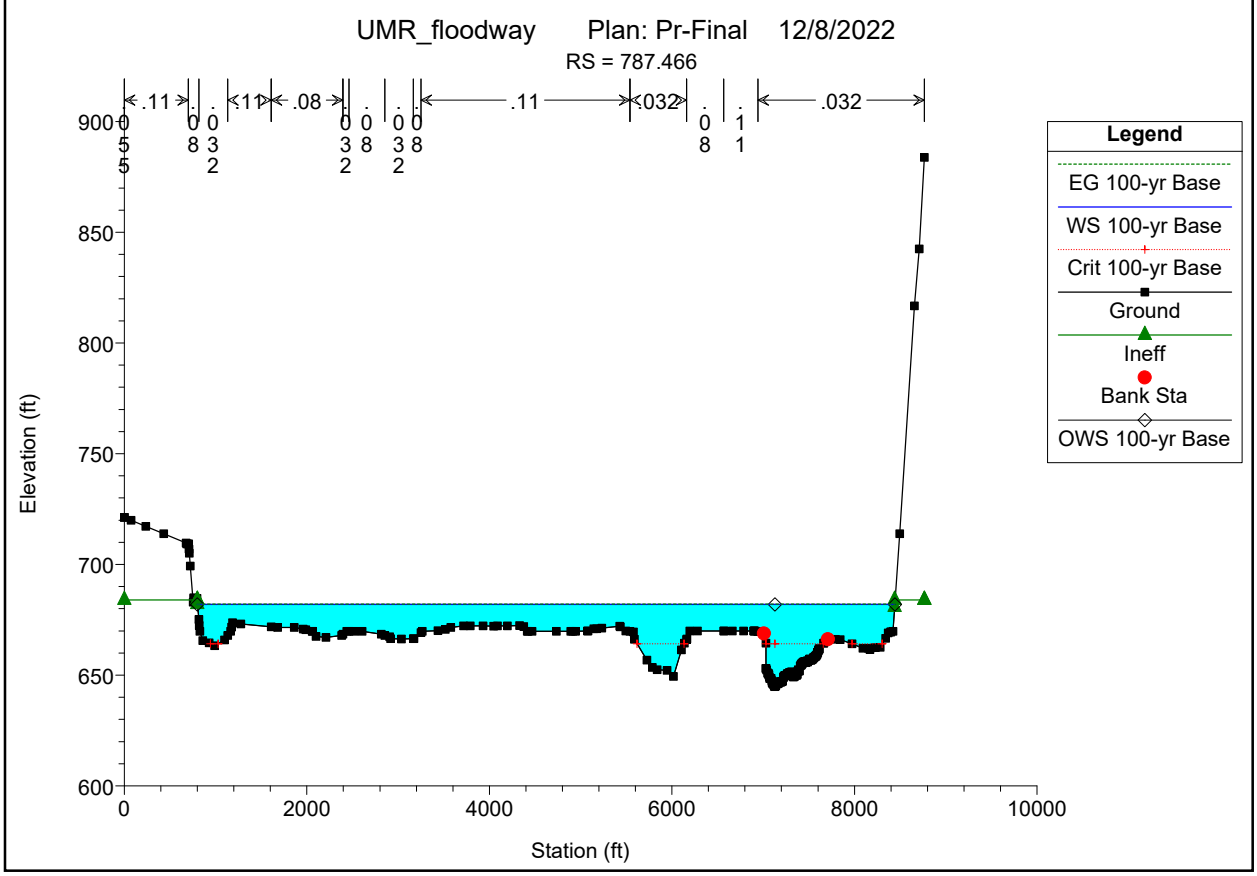

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 789.574
.08
.11
.032
.11
.08
.085
.032
.08
.032
.08
.11
.08
.032
.085
.08
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

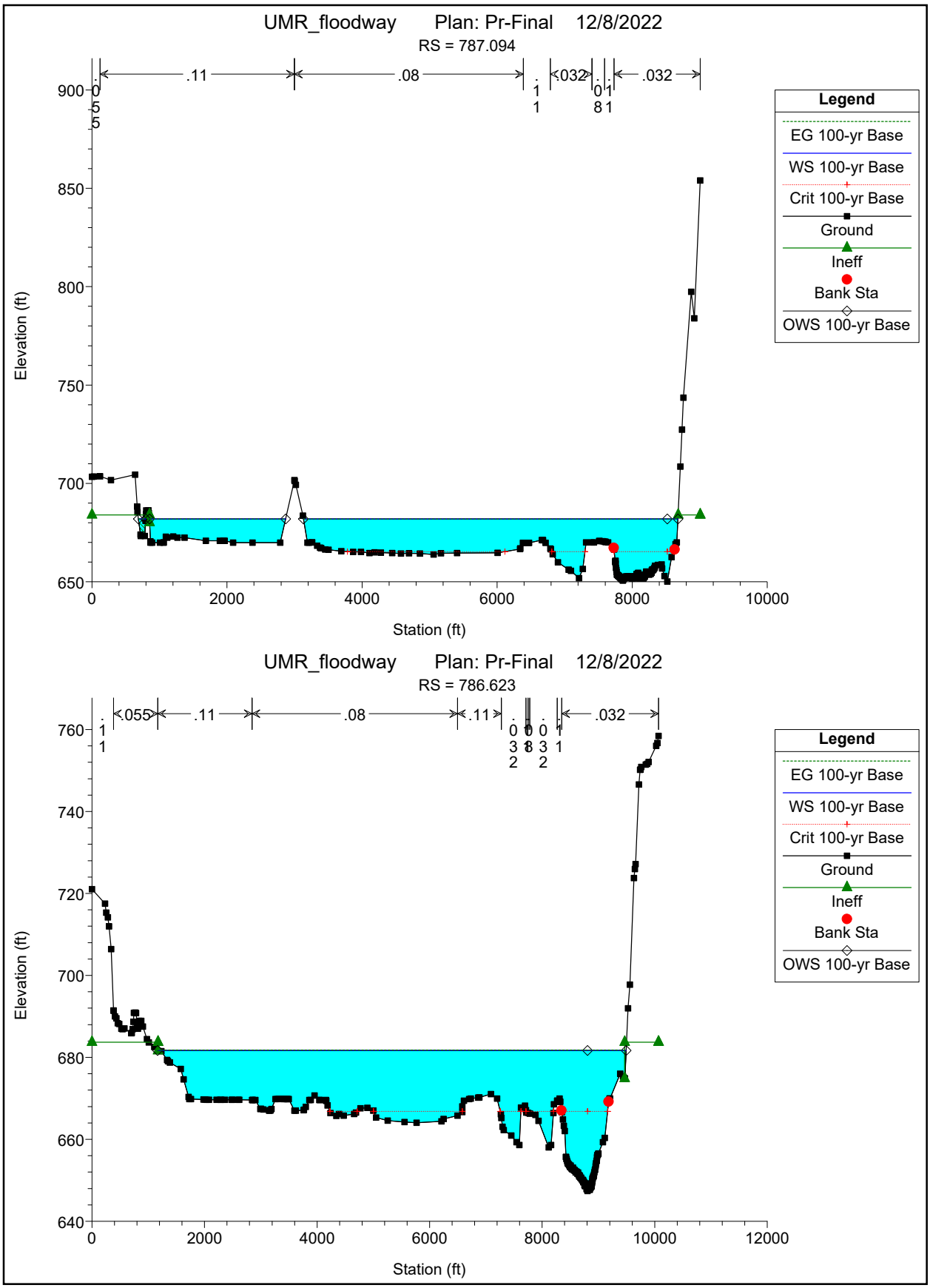

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 789.000
.085
.11
.08
.11
.085
.11
.032
.11
.08
.032
.11
.08
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

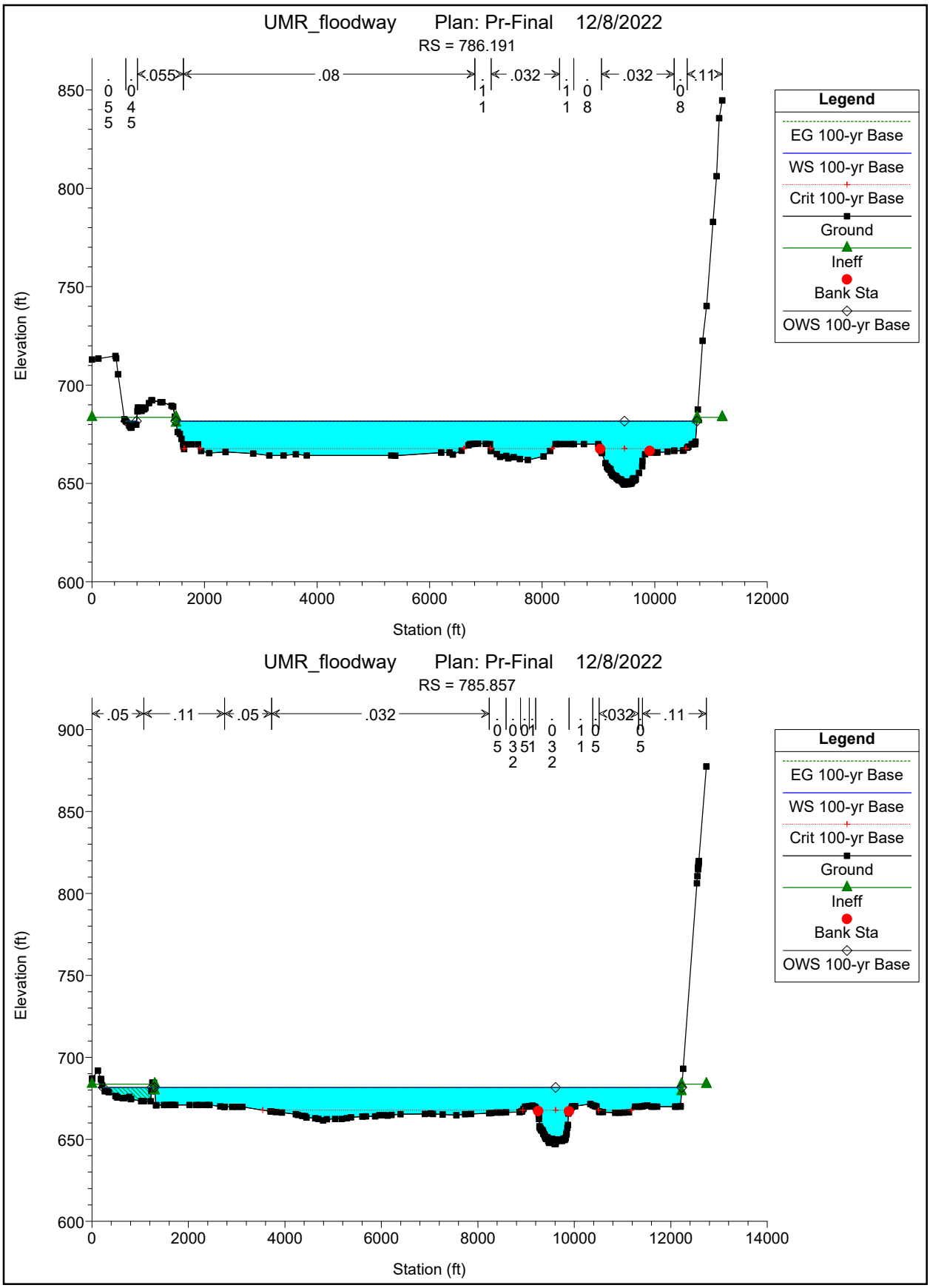

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 788.538
.08
.11
.032
.11
.08
.032
.11
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

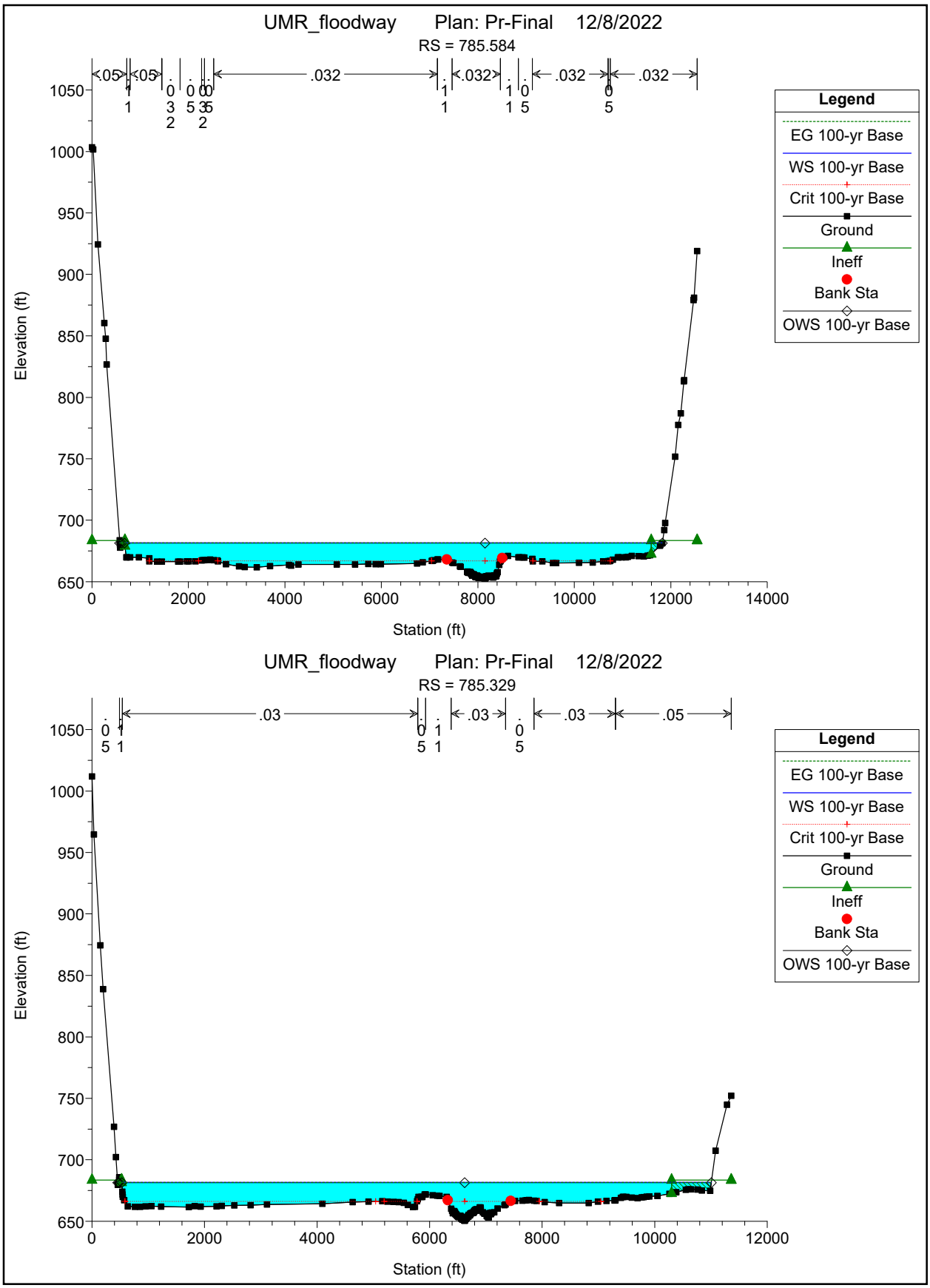

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 787.988
.055
.05
.05
.032
.05
Elevation (ft)
1000
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

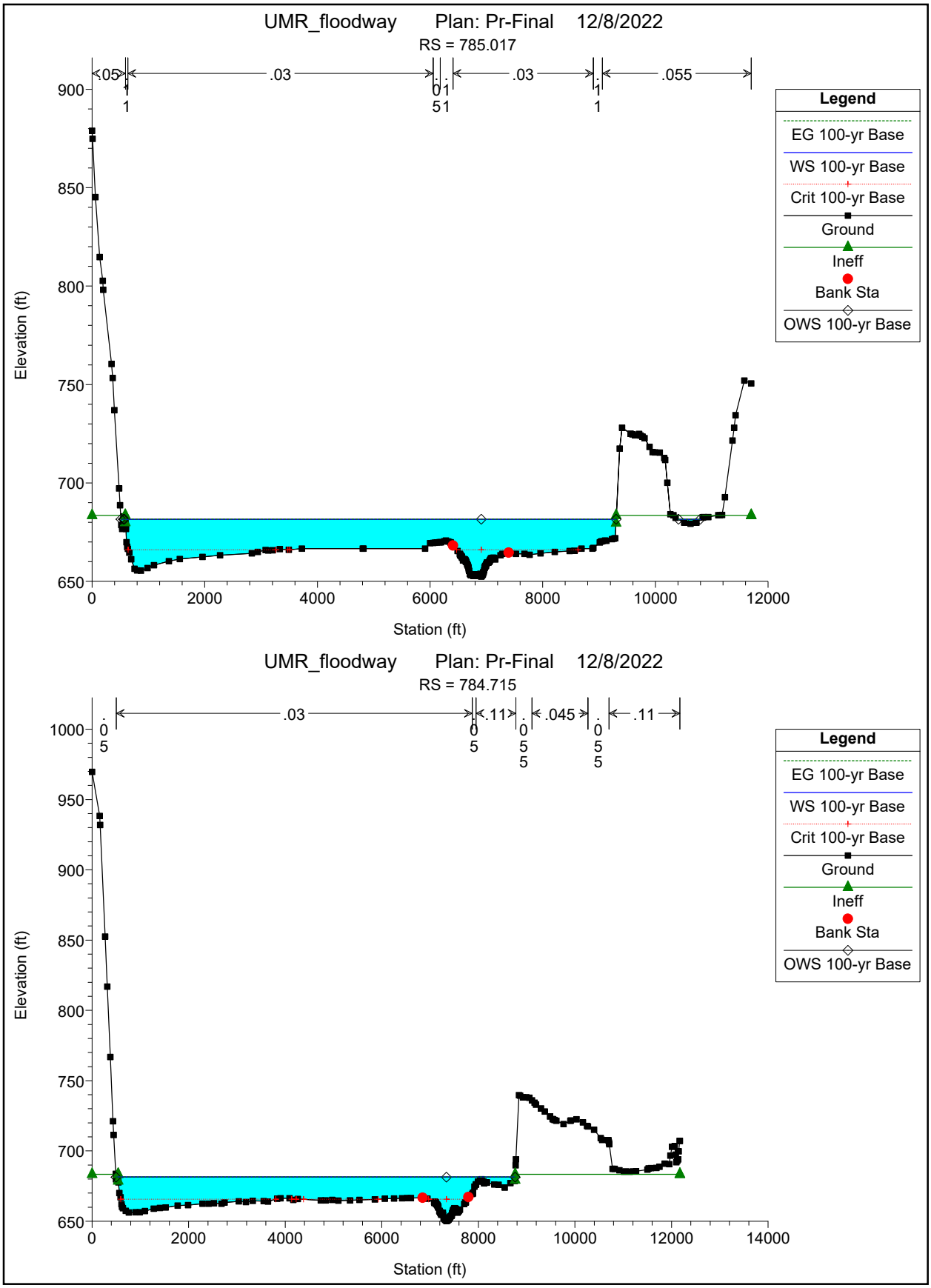

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 787.726
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

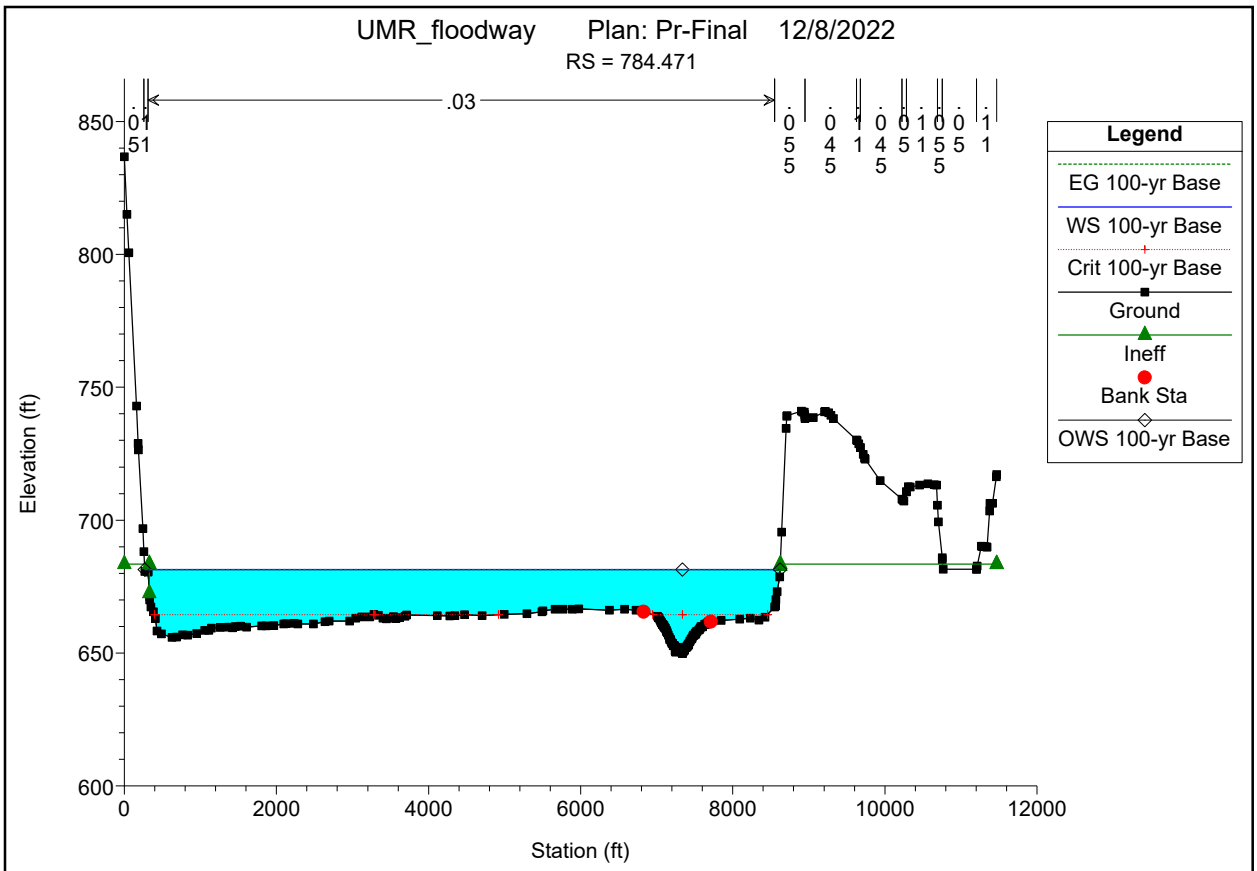

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 787.466
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

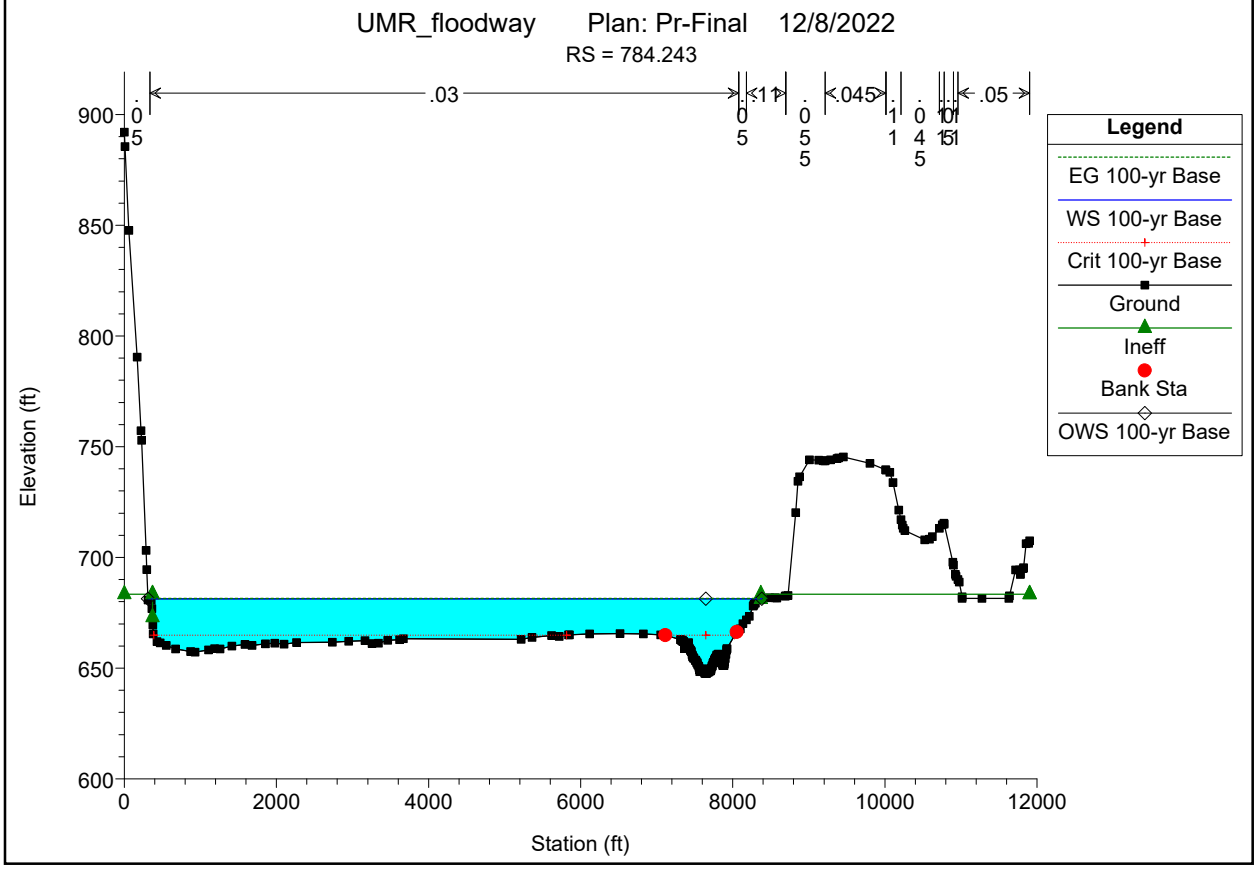

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 787.094
.055
.11
.08
.11
.032
.011
.032
Elevation (ft)
900
850
800
750
700
650
0
2000
4000
6000
8000
10000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 786.623
.11
.055
.11
.08
.11
.032
Elevation (ft)
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

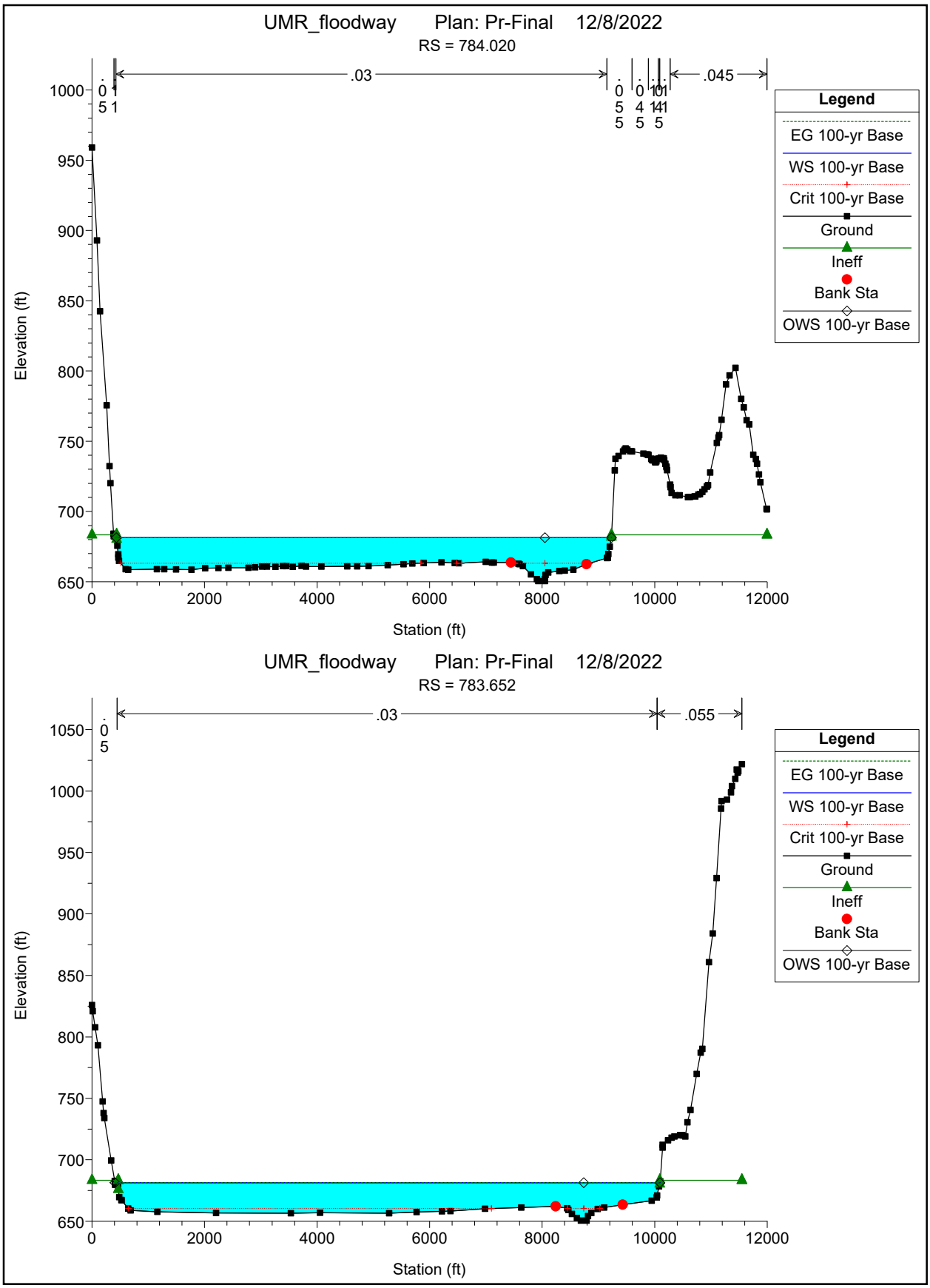

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 786.191
.055
.08
.032
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 785.857
.05
.11
.05
.032
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

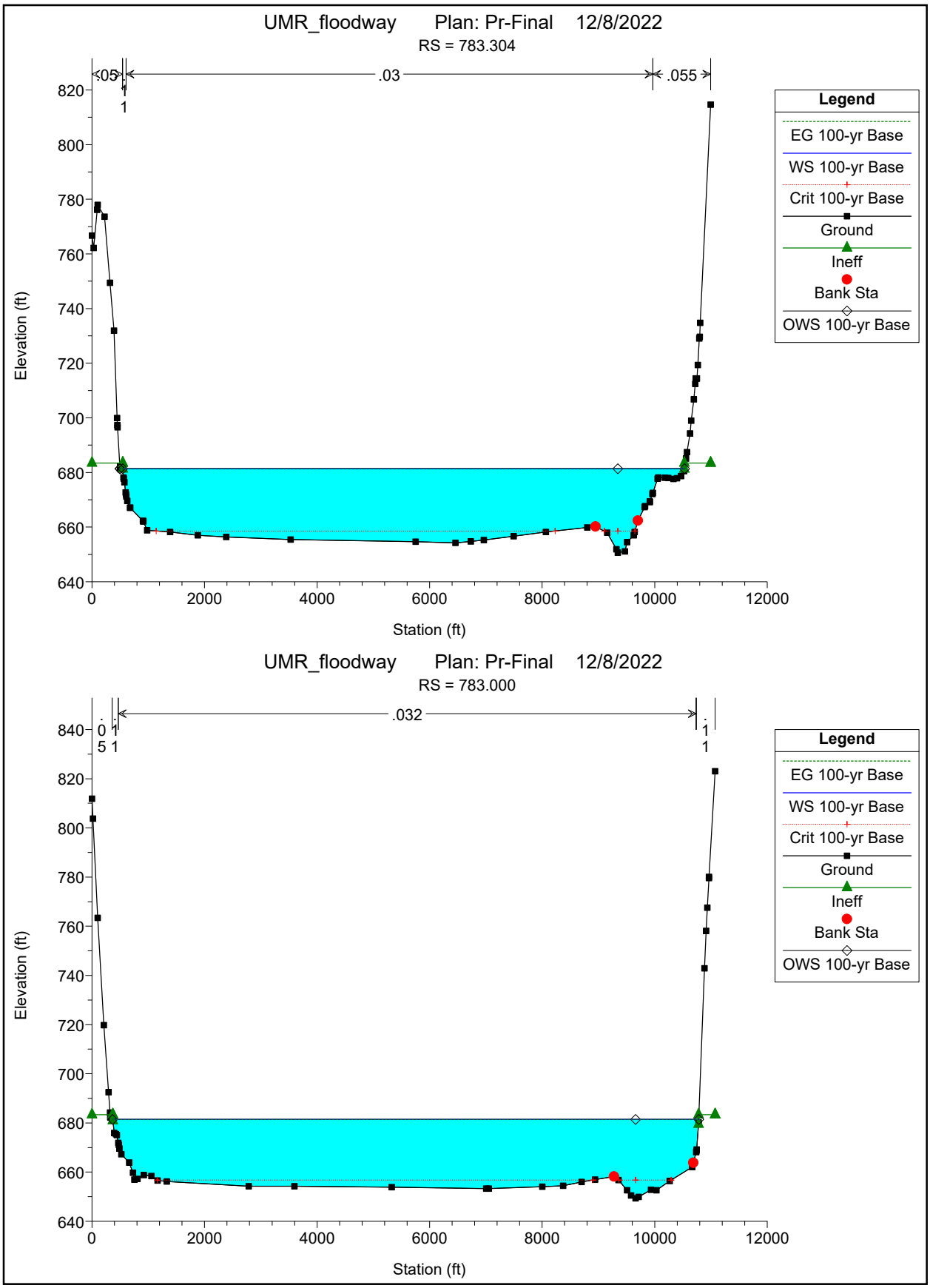

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 785.584
.05
.05
.032
.032
.032
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 785.329
.03
.03
.03
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

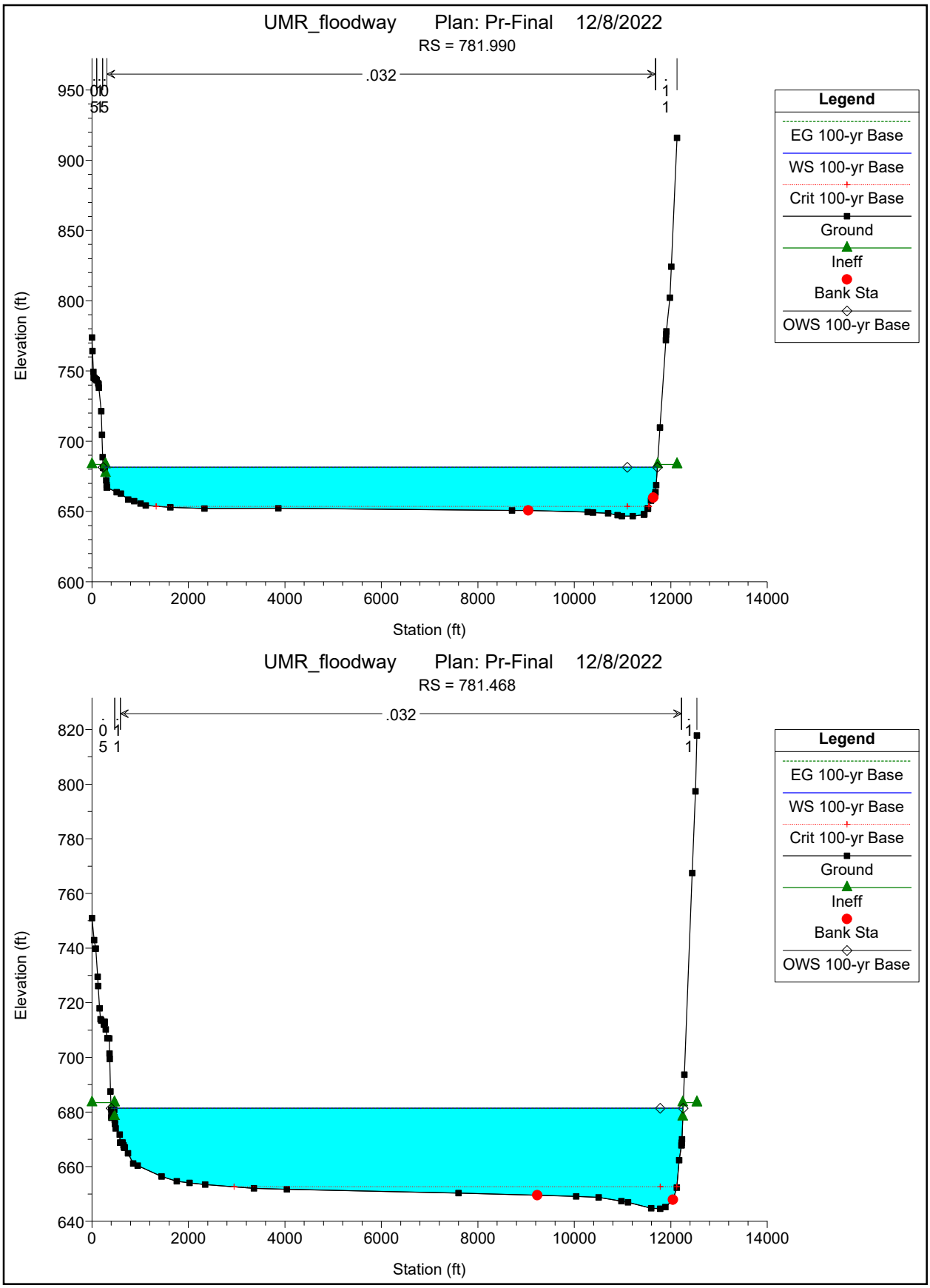

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 785.017
.05
.03
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 784.715
.03
.11
.045
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

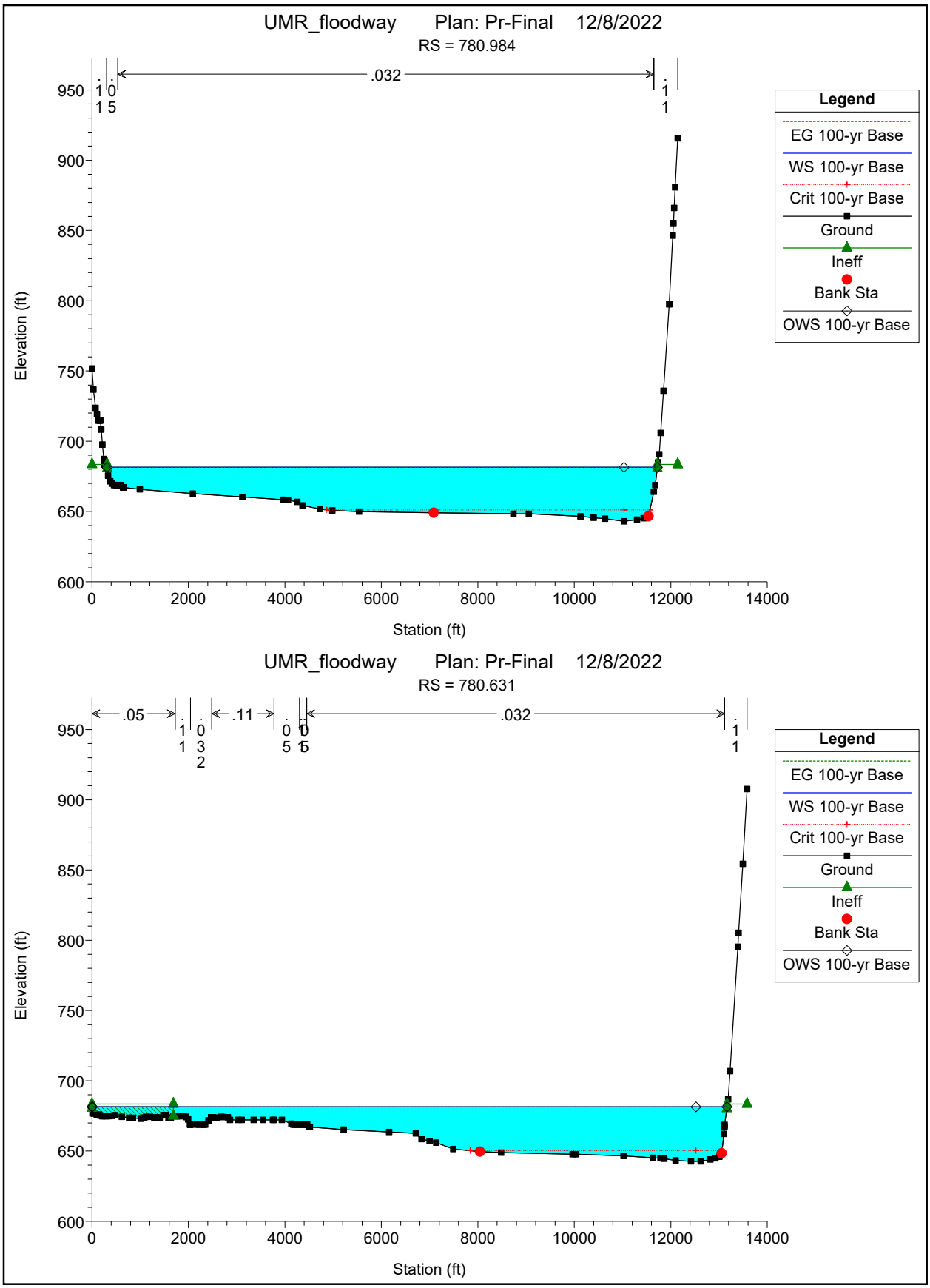

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 784.471
.03
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000

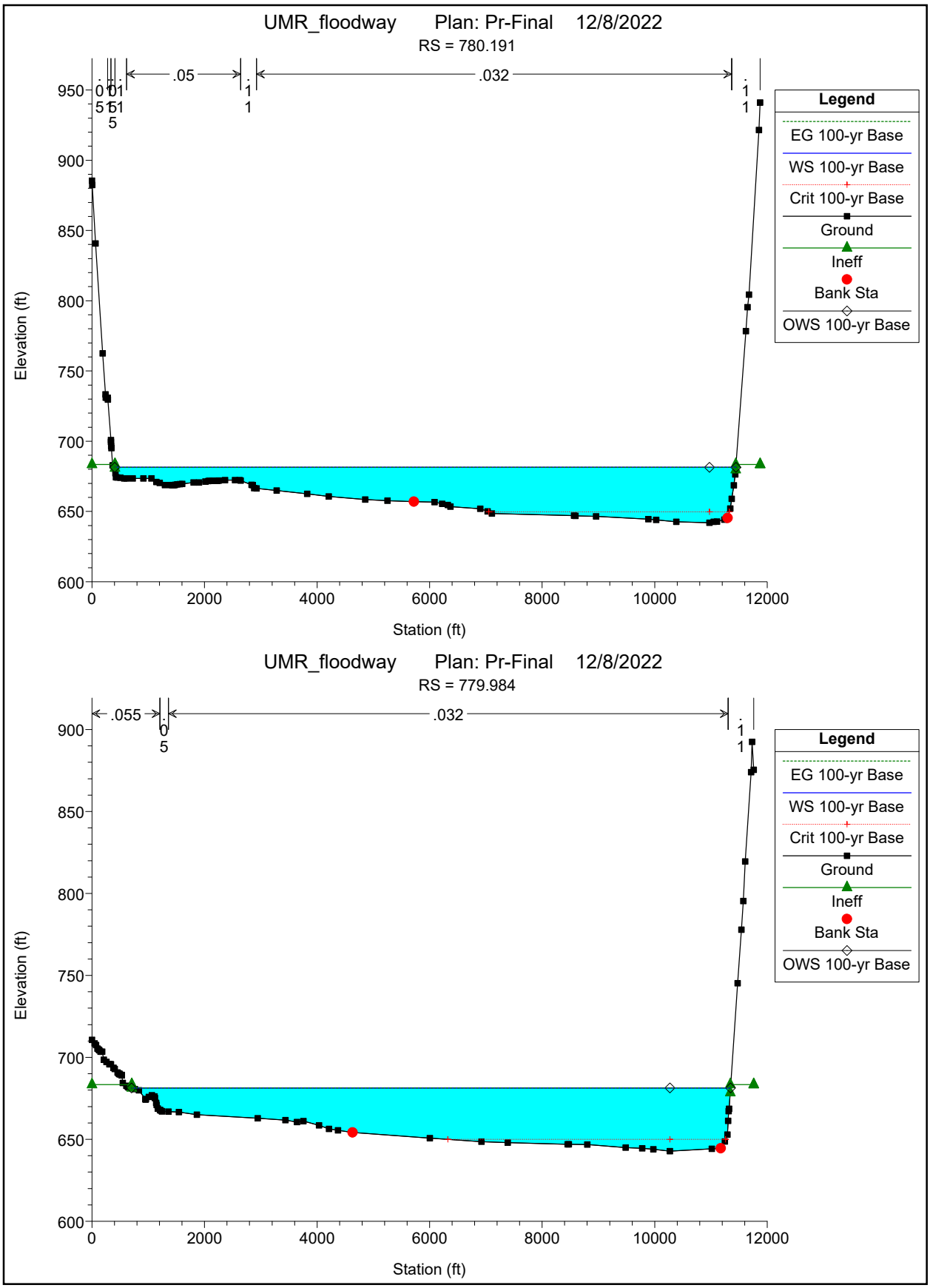

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 784.243
.03
.045
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
12000

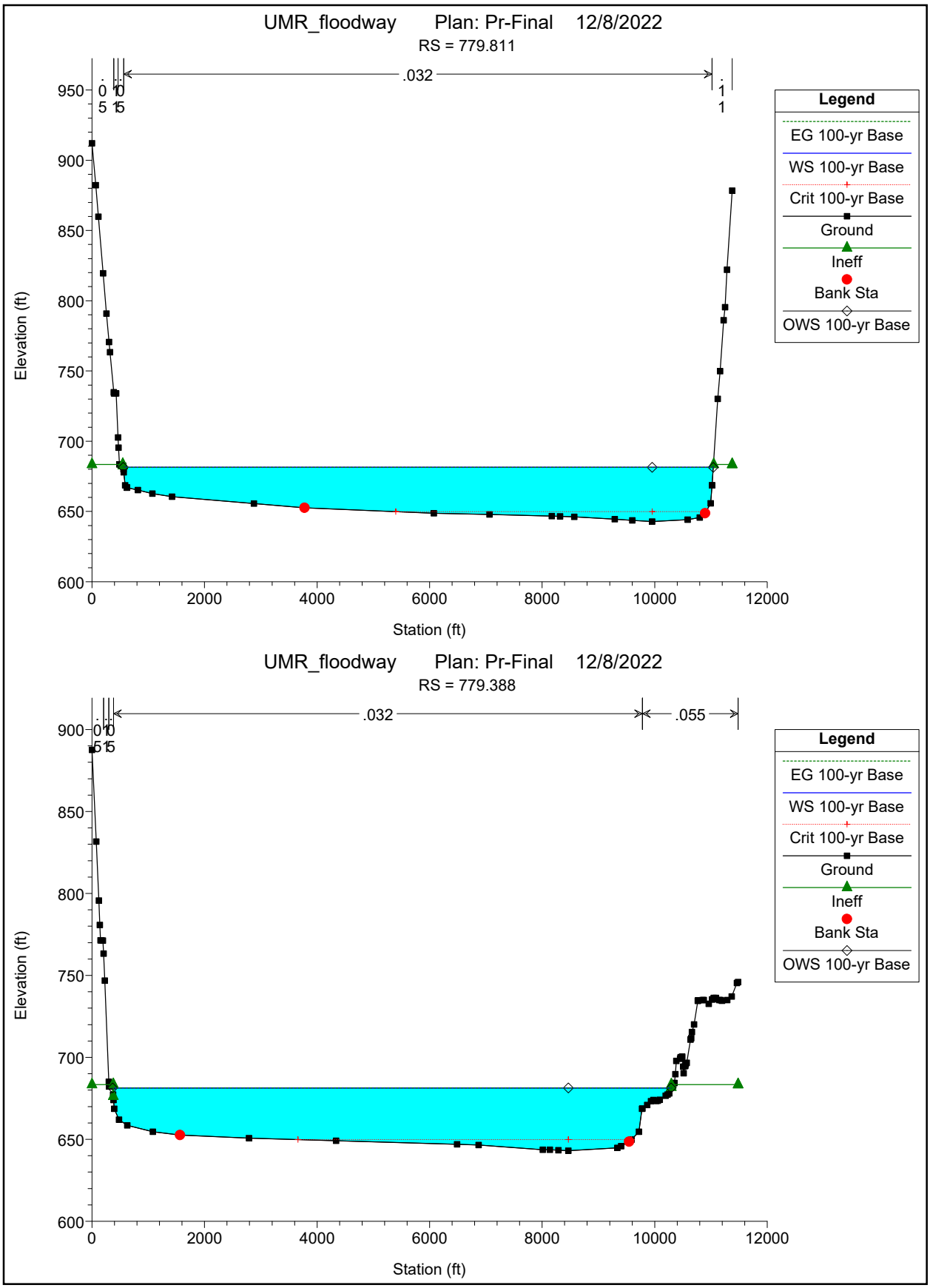

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 784.020
.03
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 783.652
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

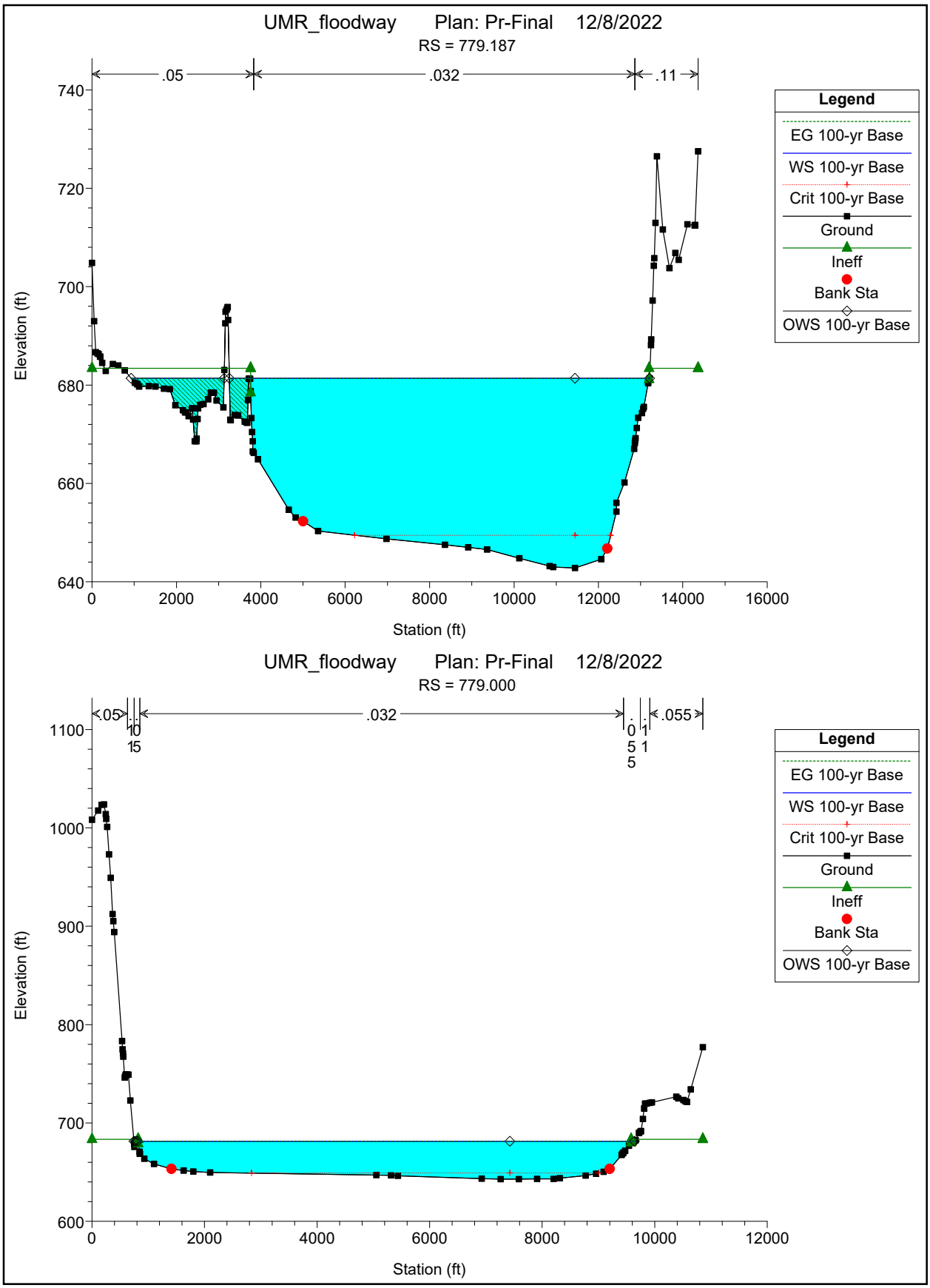

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 783.304
.05
.03
.055
1
1
Elevation (ft)
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 783.000
.032
.05
1
1
1
Elevation (ft)
840
820
800
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

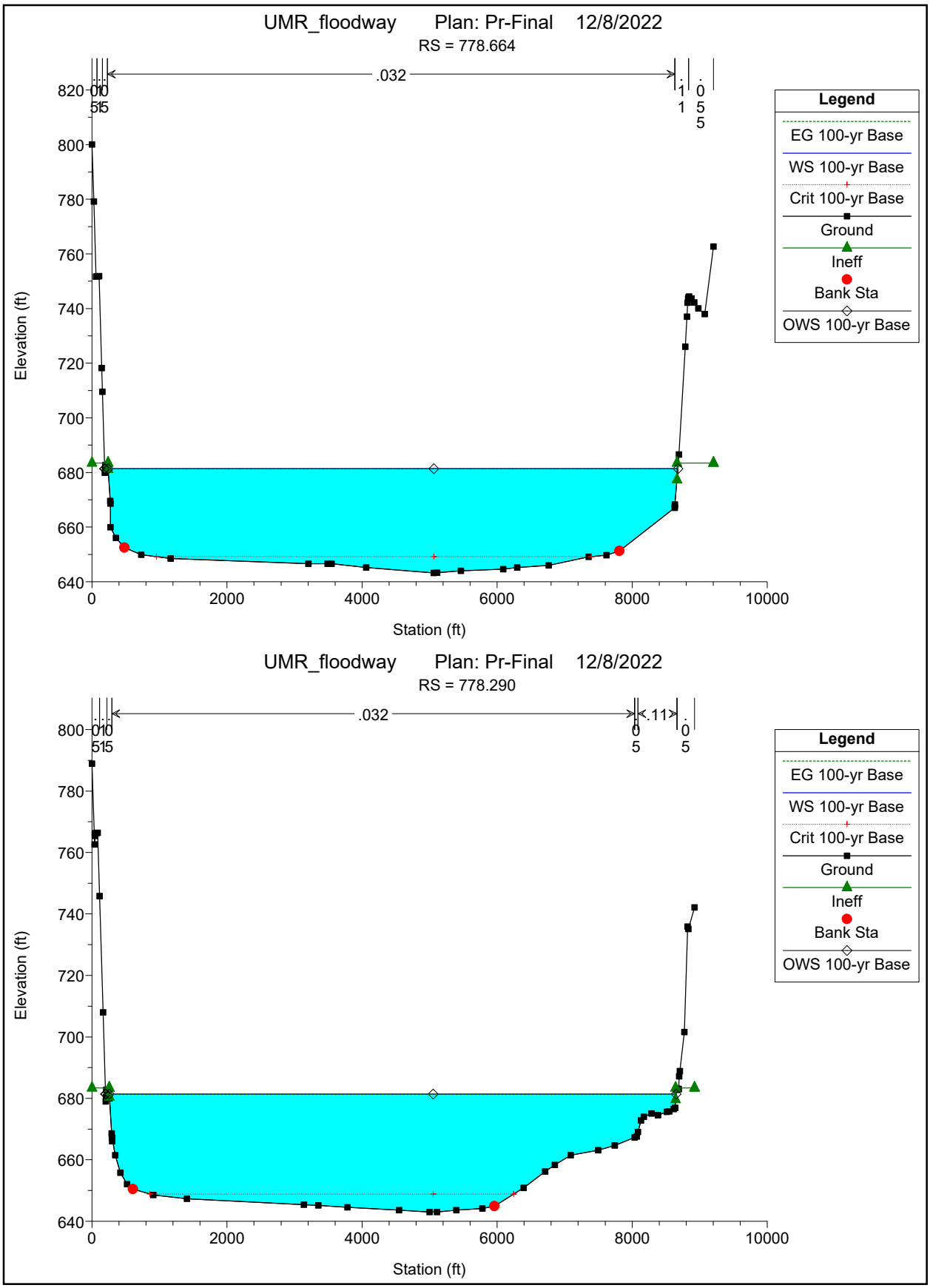

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 781.990
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 781.468
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

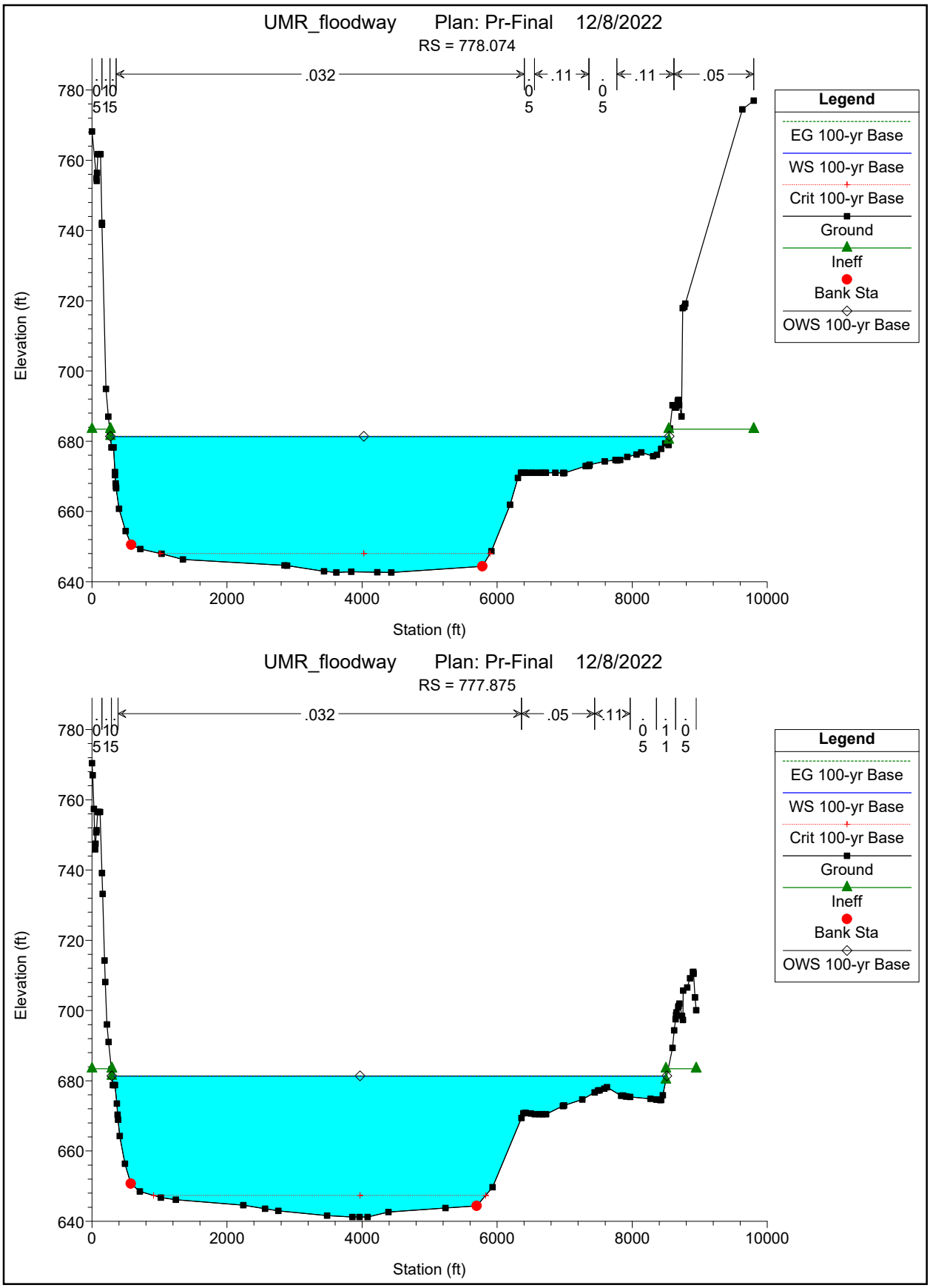

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 780.984
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 780.631
.05
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

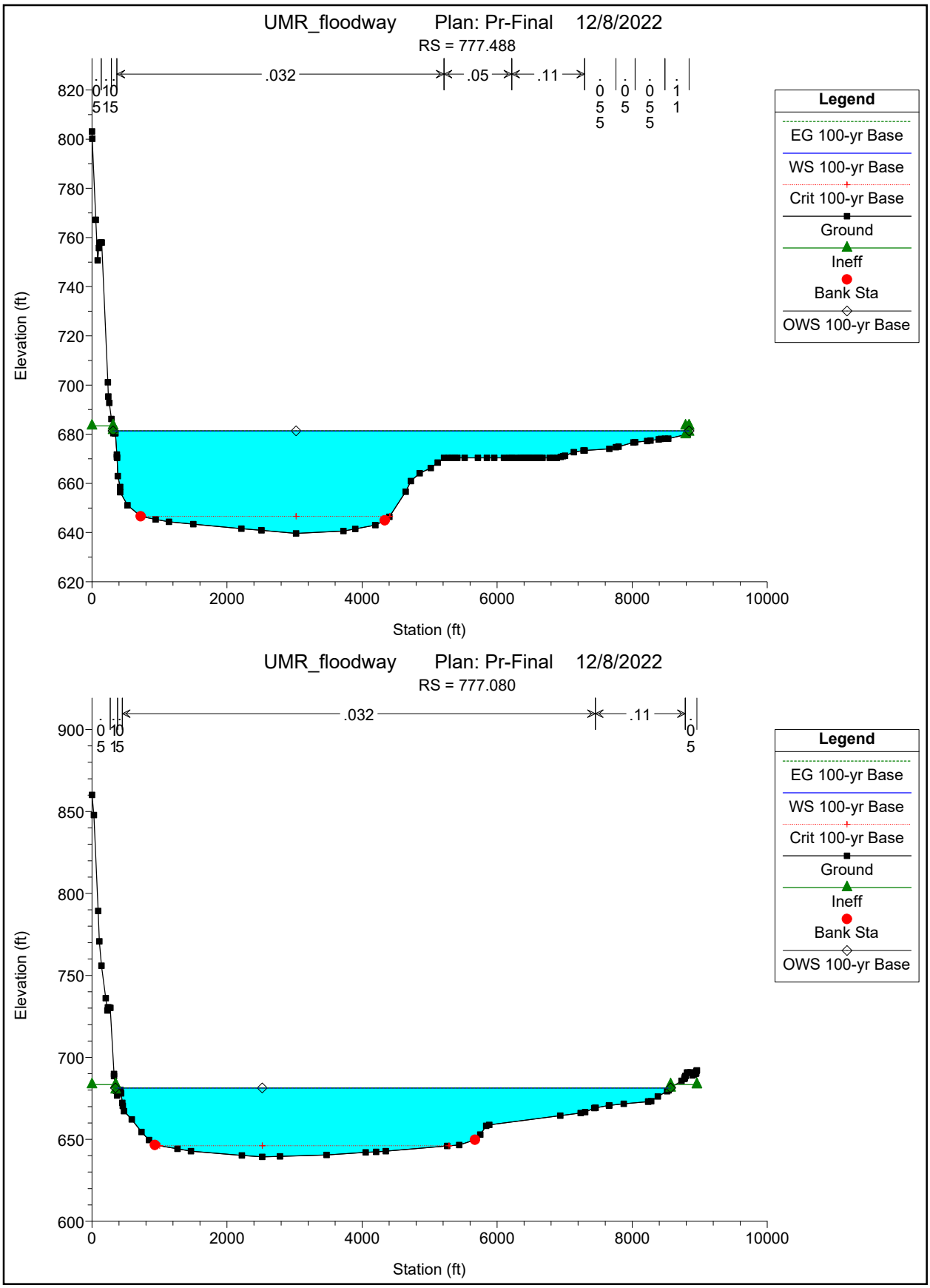

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 780.191
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 779.984
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

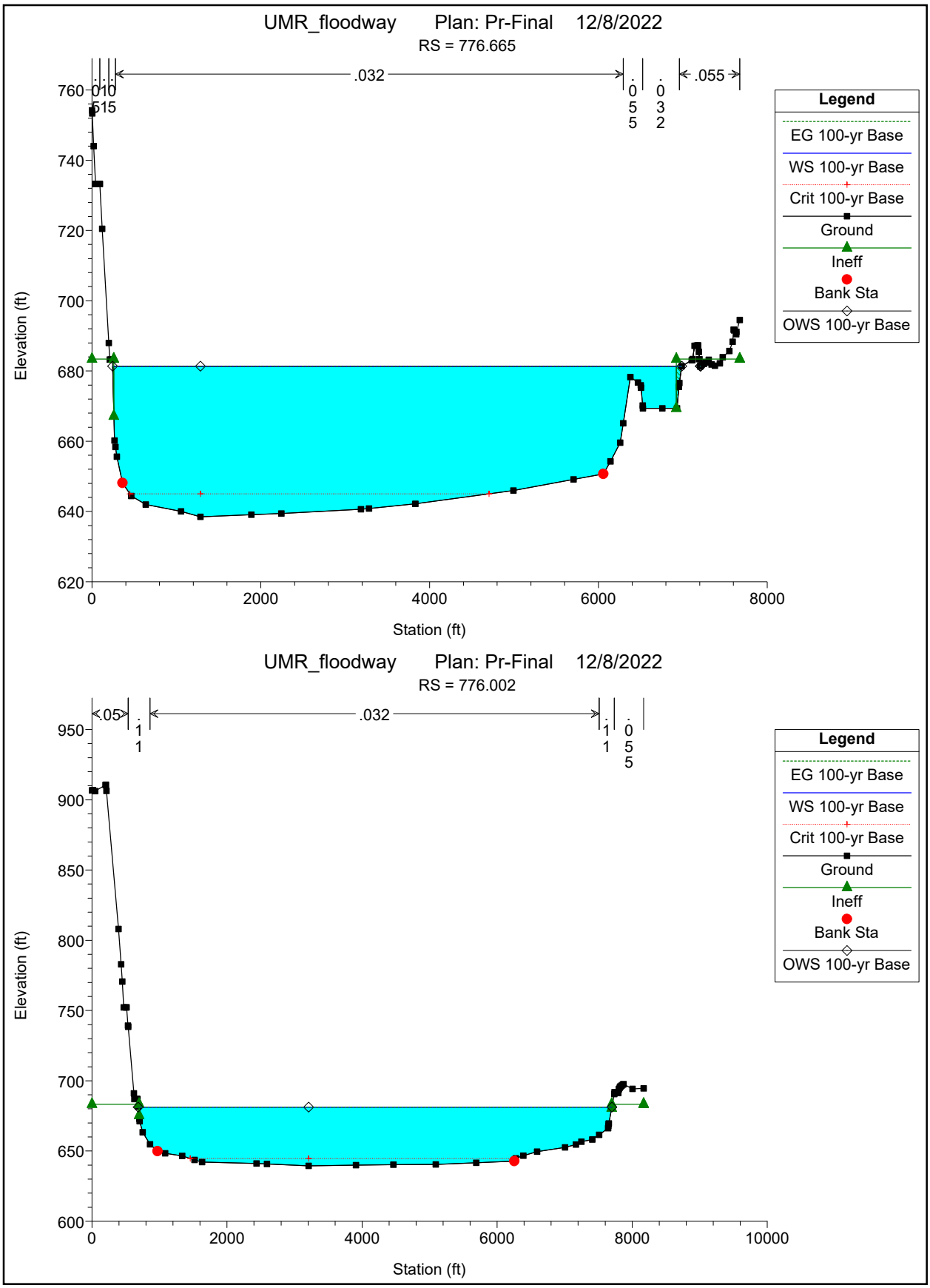

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 779.811
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 779.388
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

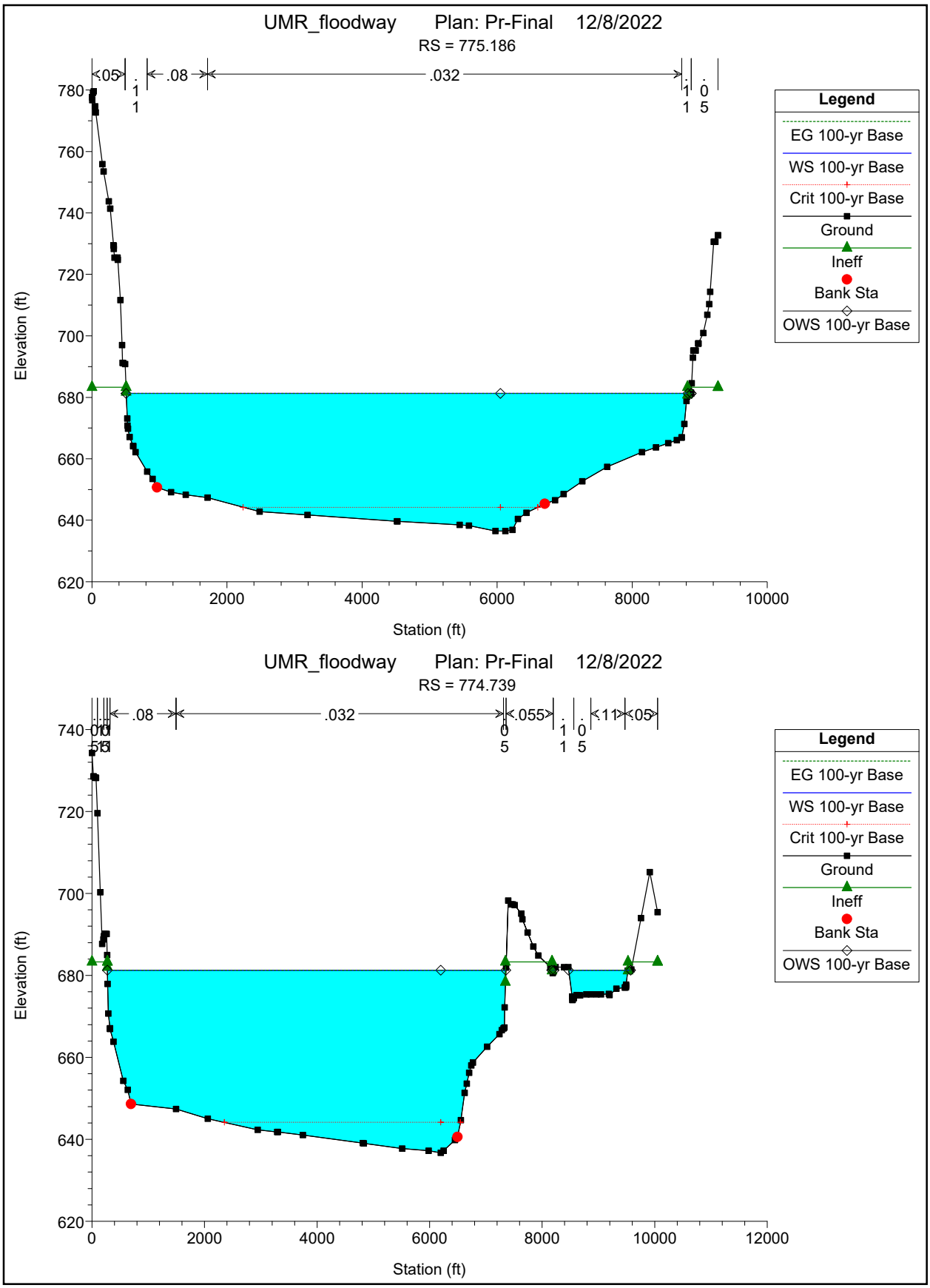

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 779.187
.05
.032
.11
Elevation (ft)
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 779.000
.05
.032
.055
Elevation (ft)
1100
1000
900
800
700
600
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

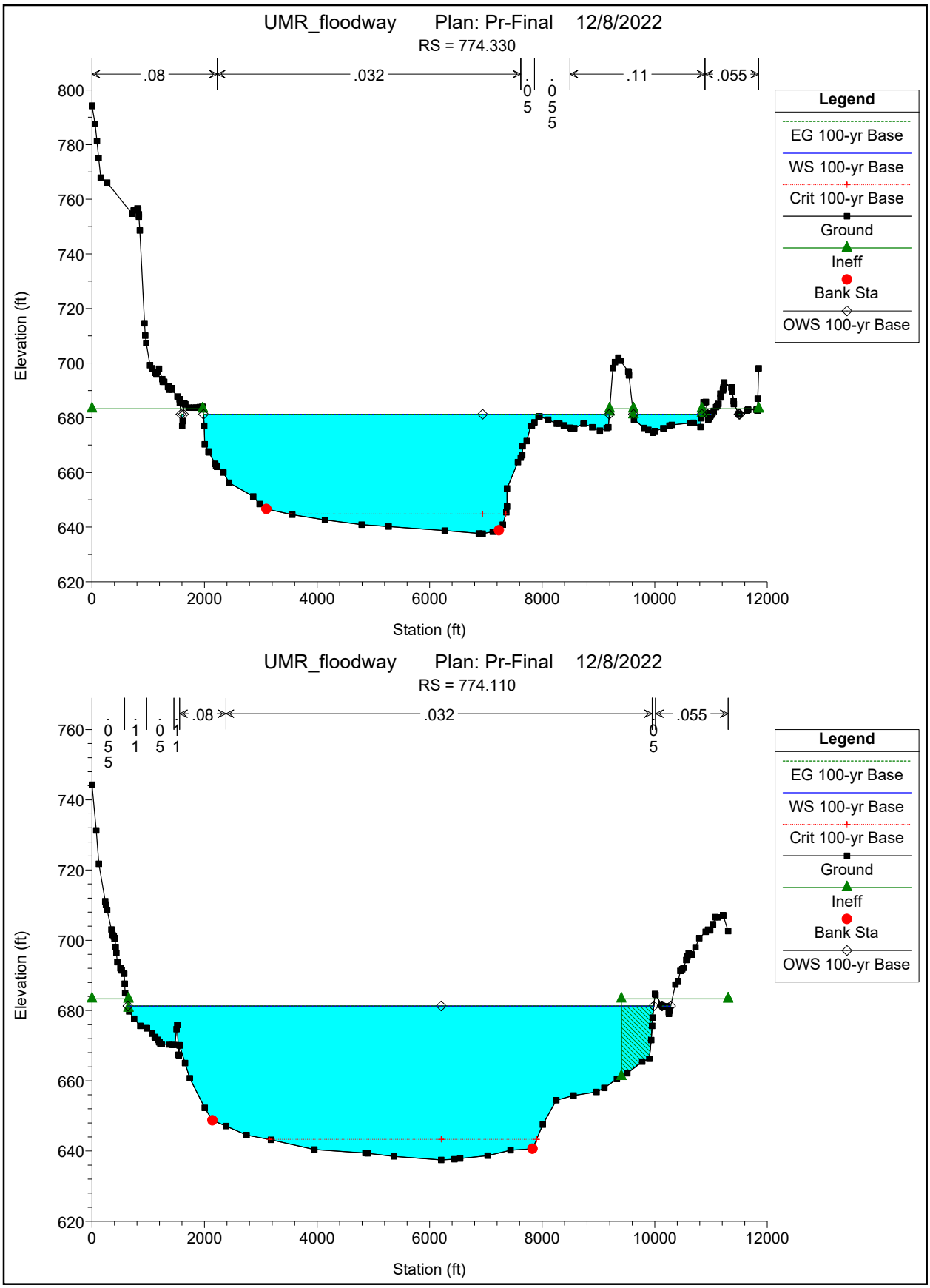

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 778.664
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 778.290
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

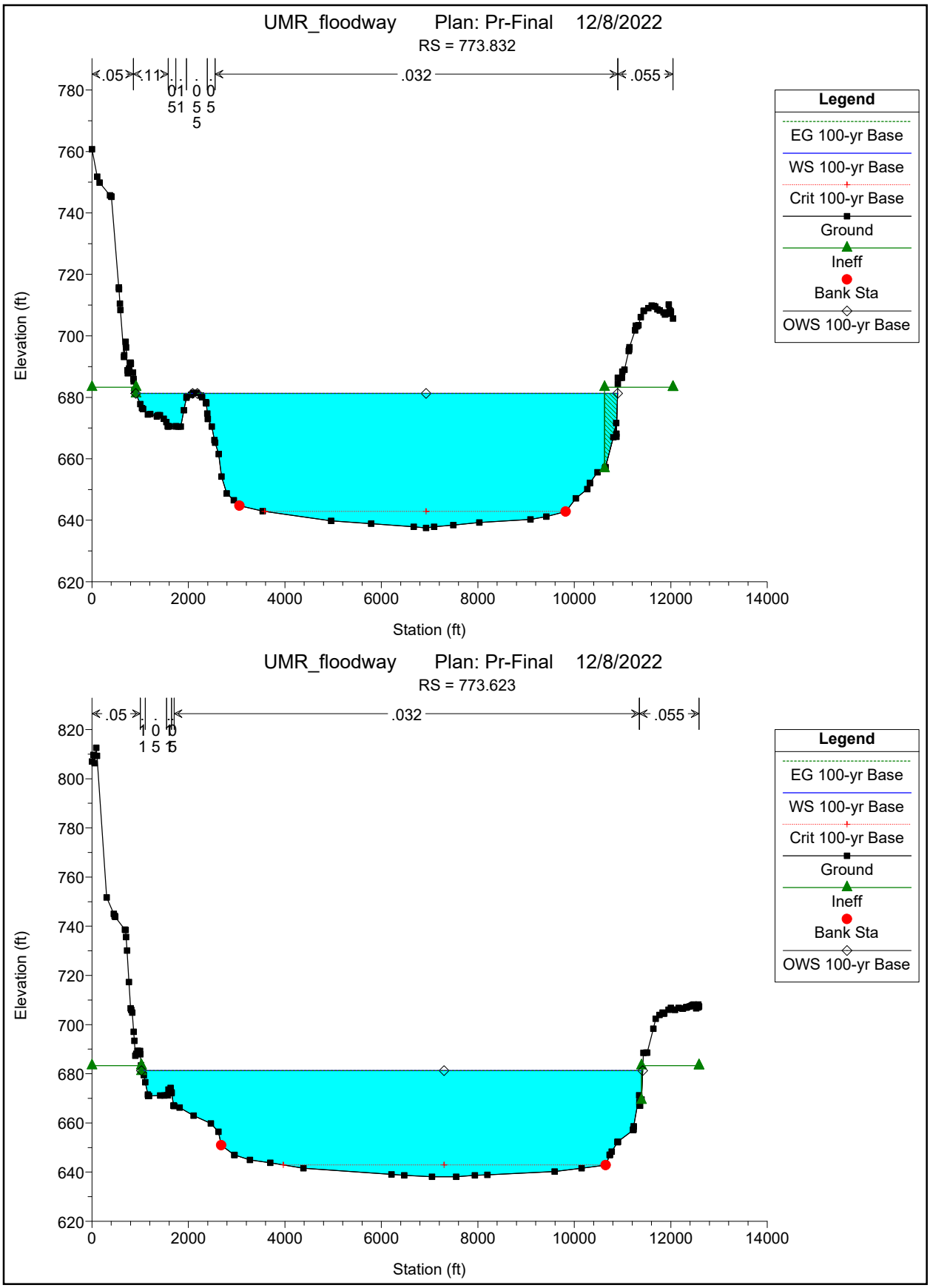

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 778.074
.032
.11
.11
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 777.875
.032
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

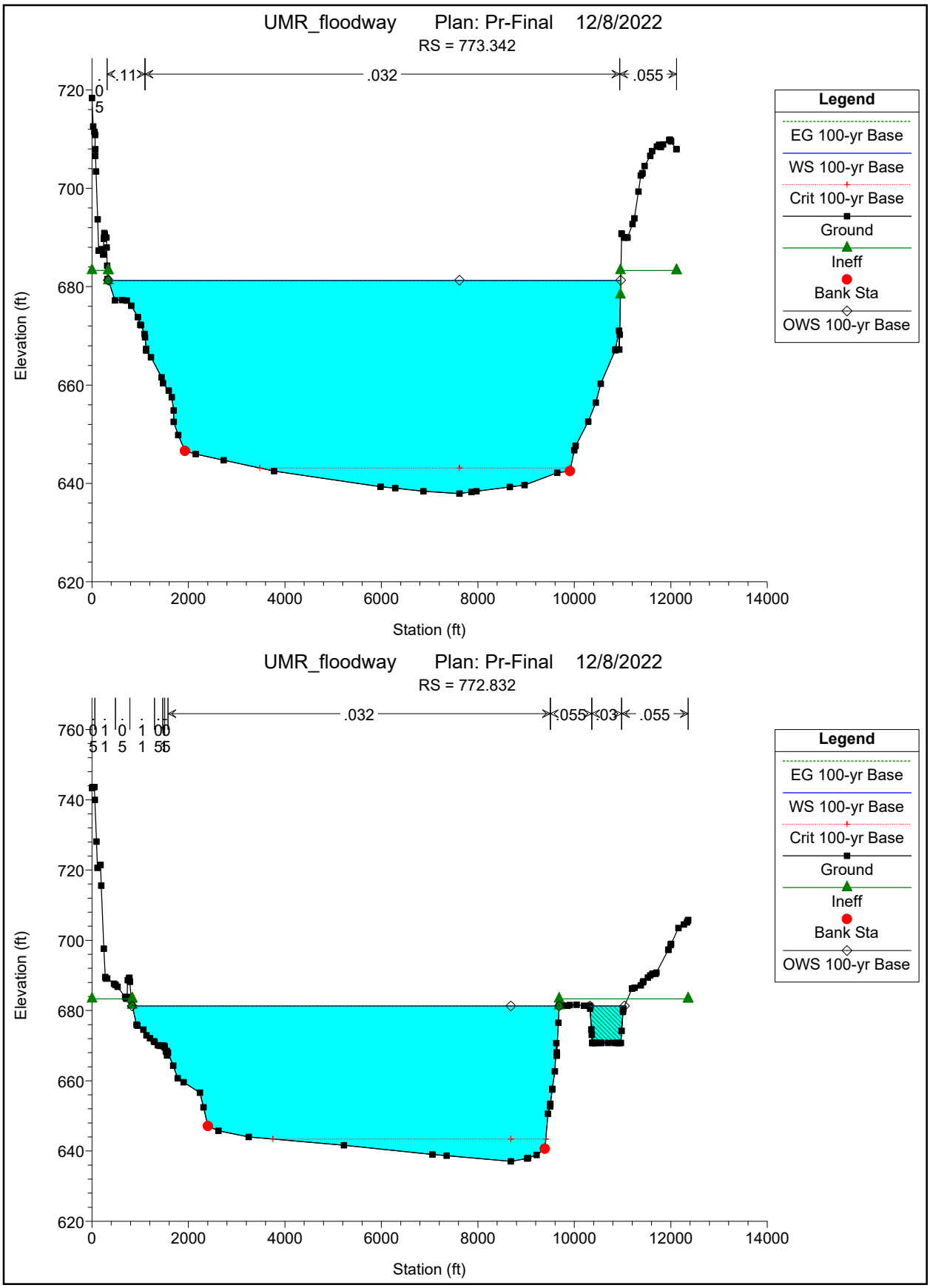

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 777.488
.032
.05
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 777.080
.032
.11
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

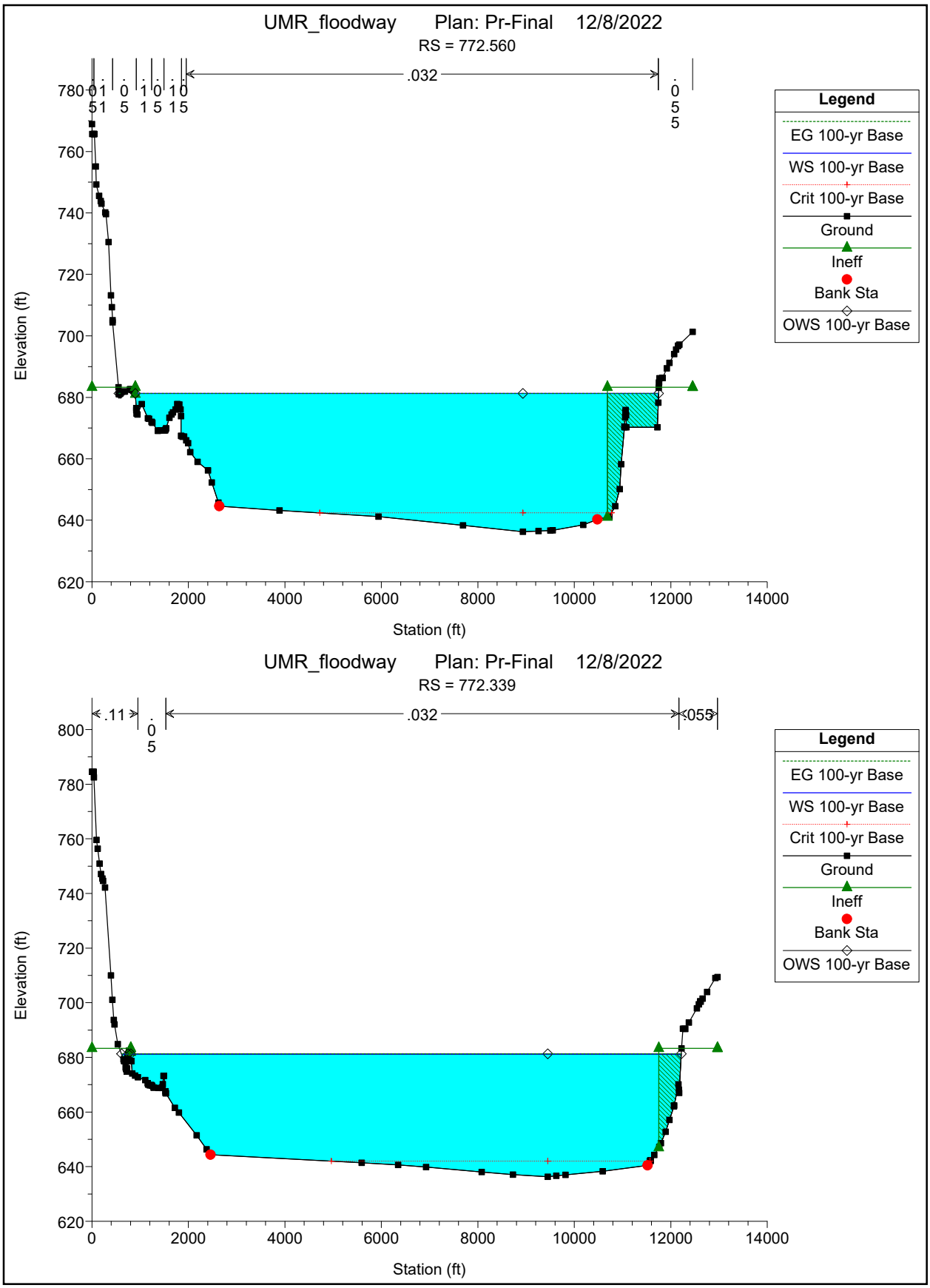

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 776.665
.010
.015
.032
.055
.035
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 776.002
.05
.111
.032
.111
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
950
900
850
800
750
700
650
600
0
2000
4000
6000
8000
10000
Station (ft)

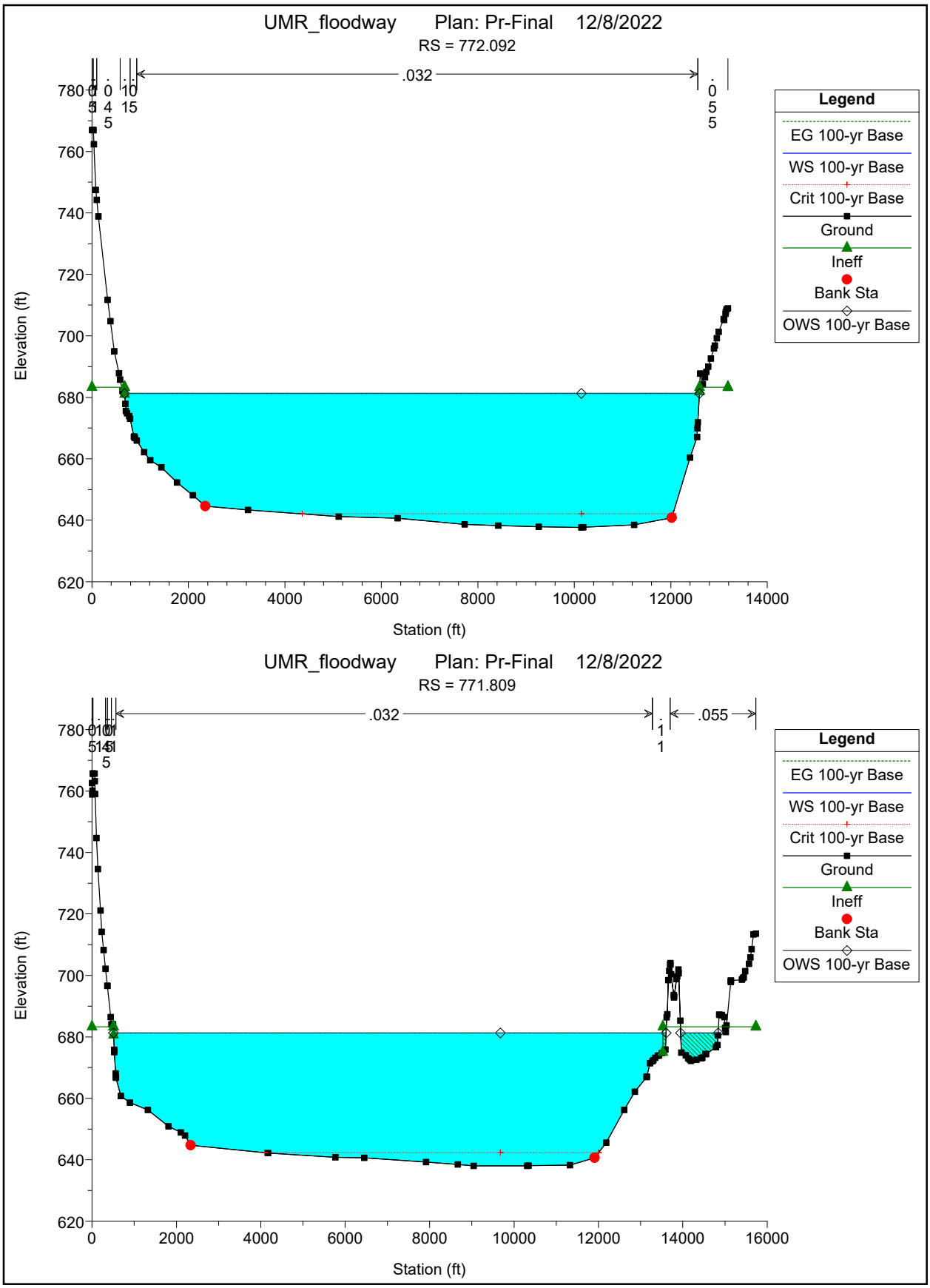

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 775.186
.05
.08
.032
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 774.739
.08
.032
.055
.11
.05
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

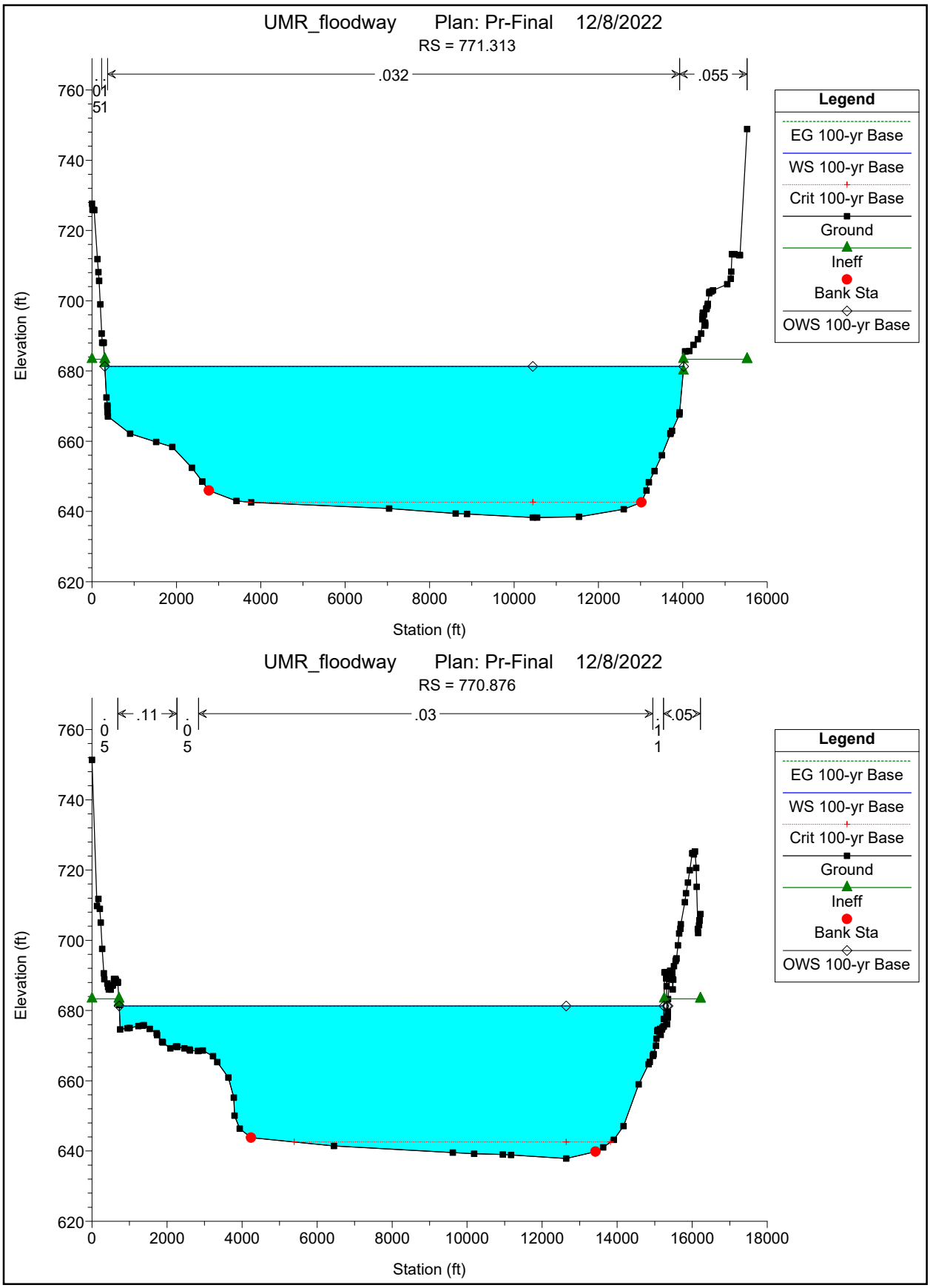

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 774.330
.08
.032
.055
.11
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 774.110
.055
.11
.05
.11
.08
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

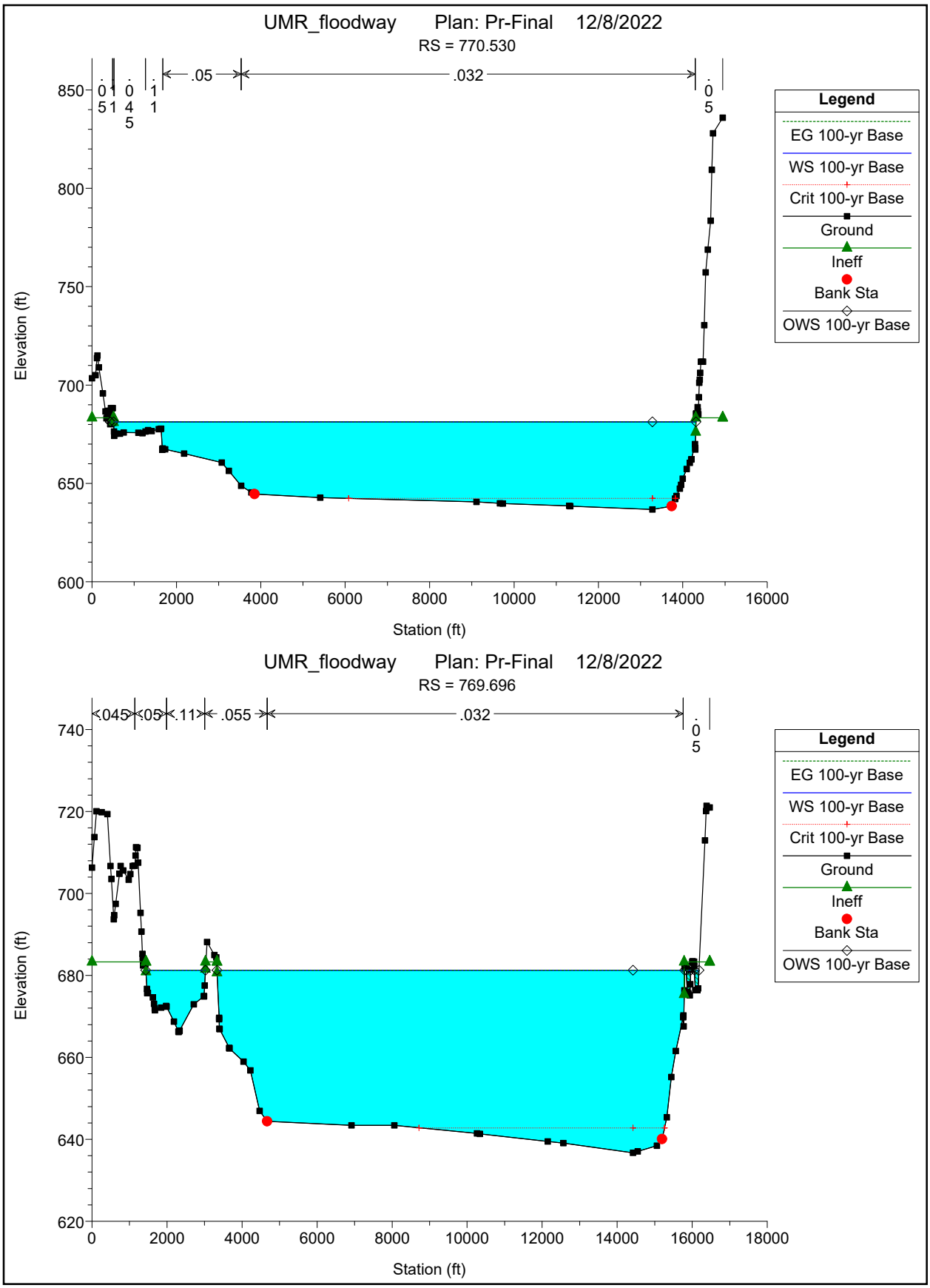

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 773.832
.05
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 773.623
.05
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

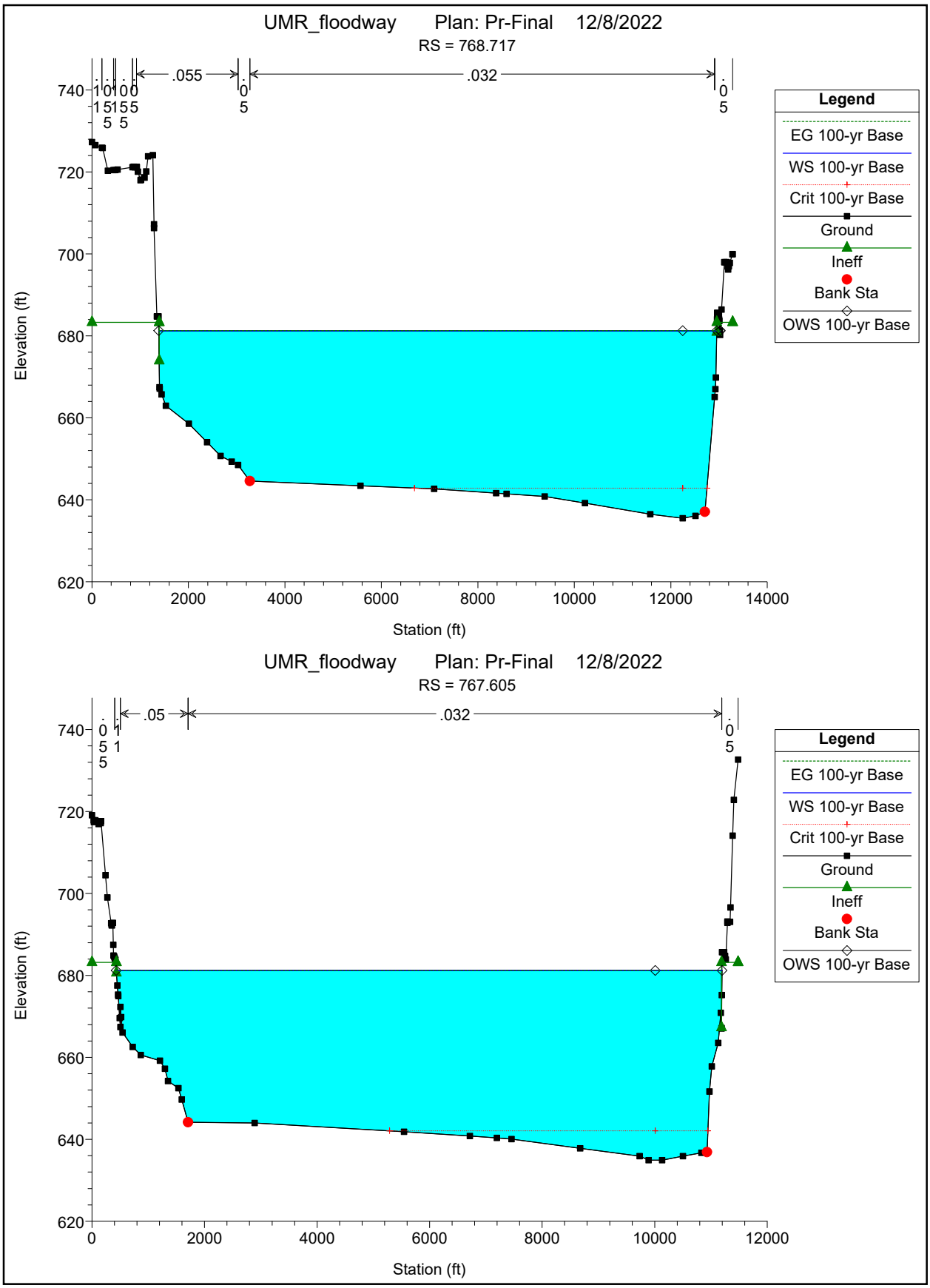

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 773.342
.11
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 772.832
.032
.055
.03
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

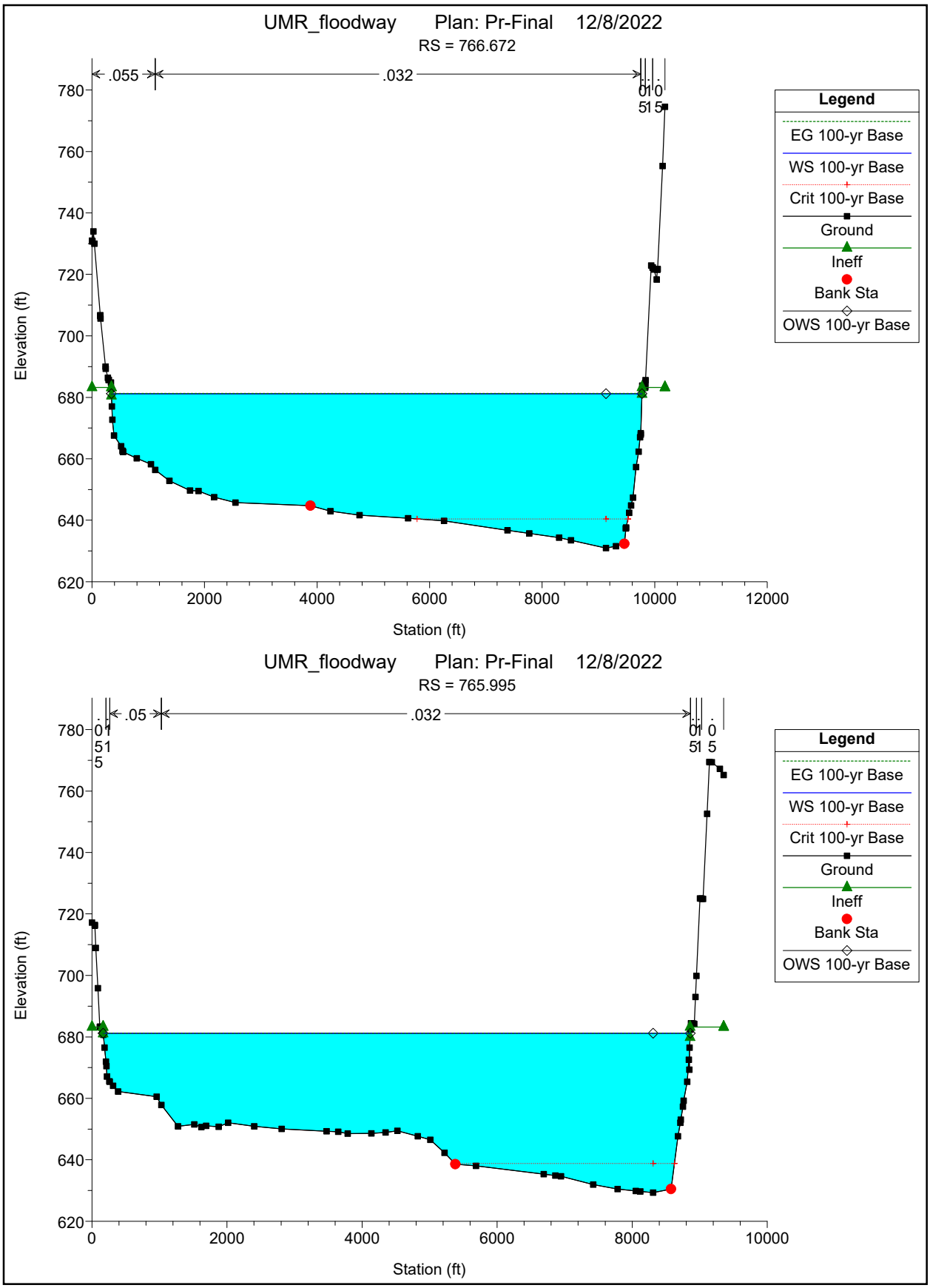

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 772.560
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 772.339
.11
.032
055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

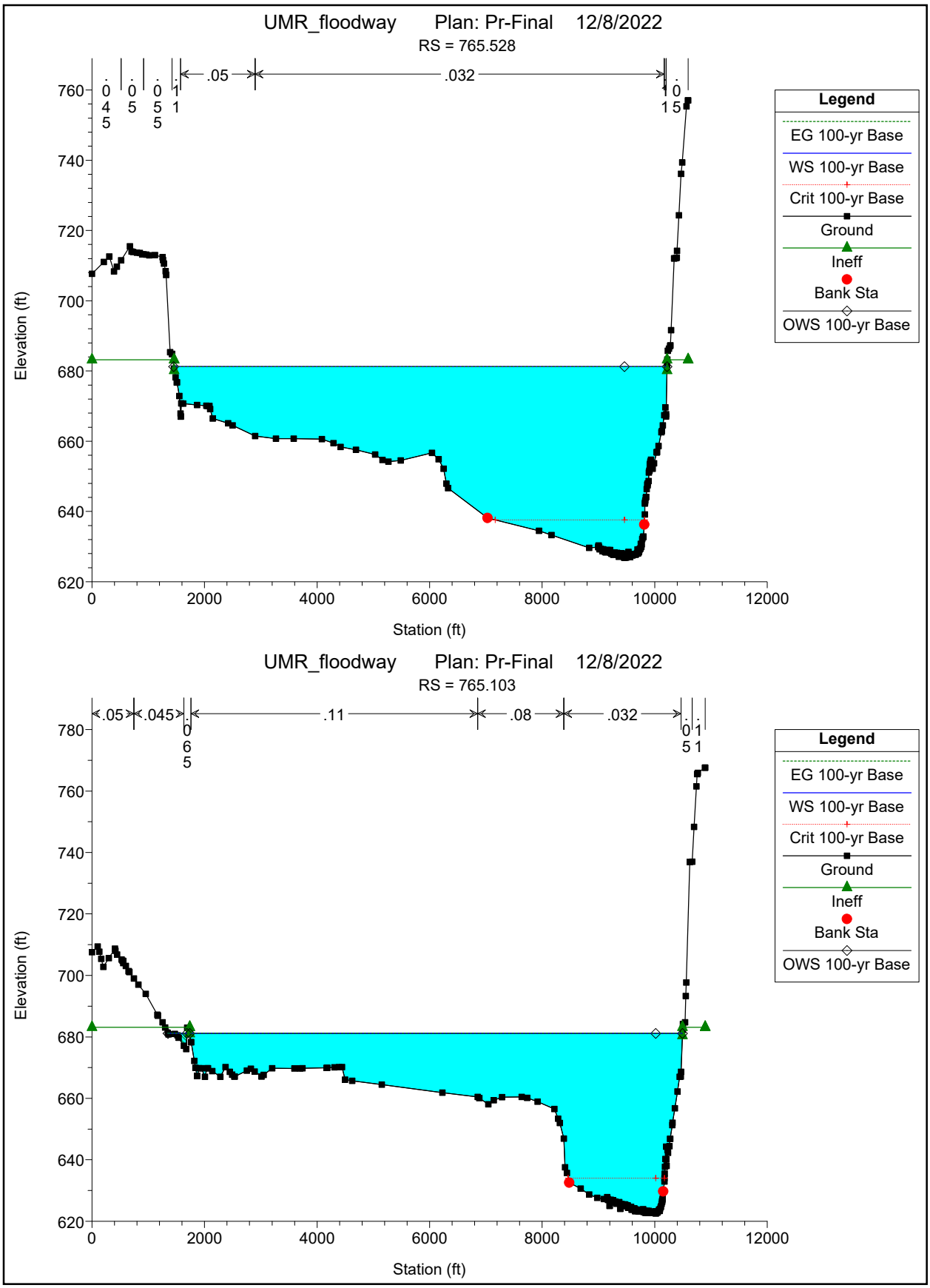

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 772.092
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 771.809
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

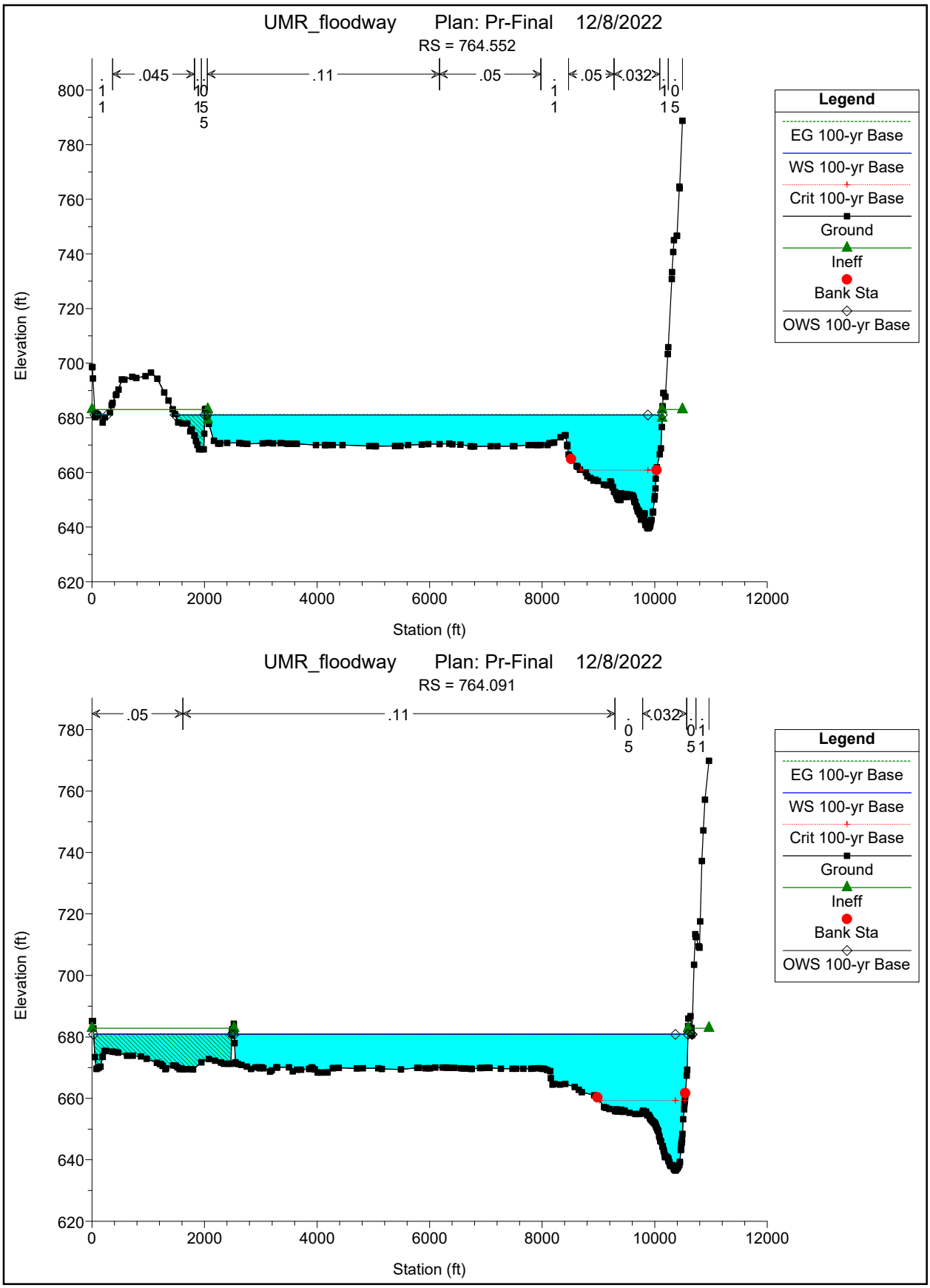

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 771.313
.01
51
.032
.055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 770.876
.05
.11
.05
.03
.05
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
Station (ft)

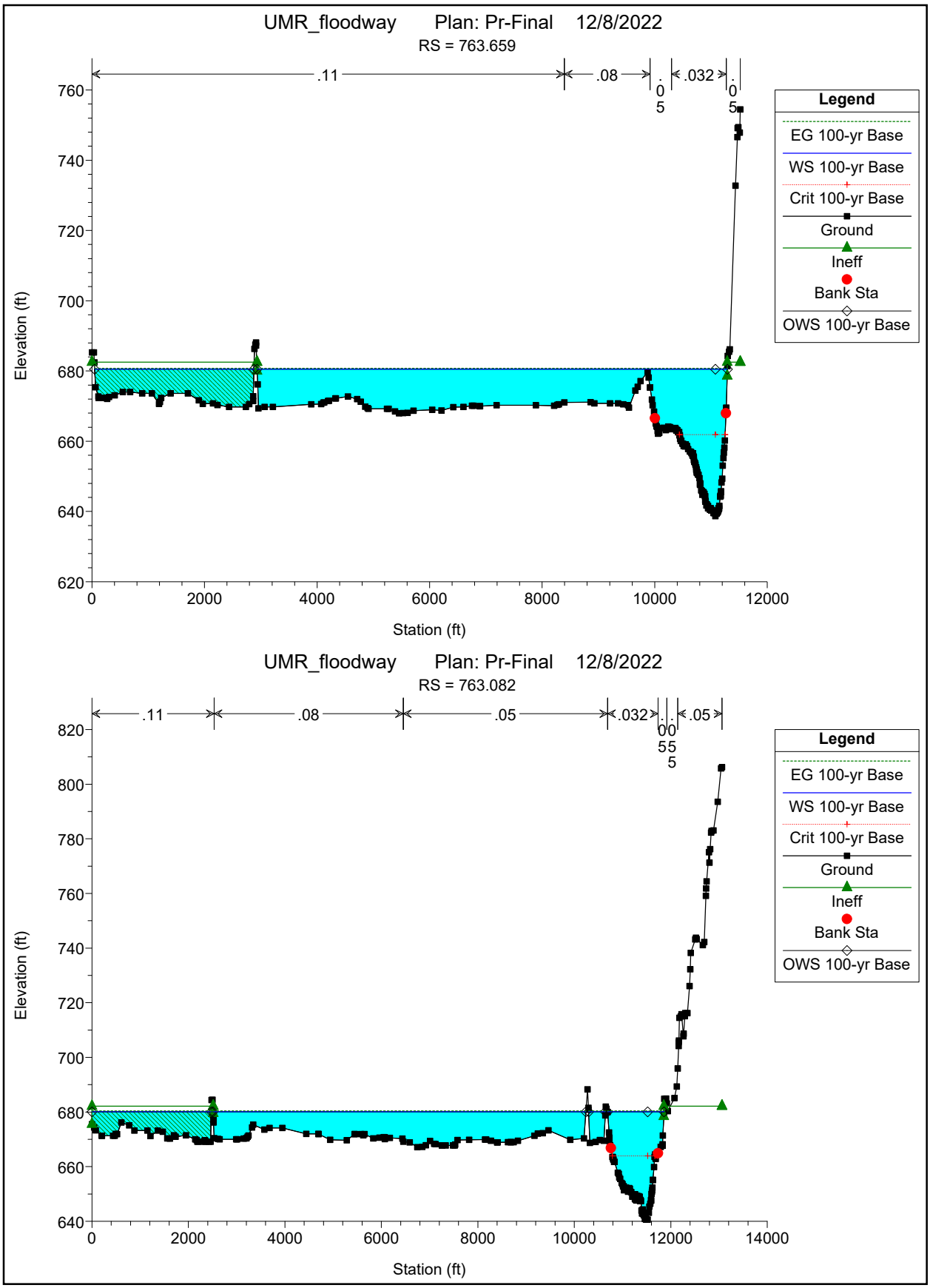

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 770.530
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 769.696
.045
.05
.11
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

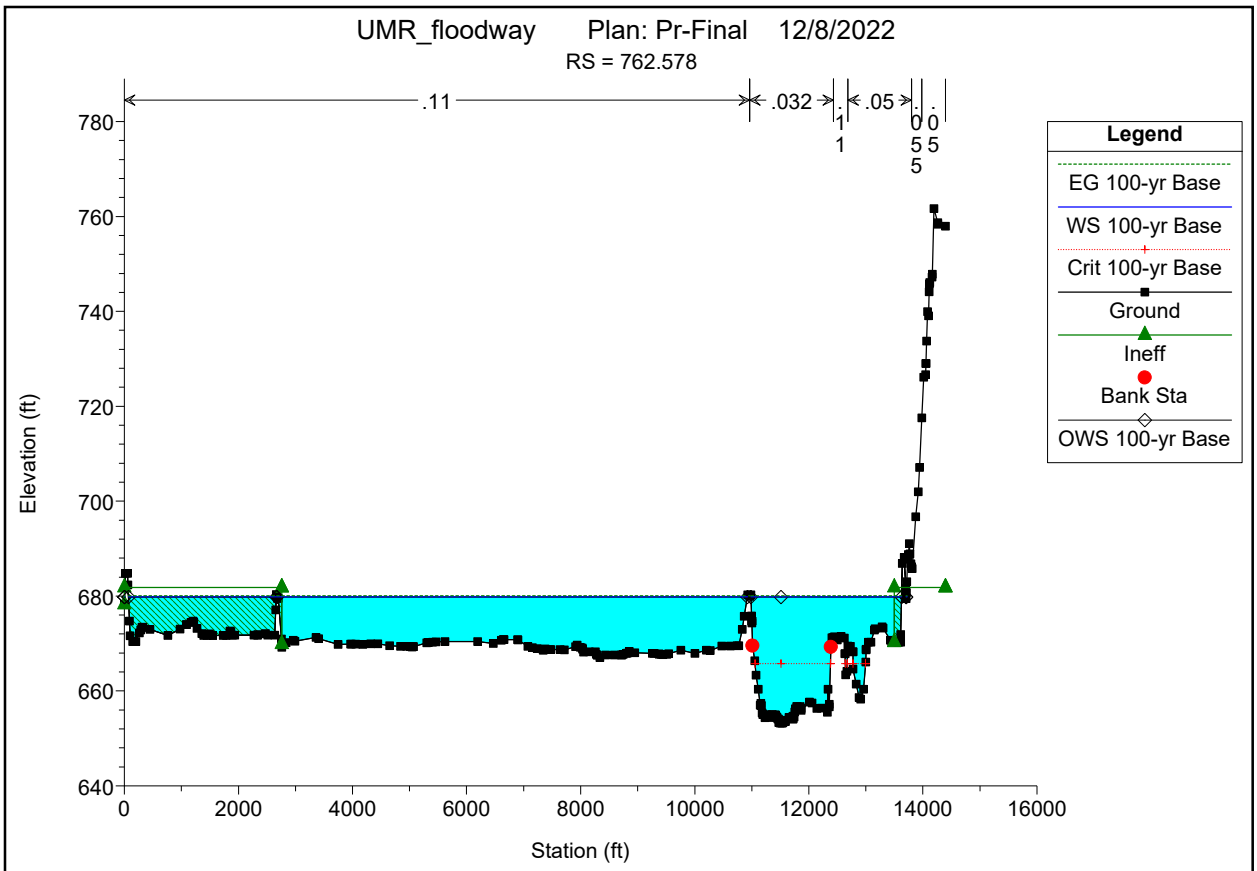

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 768.717
.055
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
14000
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 767.605
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000

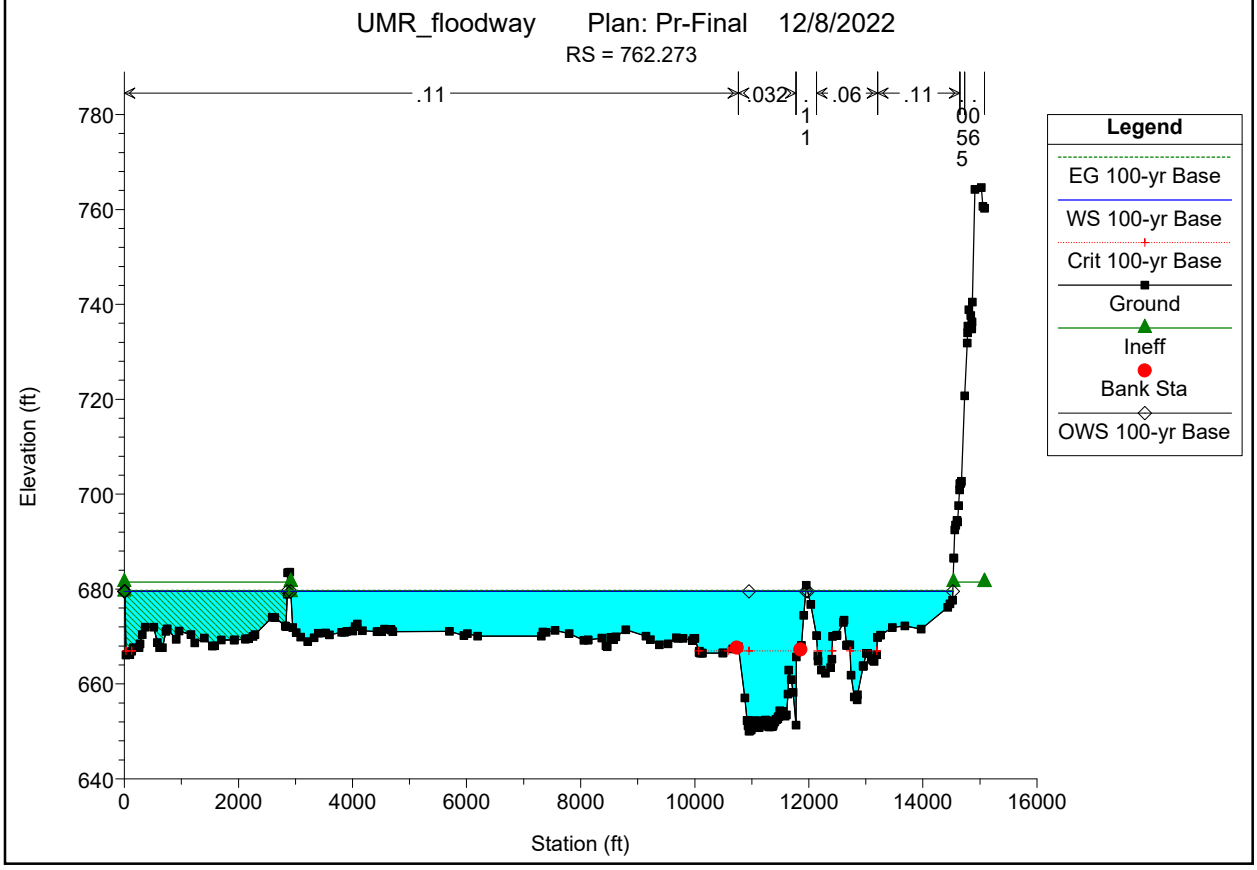

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 766.672
.055
.032
0.1
0.5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 765.995
.05
.032
0.1
0.5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
Station (ft)

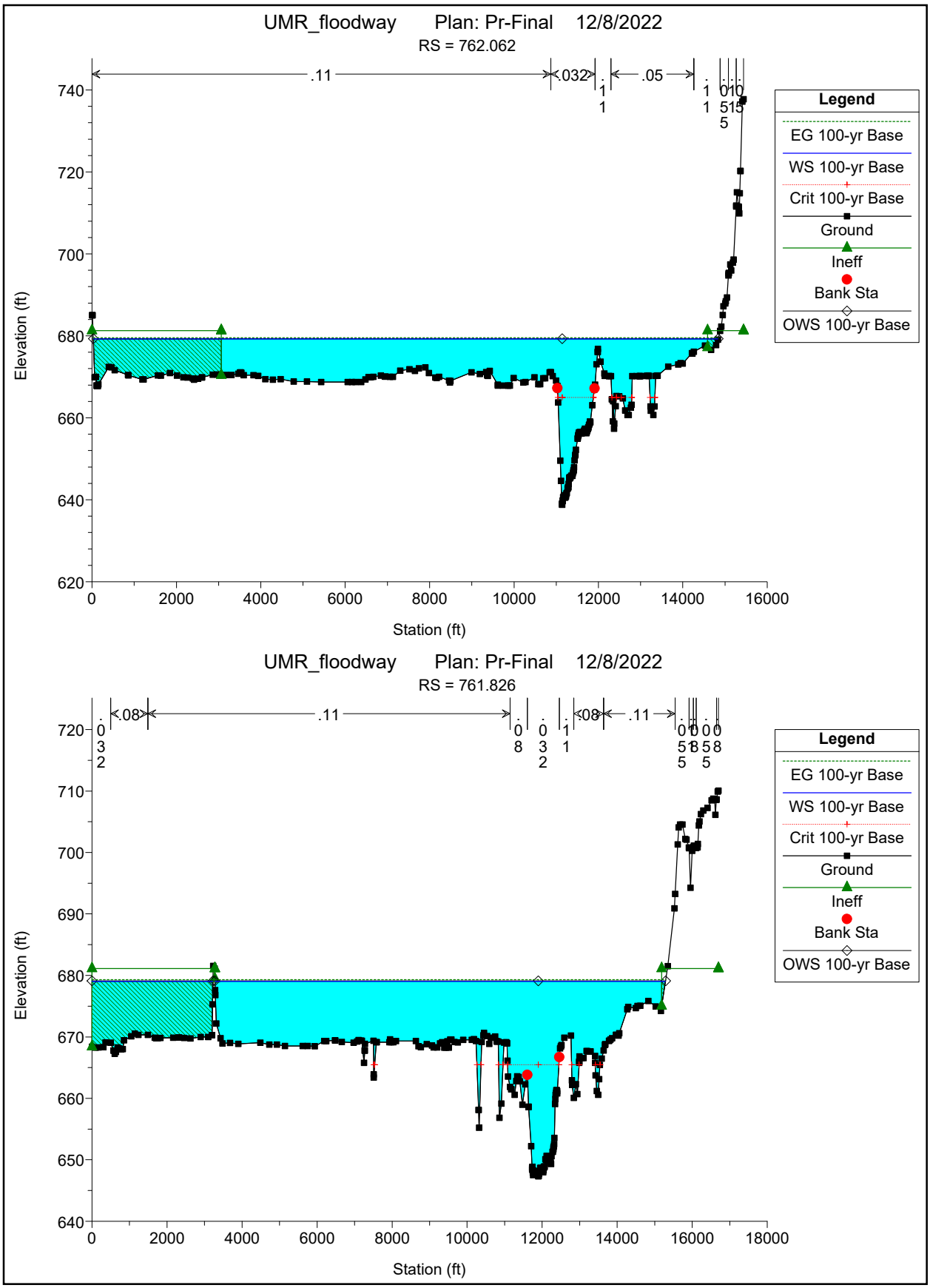

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 765.528
.045
.05
.055
.11
.05
.032
.015
Elevation (ft)
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 765.103
.05
.045
.065
.11
.08
.032
.015
.11
Elevation (ft)
780
760
740
720
700
680
660
640
620
0
2000
4000
6000
8000
10000
12000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

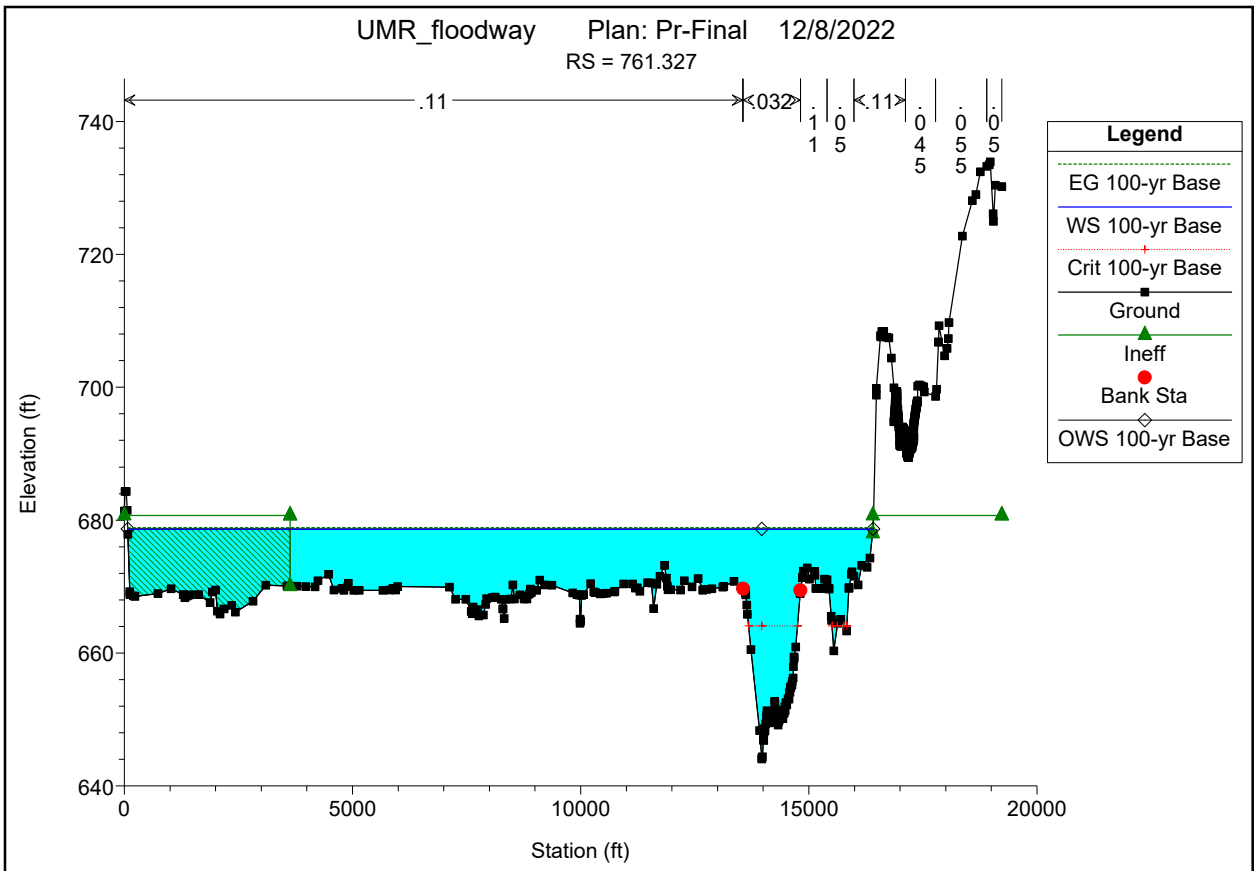

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 764.552
.045
.11
.05
.05
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 764.091
.05
.11
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

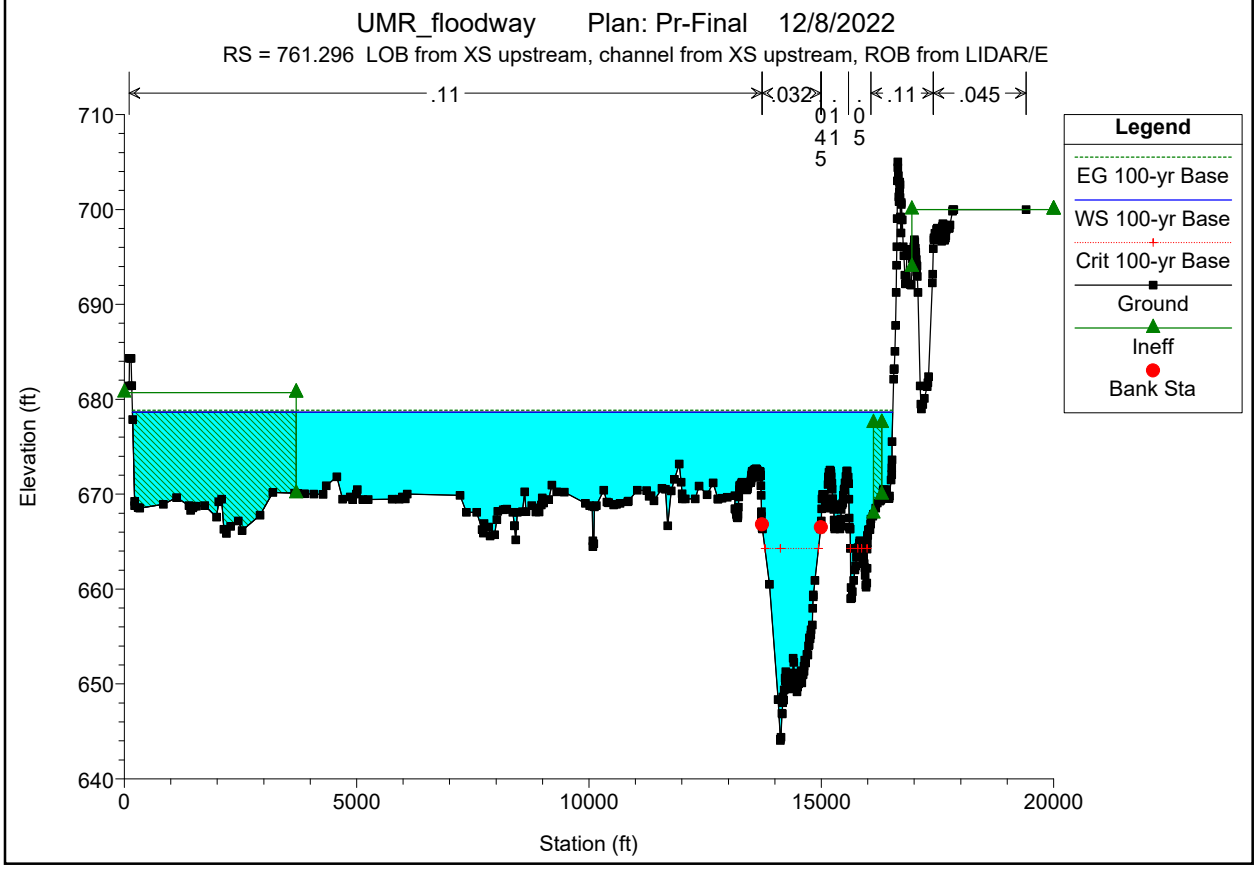

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 763.659
.11
.08
.032
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 763.082
.11
.08
.05
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

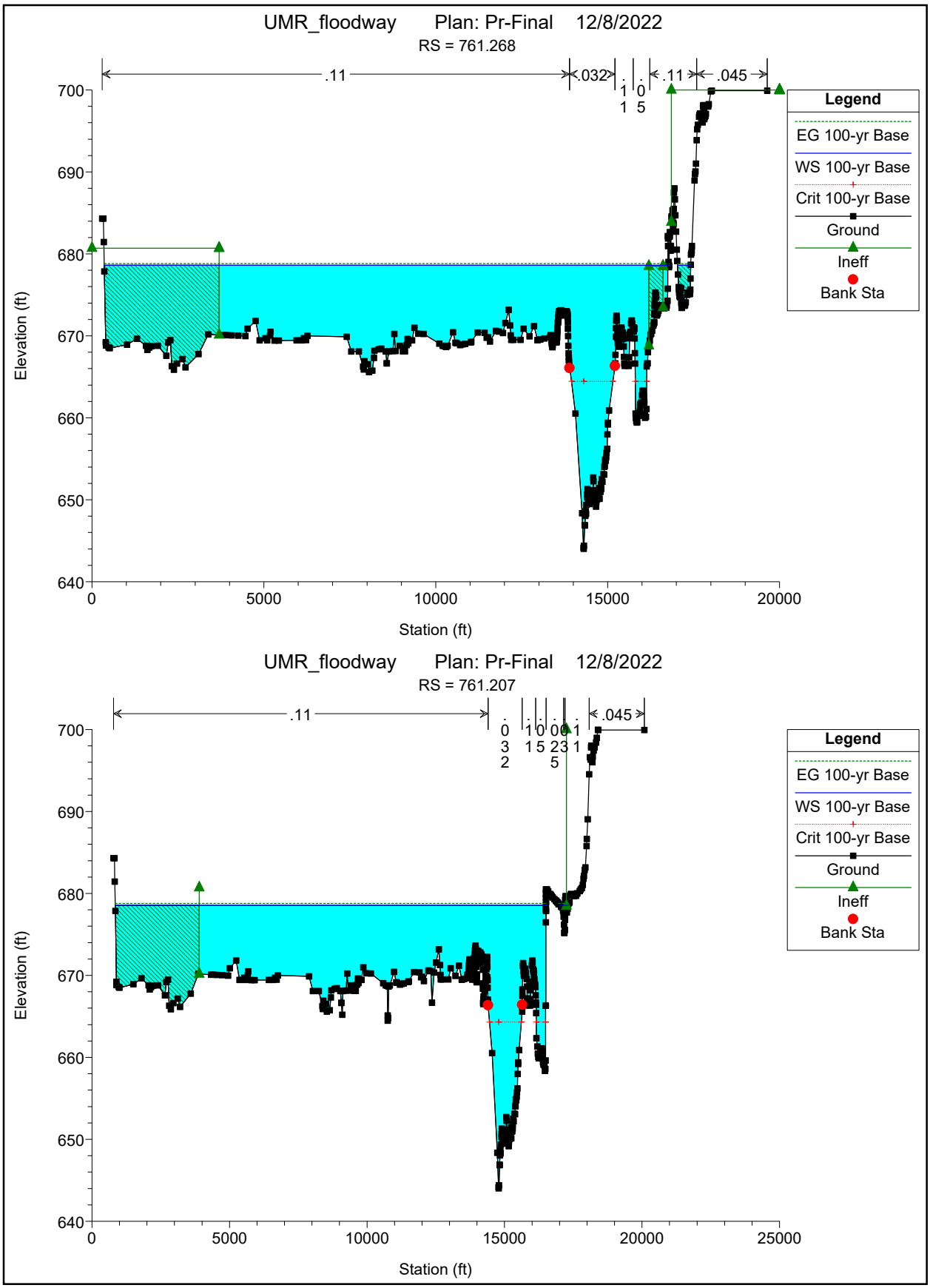

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 762.578
.11
.032
.05
.1
1
.0
5
.0
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)

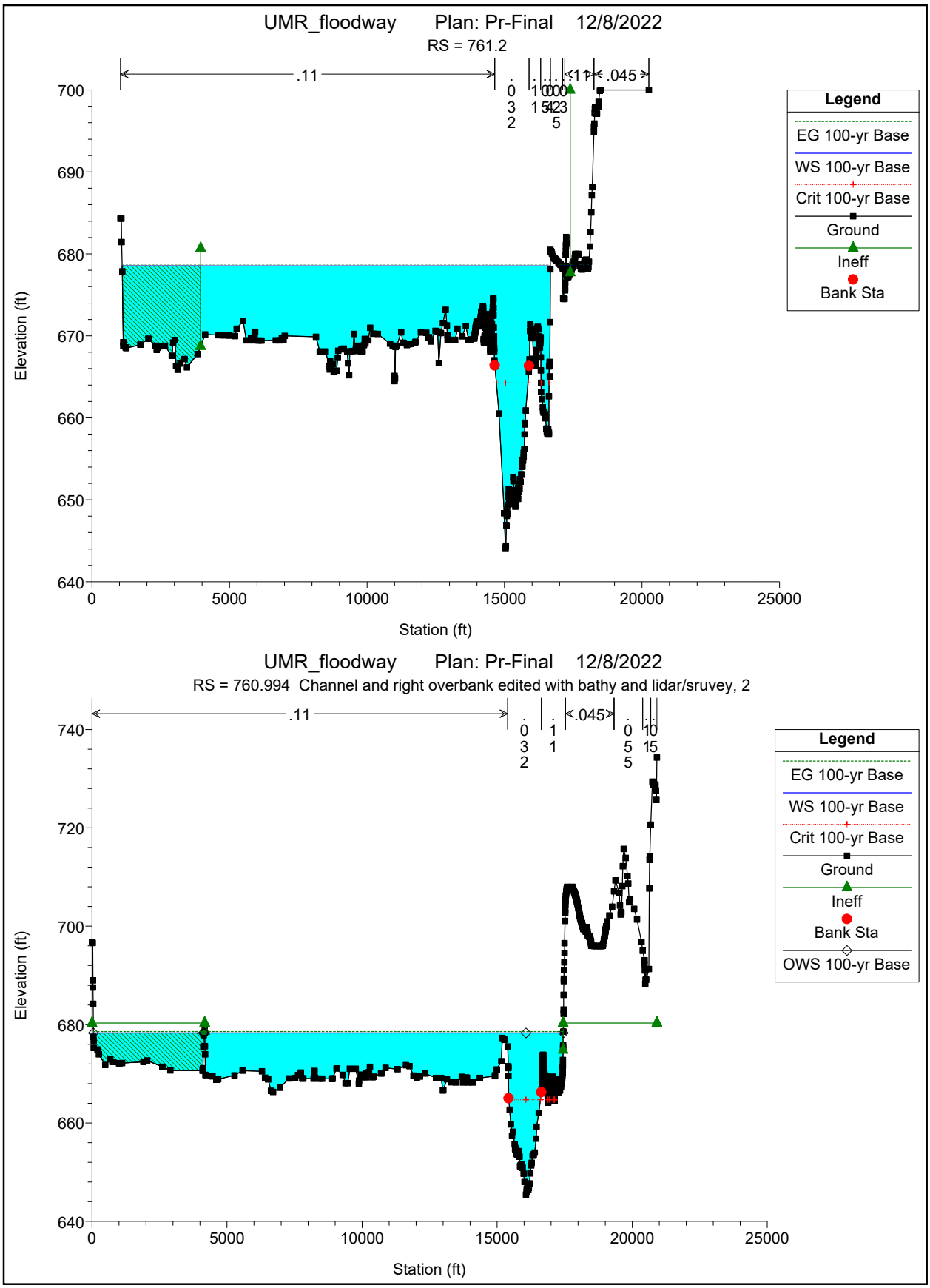

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 762.273
.11
.032
.06
.11
.1
1
.0
56
5
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
780
760
740
720
700
680
660
640
0
2000
4000
6000
8000
10000
12000
14000
16000
Station (ft)

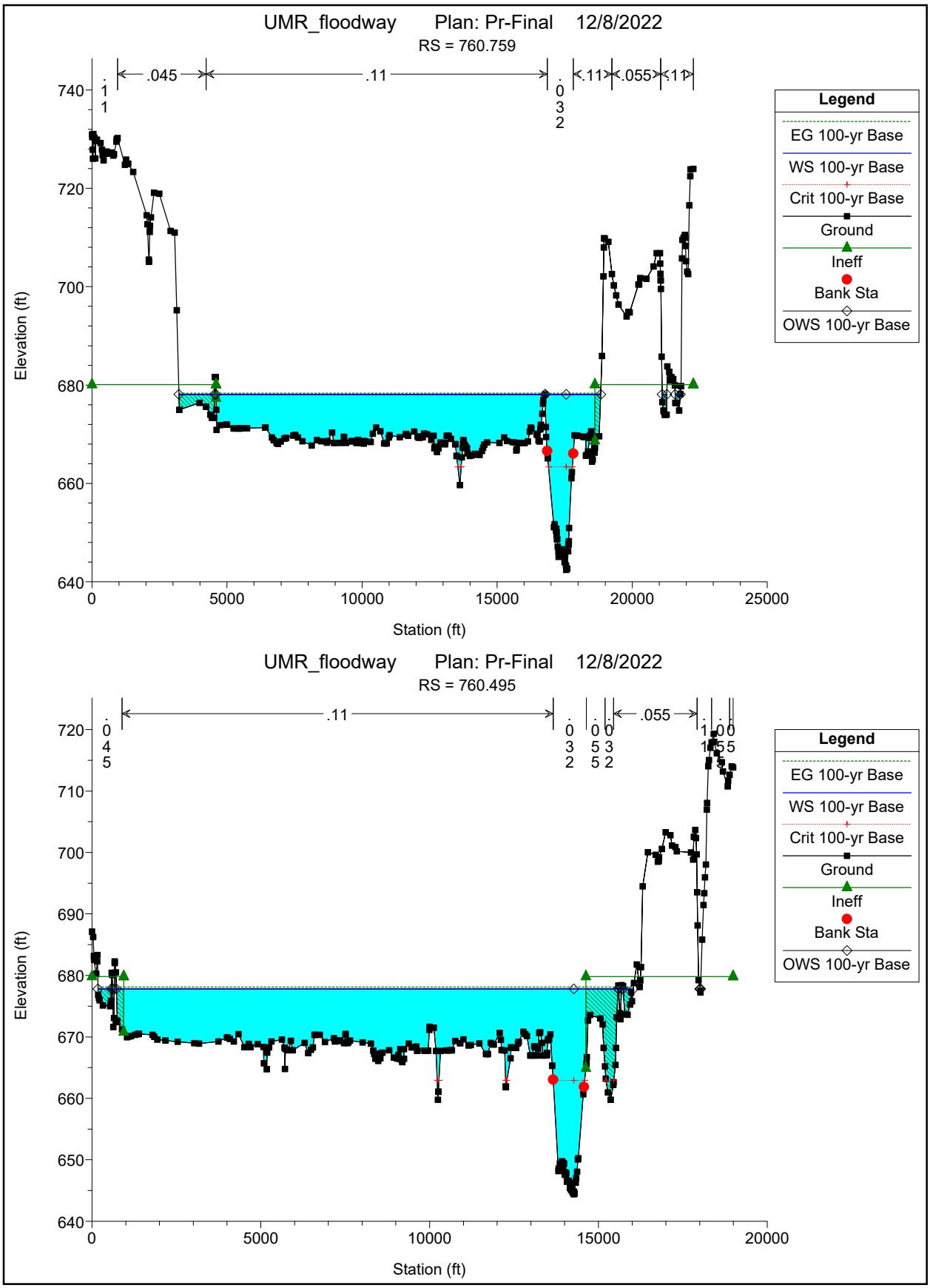

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 762.062
.11
.032
.05
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.826
.08
.11
.08
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

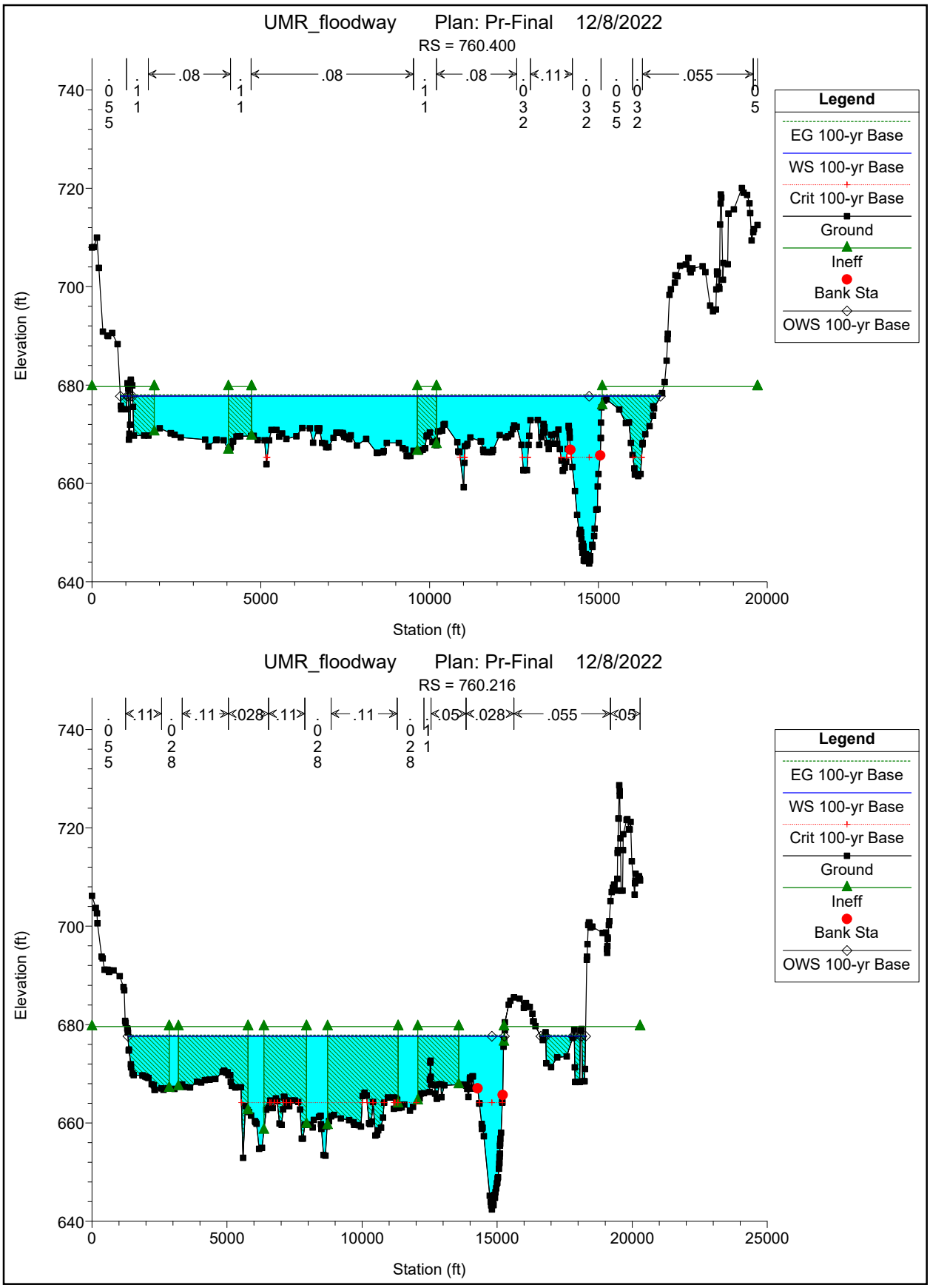

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.327
.11
.032
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)

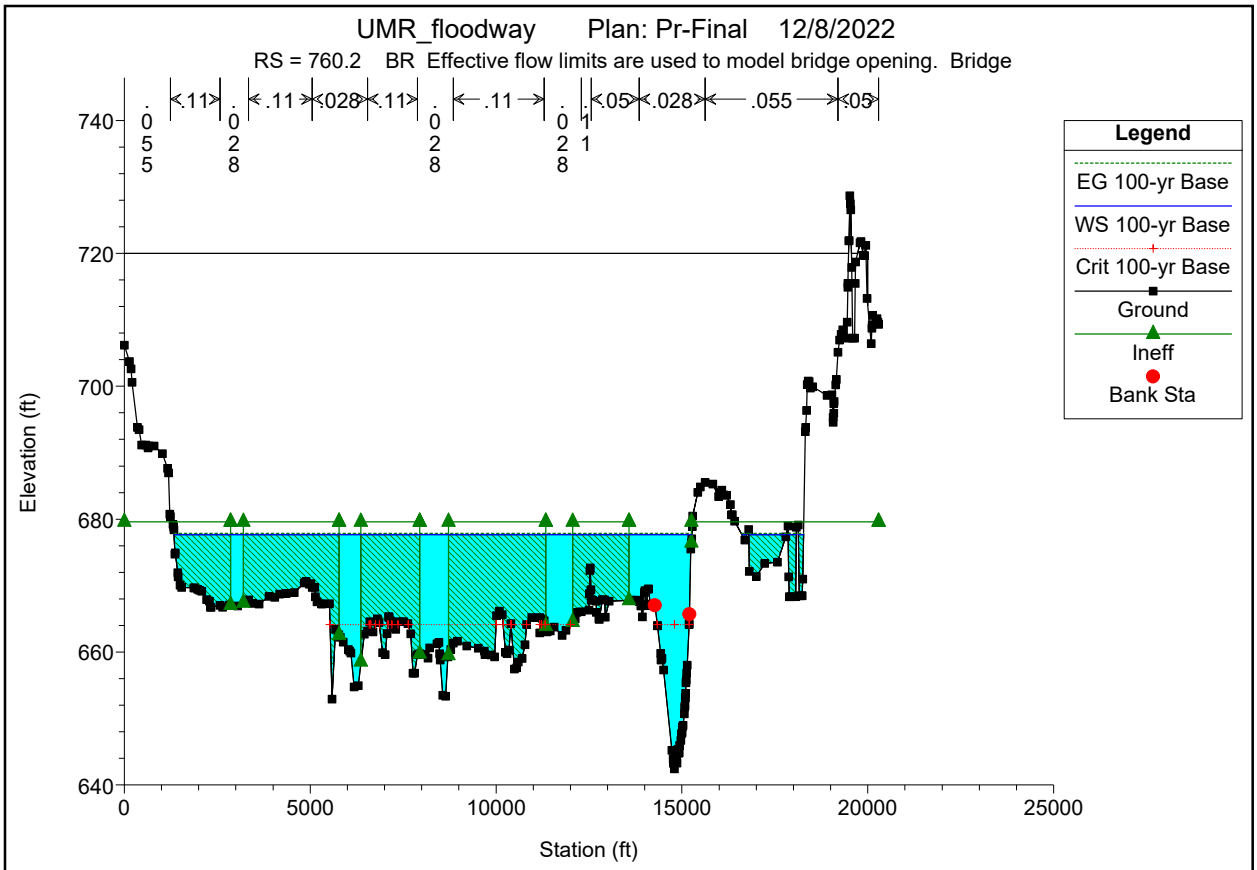

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.296 LOB from XS upstream, channel from XS upstream, ROB from LIDAR/E
.11
.032
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)

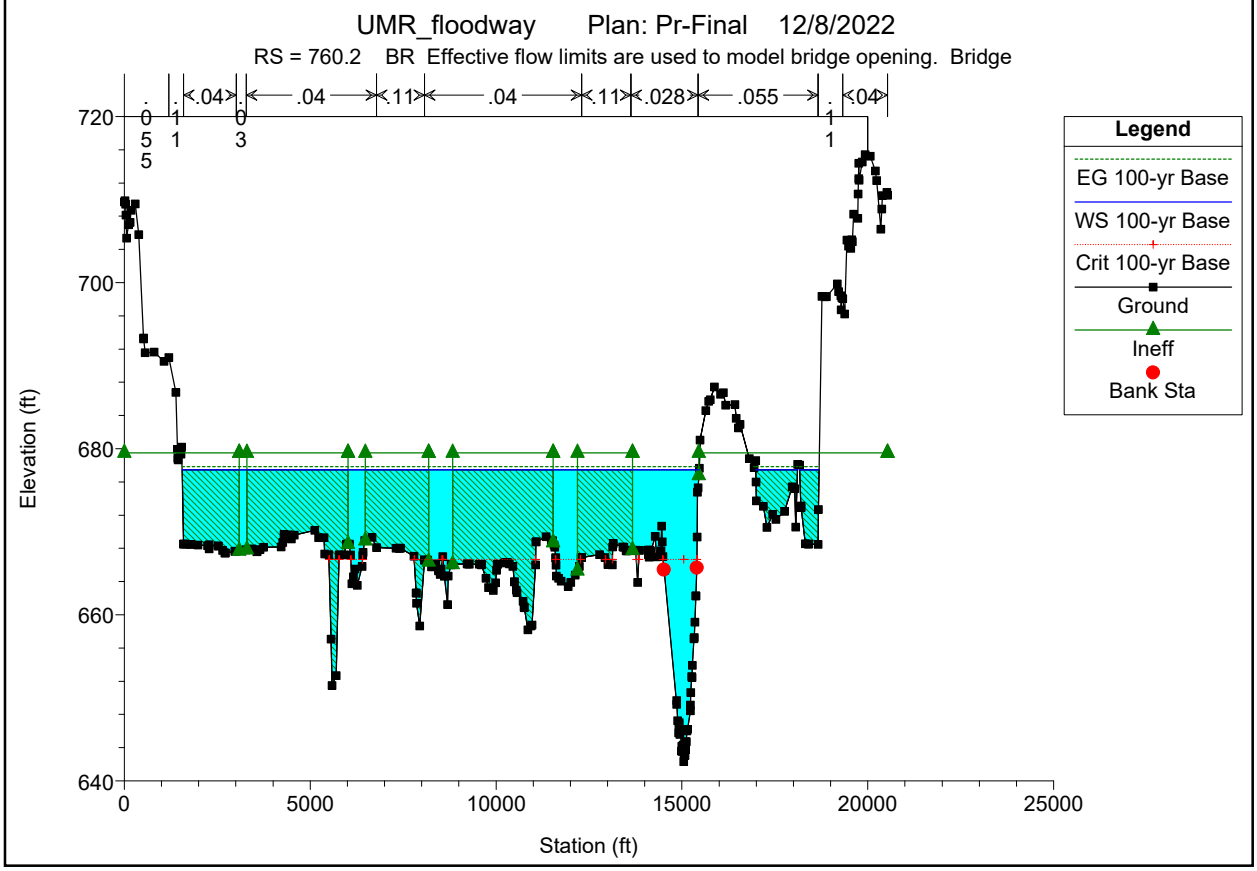

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.268
.11
.032
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.207
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

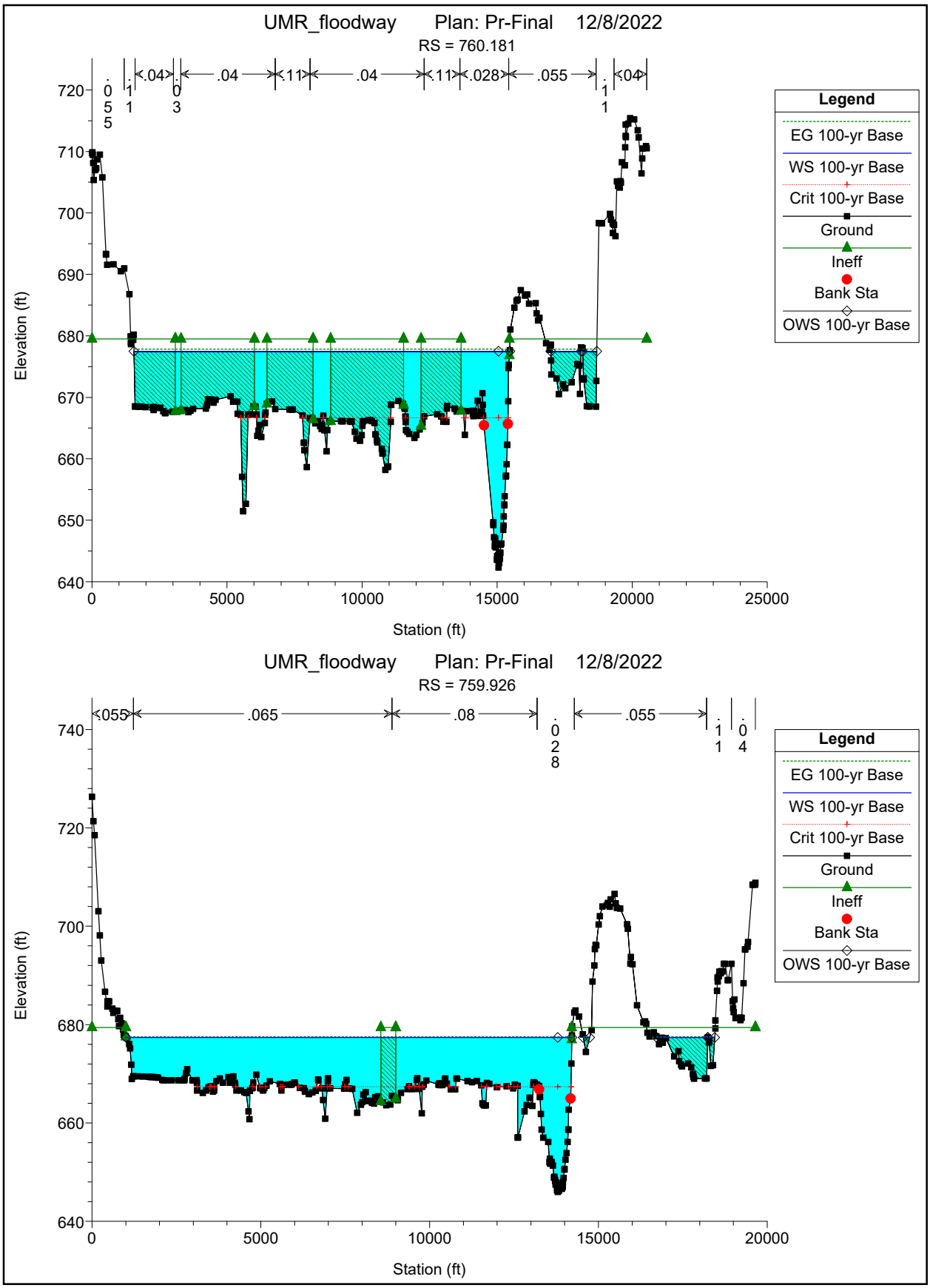

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 761.2
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.994 Channel and right overbank edited with bathy and lidar/sruvey, 2
.11
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

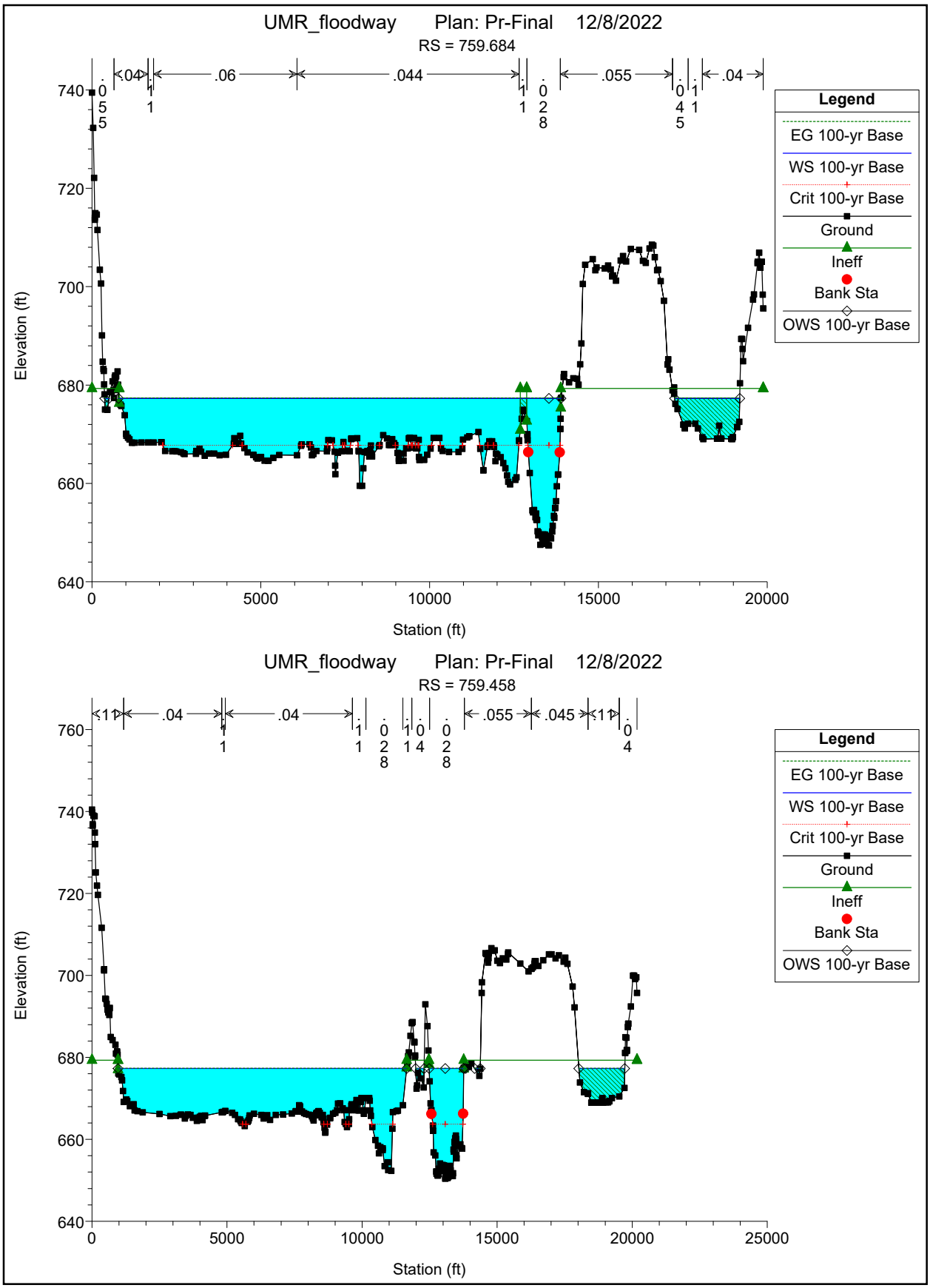

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.759
.045
.11
.11
.055
.11
.11
.032
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.495
.11
.055
.045
.032
.0053
.0052
.100
.155
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

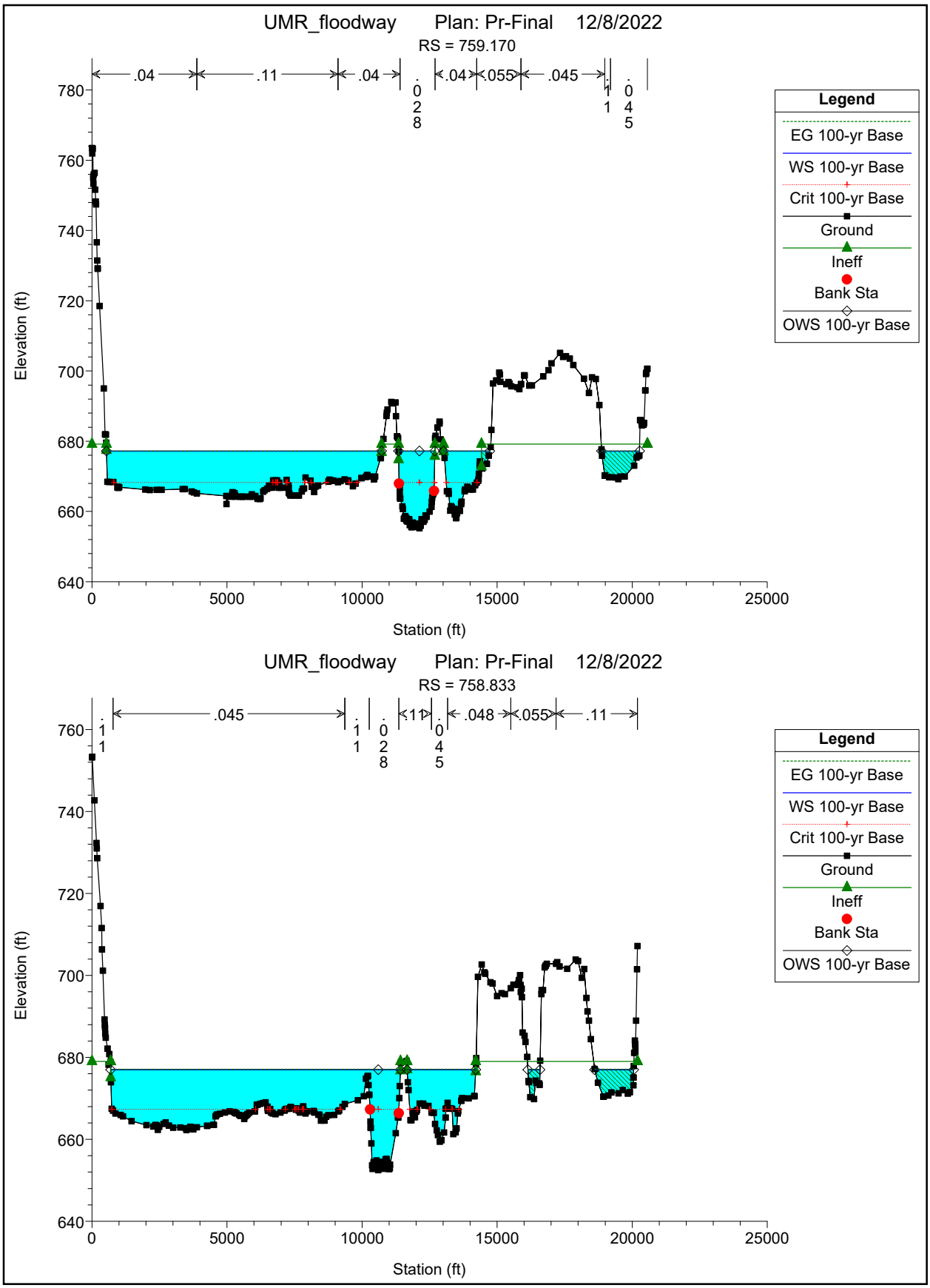

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.400
.055
.11
.08
.11
.08
.11
.08
.032
.11
.032
.055
.032
.055
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.216
.055
.11
.028
.11
.028
.11
.028
.11
.05
.028
.055
.05
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

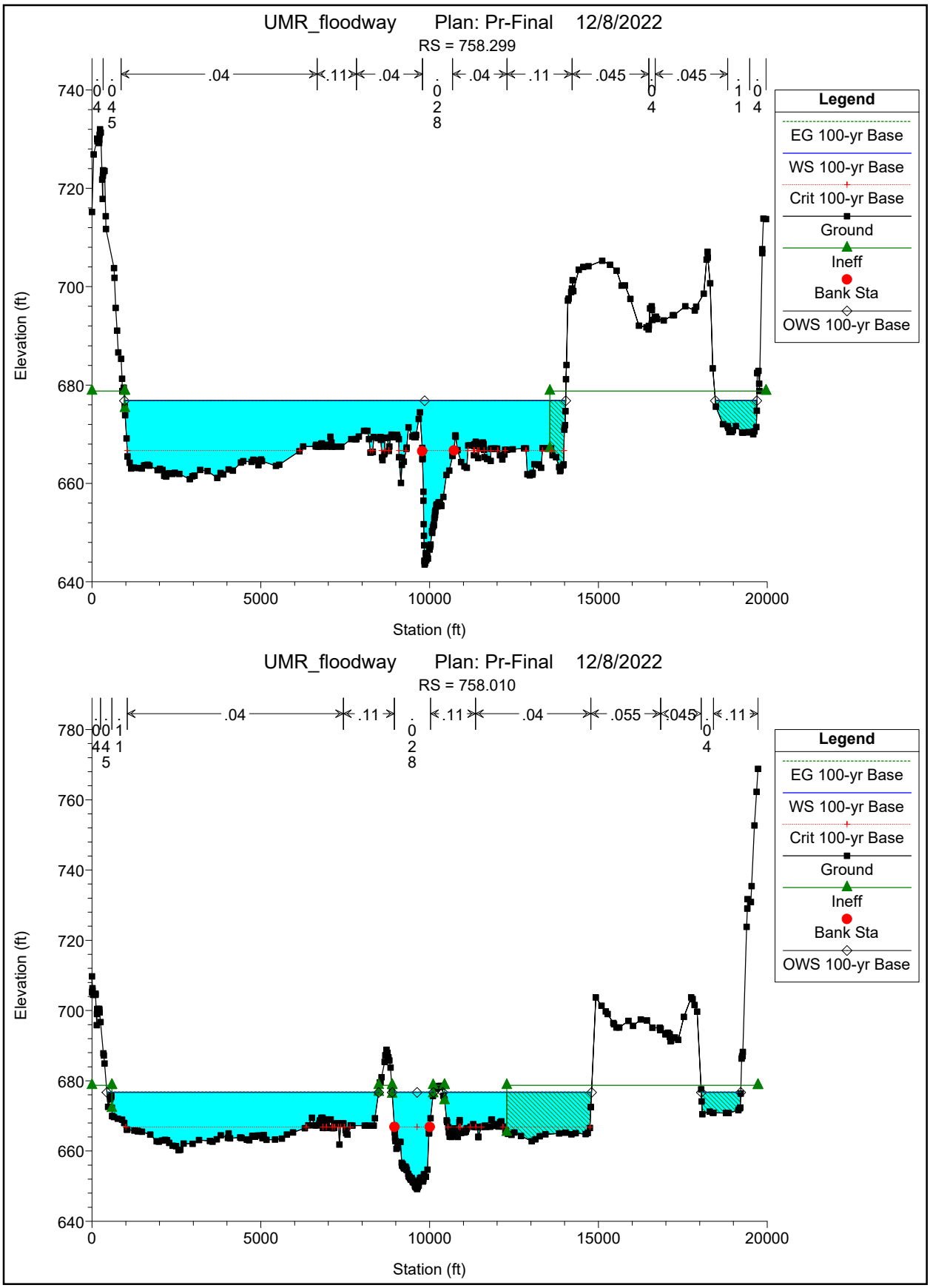

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055 .11 .028 .11 .028 .11 .055 .11 .055
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
640
660
680
700
720
740
0
5000
10000
15000
20000
25000

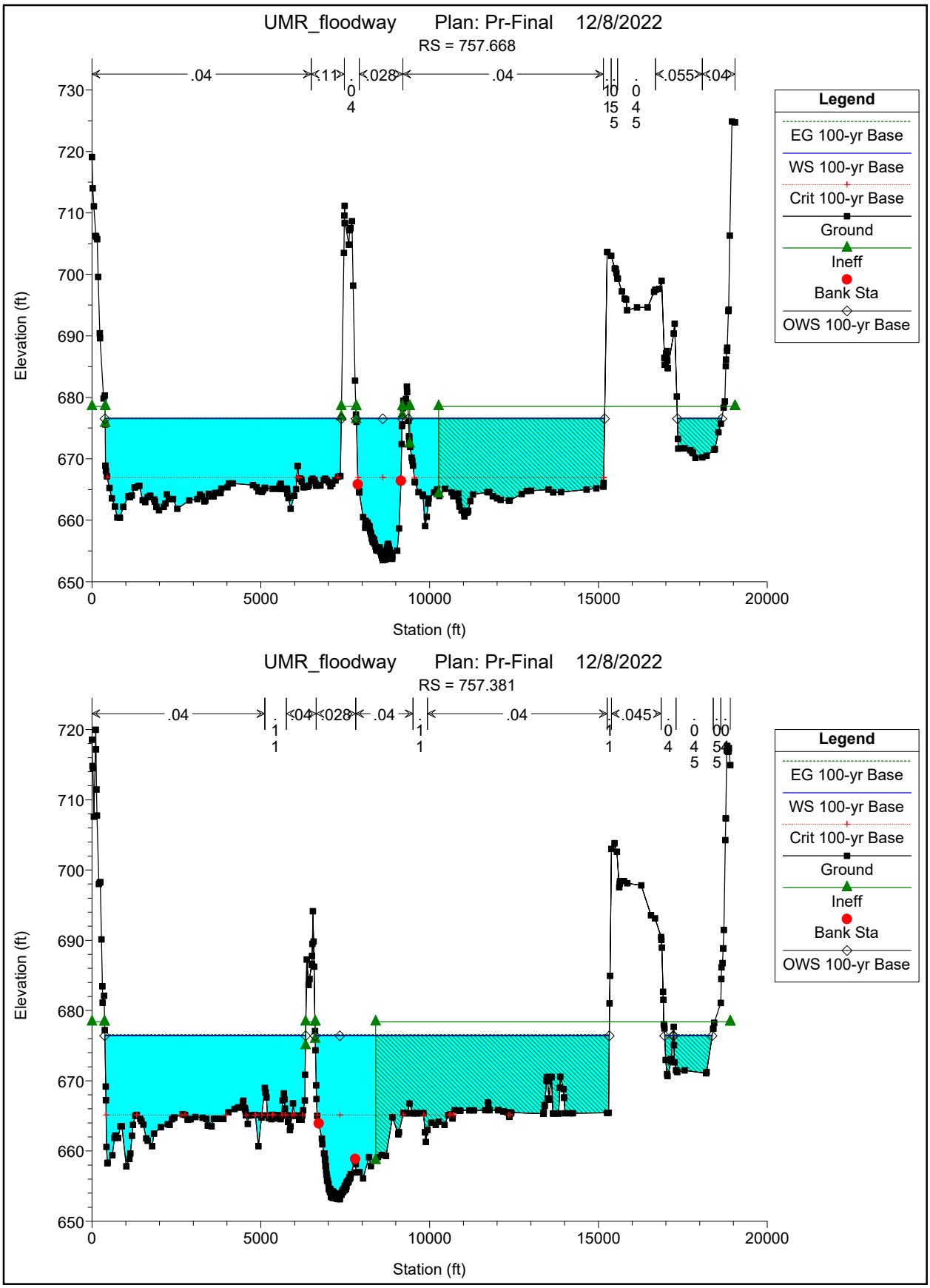

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.2 BR Effective flow limits are used to model bridge opening. Bridge
.055 .11 .04 .03 .04 .11 .04 .11 .028 .055 .11 .04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
640
660
680
700
720
0
5000
10000
15000
20000
25000

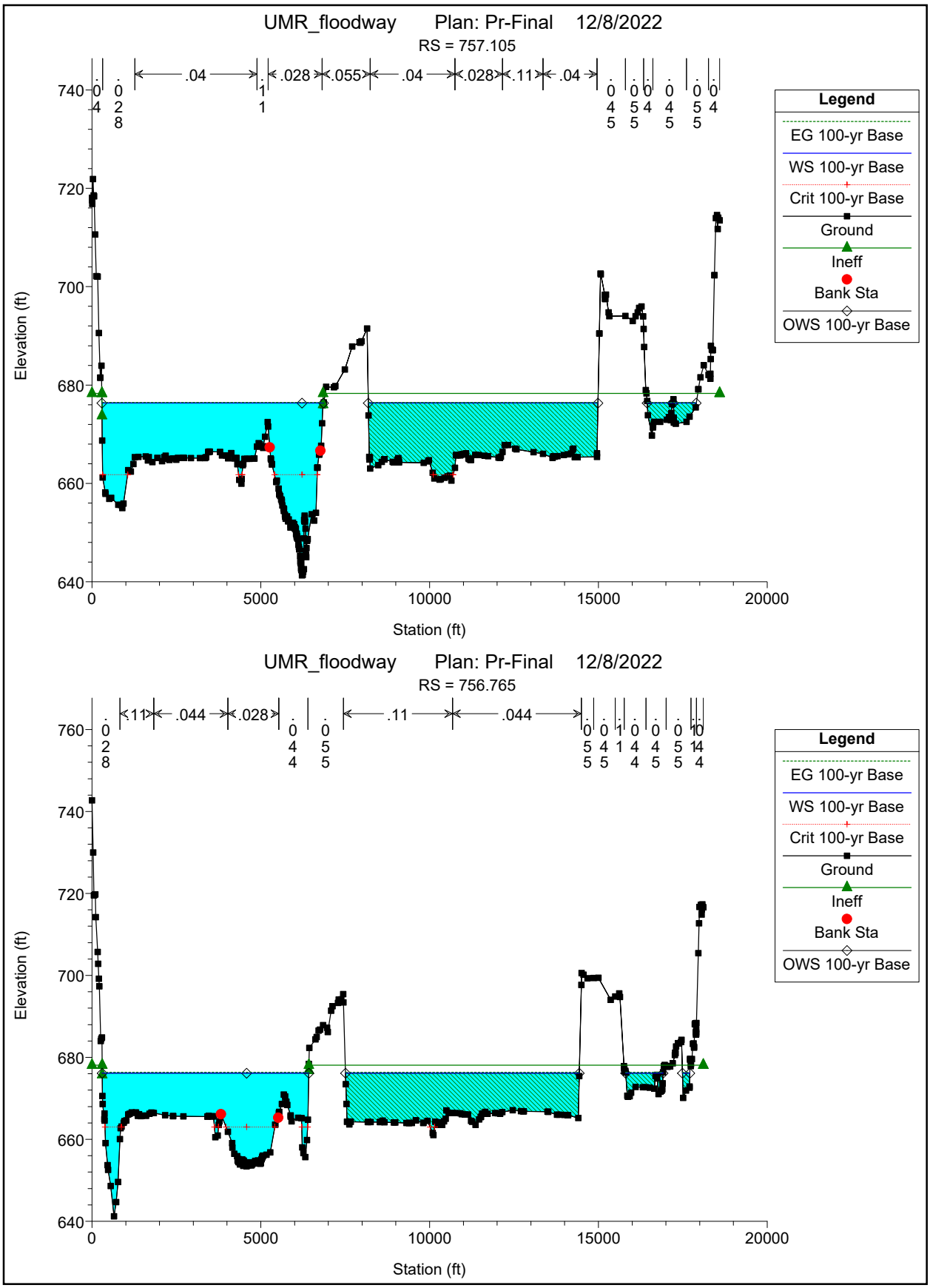

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 760.181
.055
.11
.04
.03
.04
.11
.04
.11
.028
.055
.11
.04
Elevation (ft)
720
710
700
690
680
670
660
650
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 759.926
.055
.065
.08
.028
.055
.11
.04
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

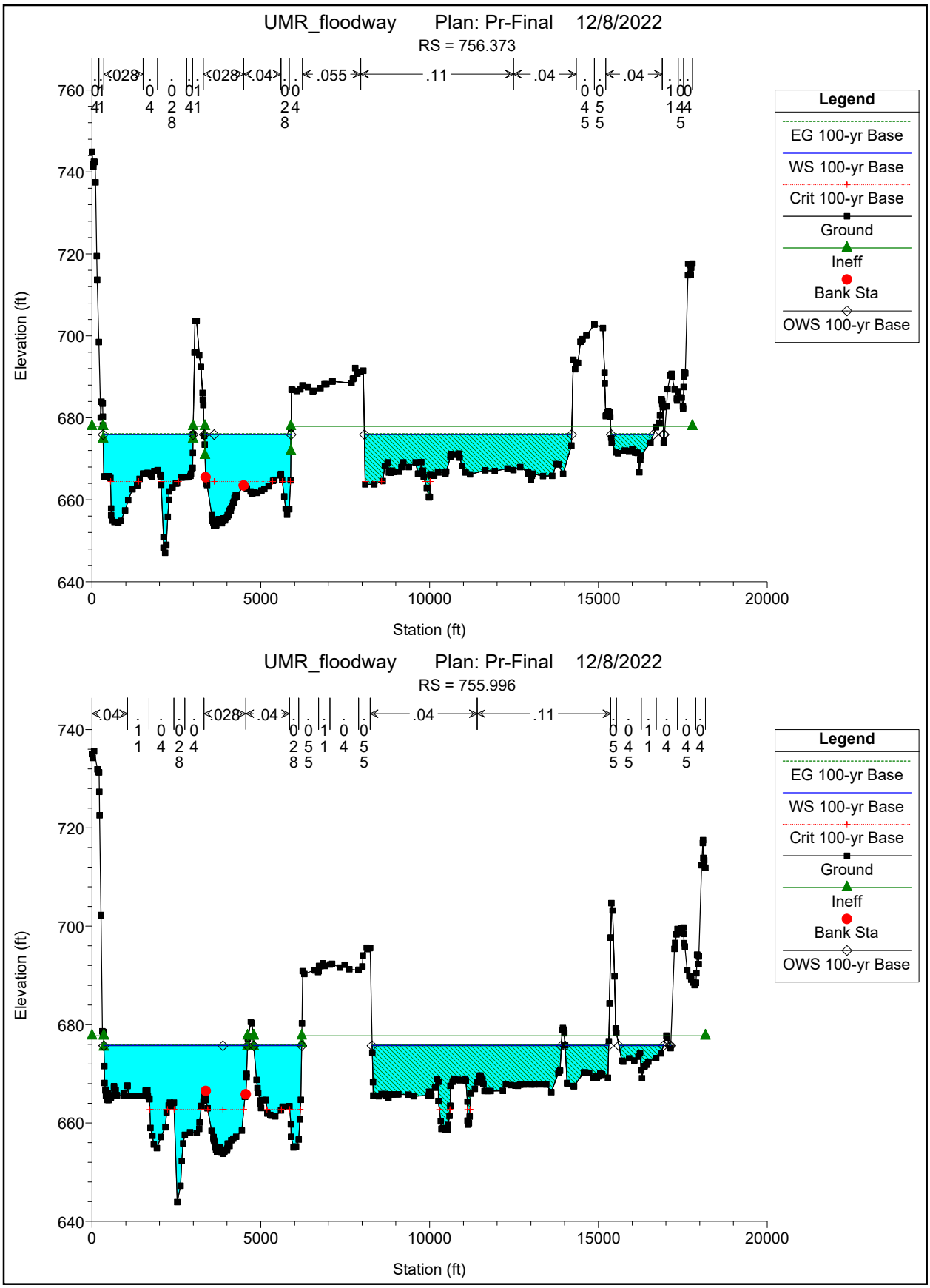

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 759.684
.055
.04
.06
.044
.055
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 759.458
.04
.04
.055
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)

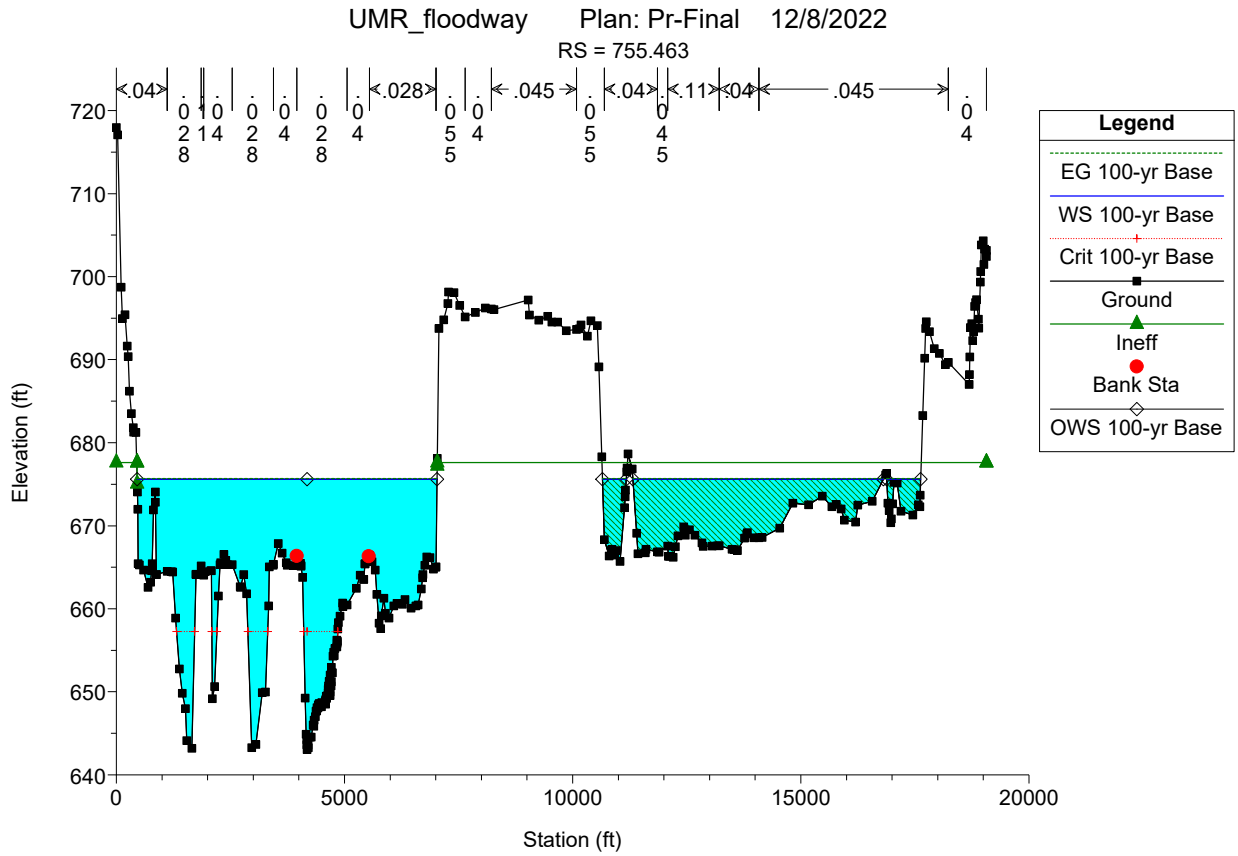

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 759.170
.04
.11
.04
.028
.04
.055
.045
.045
Elevation (ft)
780
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 758.833
.11
.045
.11
.028
.11
.048
.055
.11
.045
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
25000
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base

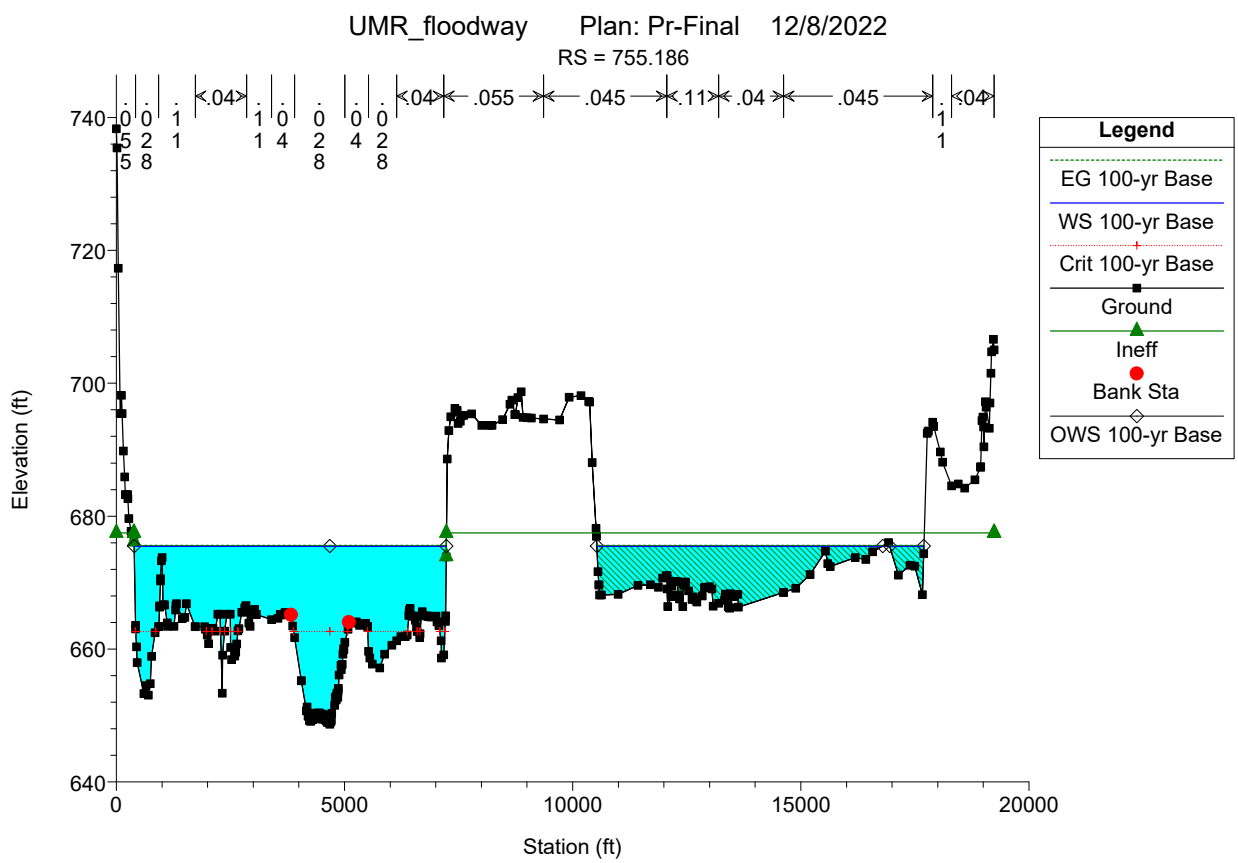

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 758.299
.04
.11
.04
.04
.11
.045
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 758.010
.04
.11
.11
.04
.055
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)

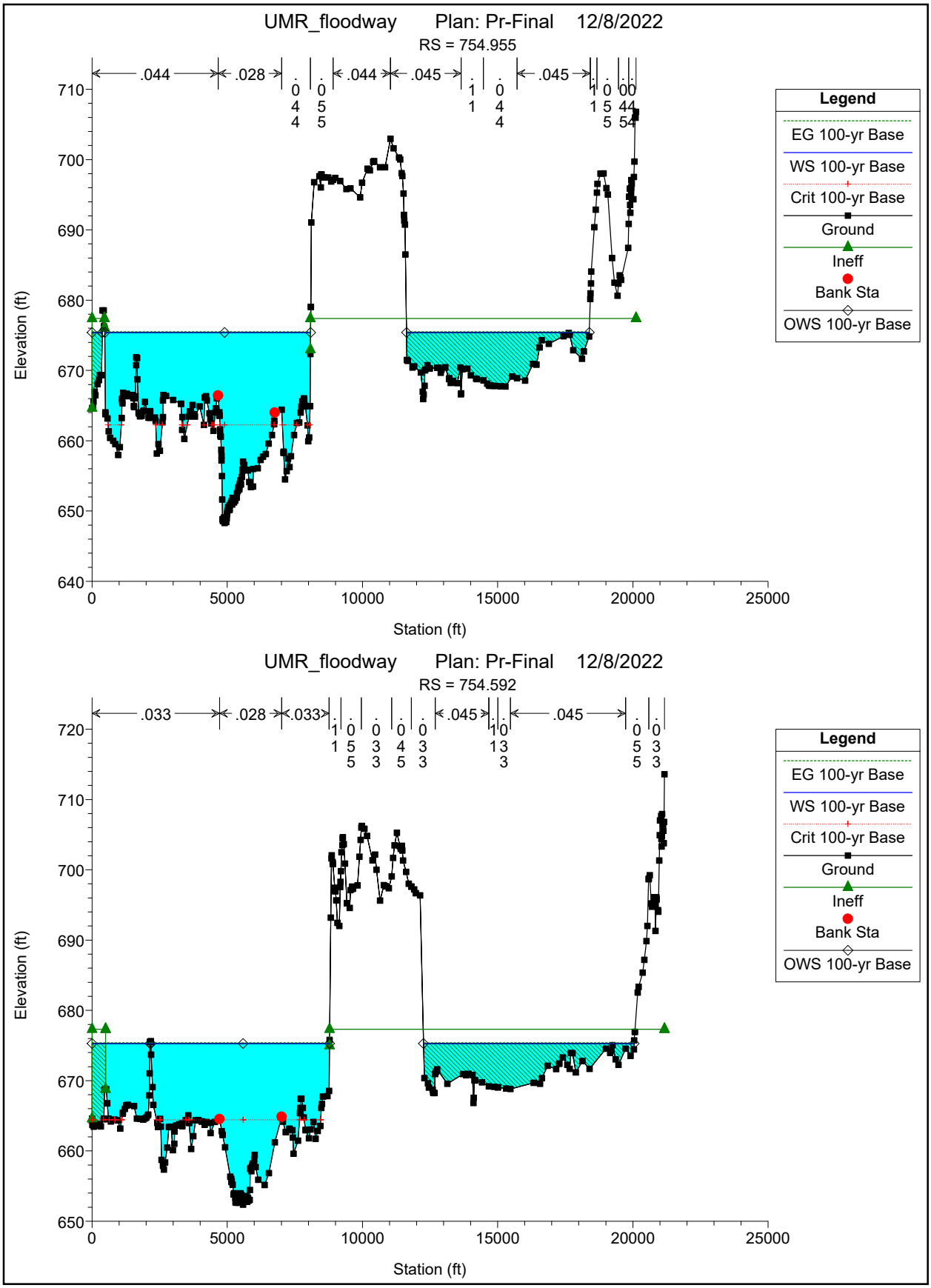

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 757.668
.04
.11
.028
.04
.055
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
730
720
710
700
690
680
670
660
650
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 757.381
.04
.04
.028
.04
.04
.045
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
720
710
700
690
680
670
660
650
0
5000
10000
15000
20000
Station (ft)

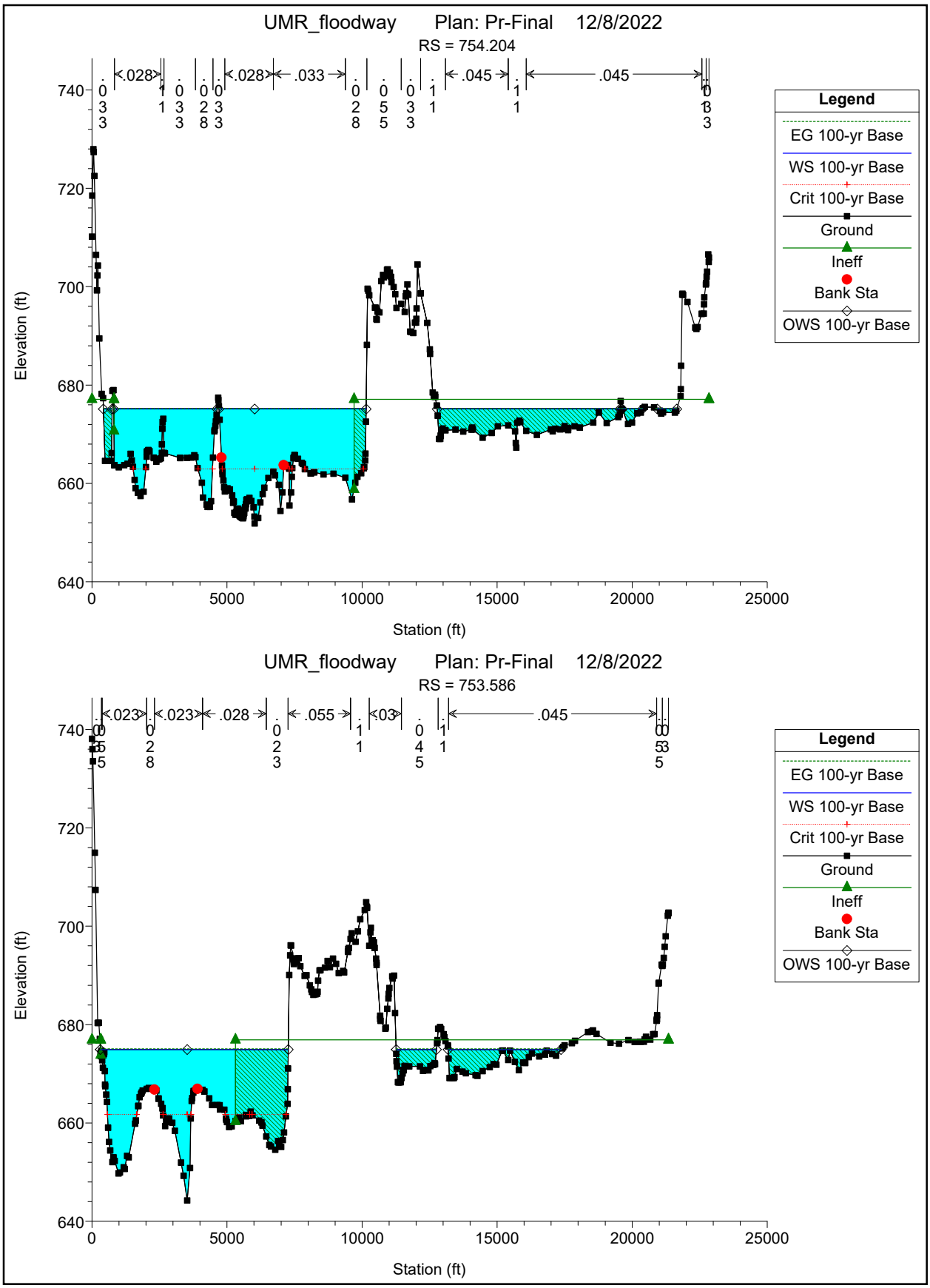

UMR_floodway Plan: Pr-Final 12/8/2022
RS = 757.105
.04
.028
.055
.04
.028
.11
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 756.765
.11
.044
.028
.11
.044
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
Station (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000


UMR_floodway Plan: Pr-Final 12/8/2022
RS = 756.373
.028
.04
.055
.11
.04
.04
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 755.996
.04
.028
.04
.04
.11
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
740
720
700
680
660
640
0
5000
10000
15000
20000
Station (ft)


UMR_floodway Plan: Pr-Final 12/8/2022
RS = 755.463
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base


UMR_floodway Plan: Pr-Final 12/8/2022
RS = 755.186
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base


UMR_floodway Plan: Pr-Final 12/8/2022
RS = 754.955
.044
.028
.044
.045
.045
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
UMR_floodway Plan: Pr-Final 12/8/2022
RS = 754.592
.033
.028
.033
.045
.045
Elevation (ft)
Station (ft)
Legend
EG 100-yr Base
WS 100-yr Base
Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base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Crit 100-yr Base
Ground
Ineff
Bank Sta
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700
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660
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0
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10000
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20000
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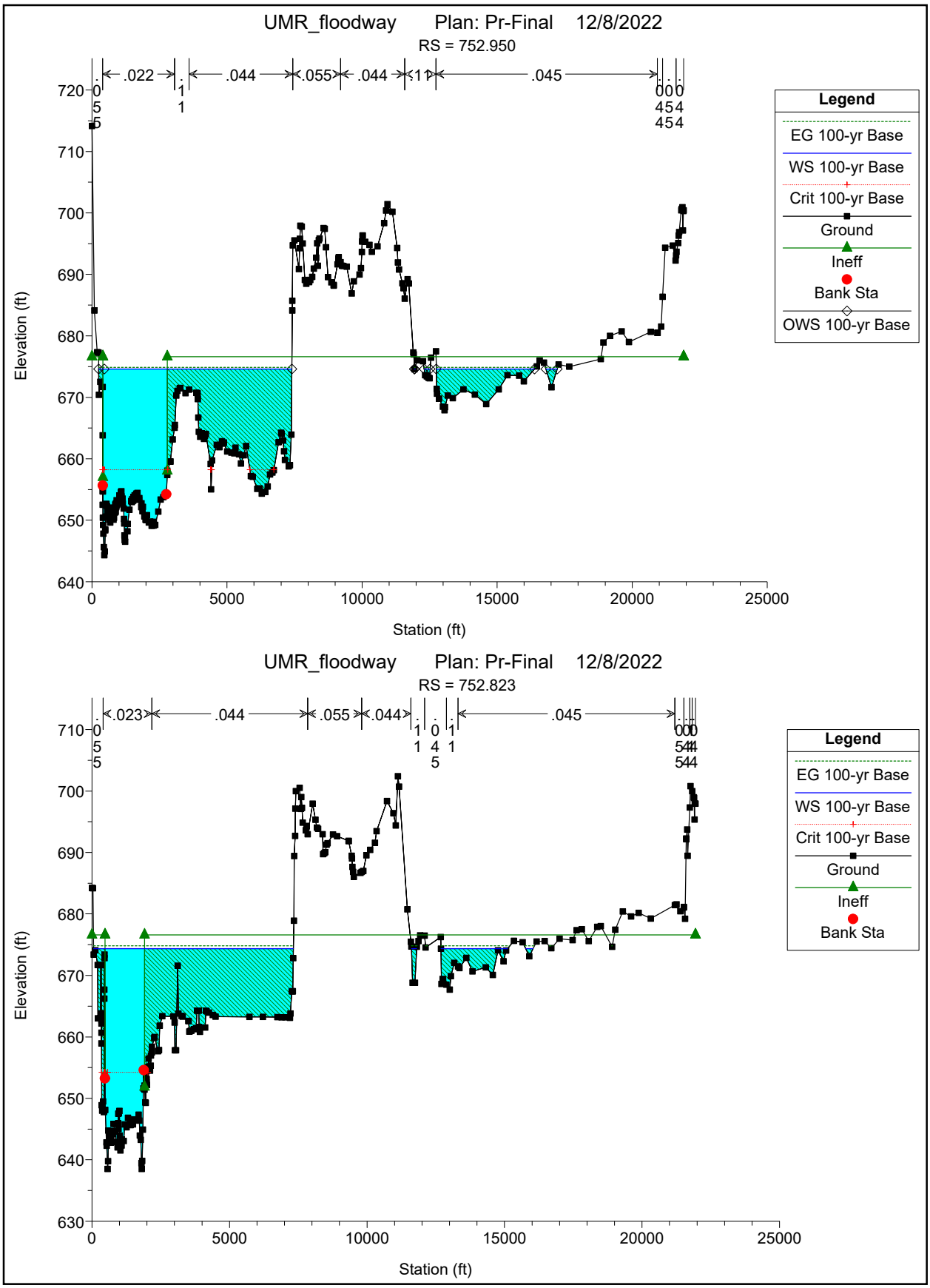
Station (ft)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Station (ft)
Legend
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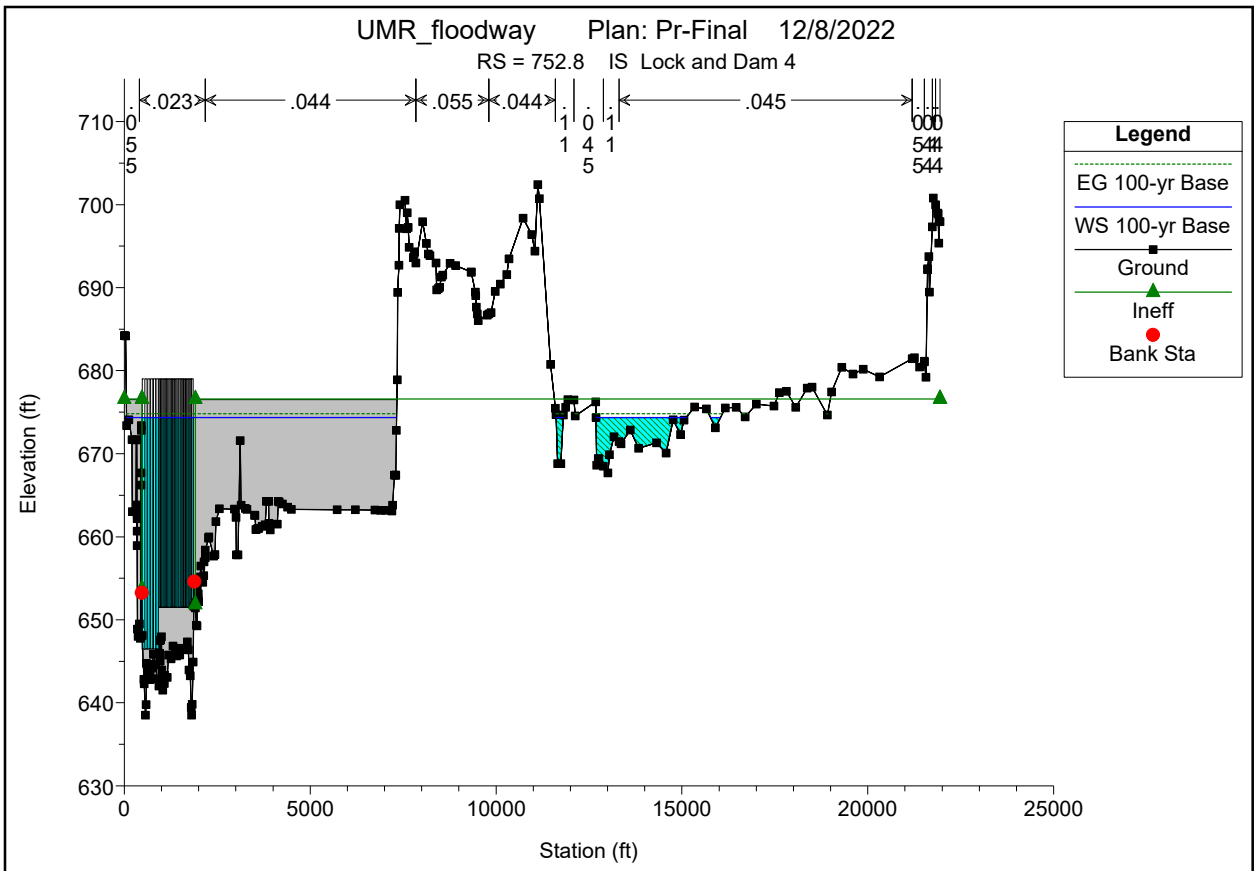
Crit 100-yr Base
Ground
Ineff
Bank Sta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.045
Legend
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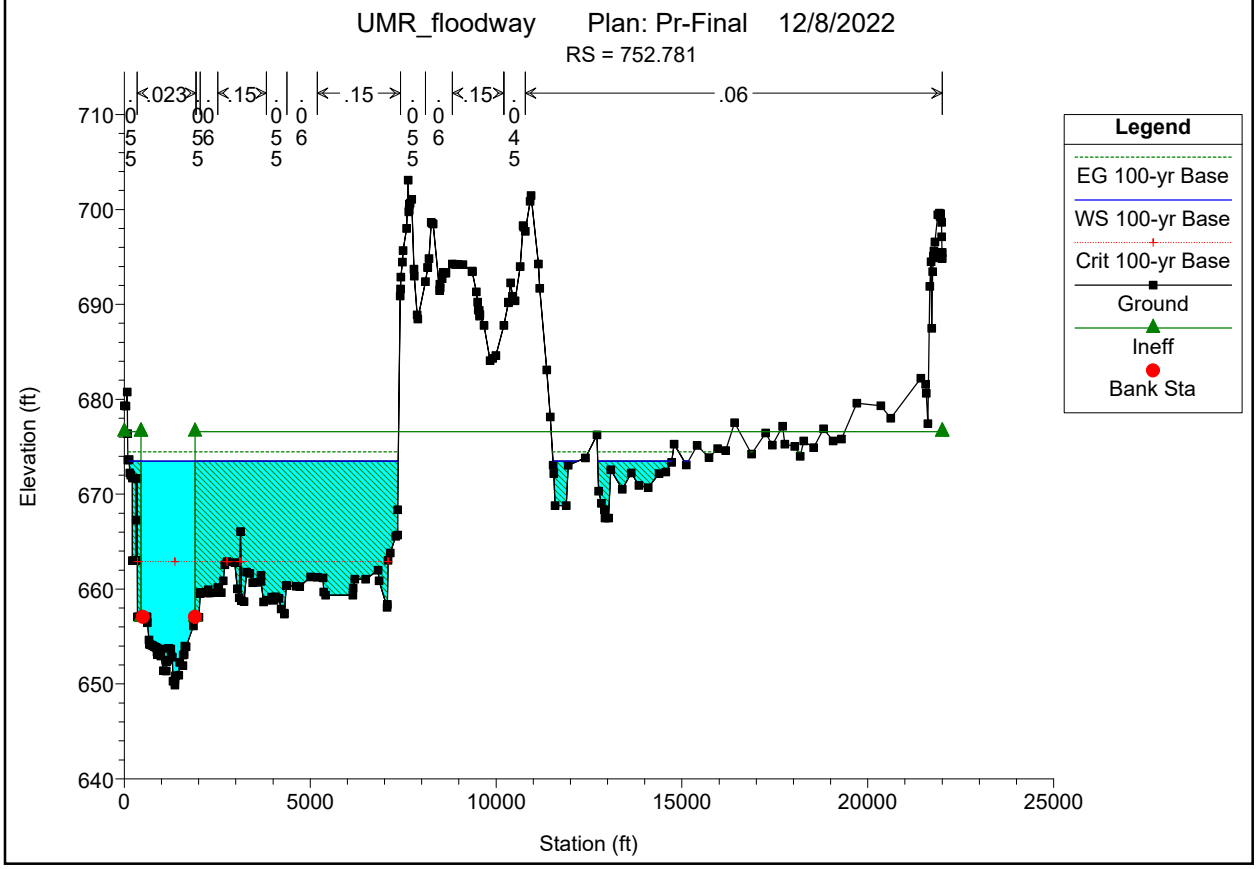
WS 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)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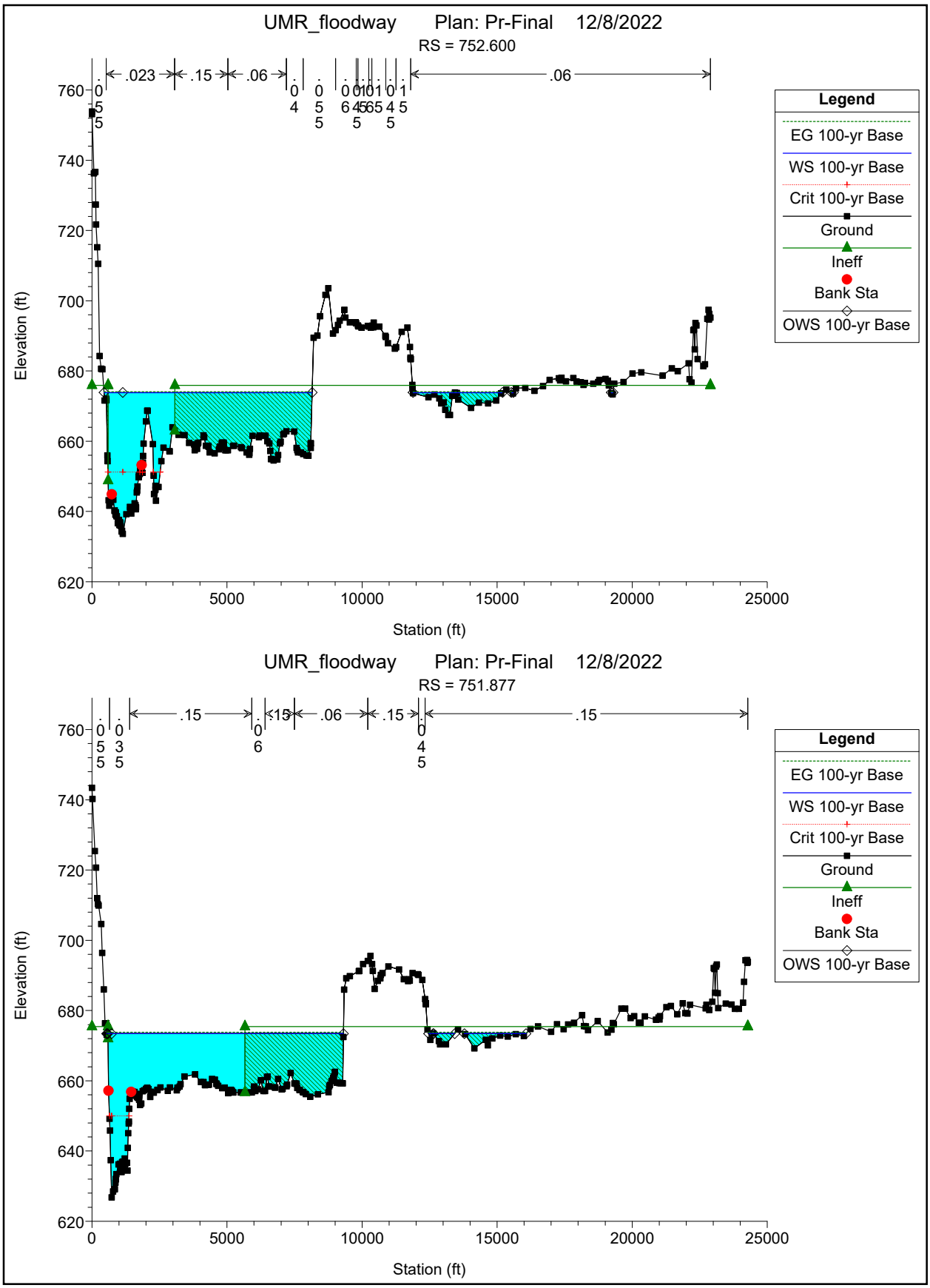
Crit 100-yr Base
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)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Bank Sta
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720
700
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640
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5000
10000
15000
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Legend
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Crit 100-yr Base
Ground
Ineff
Bank Sta
OWS 100-yr Base
Elevation (ft)
760
740
720
700
680
660
640
620
0
5000
10000
15000
20000
25000
Station (ft)

Appendix F:
Preliminary Site Layout

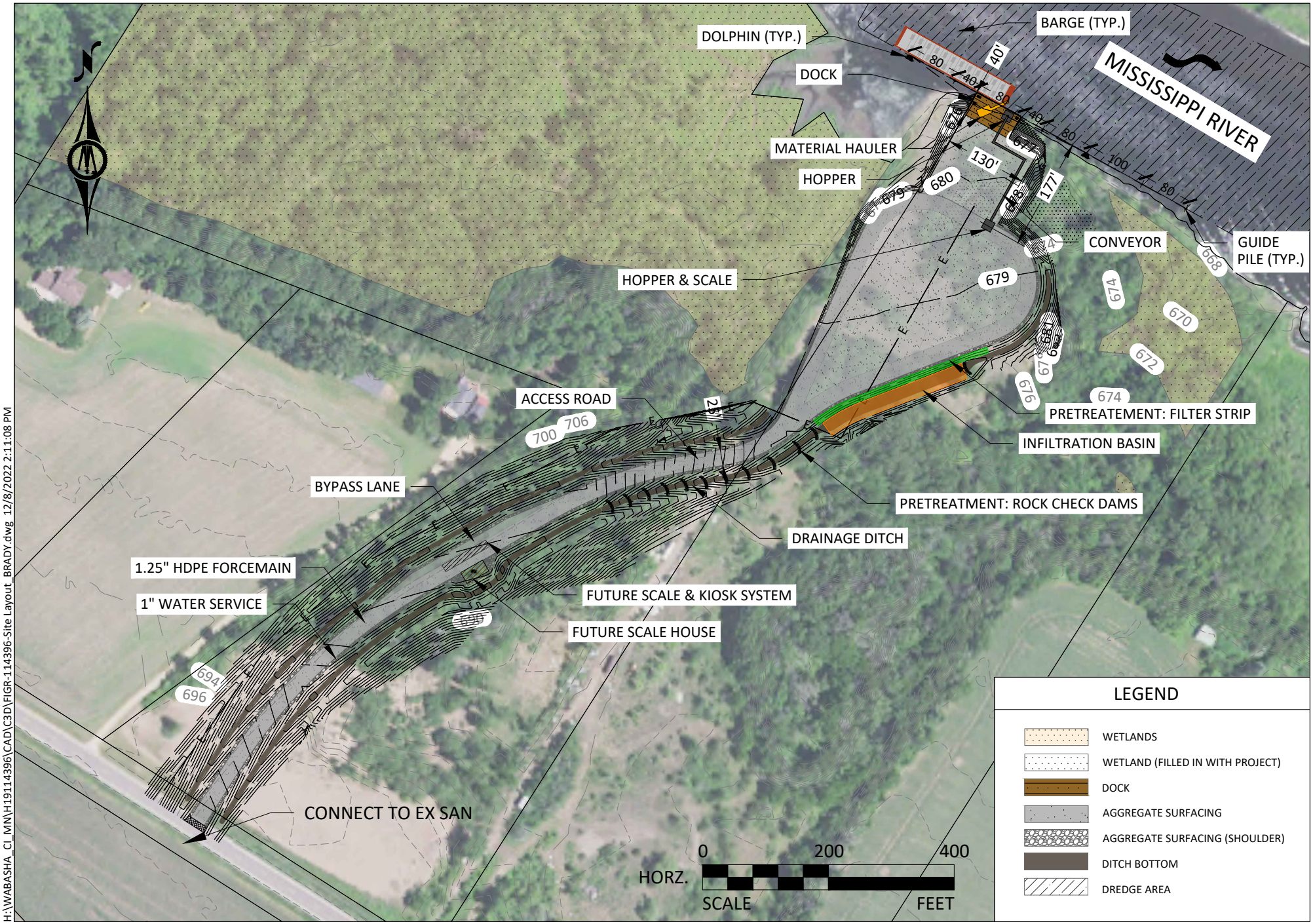
USACE Dredge Material Management Plan

City of Wabasha, MN

Preliminary Site Layout

December 2022

BOLTON & MENK



H:\WABASHA_CI_MN\H19114396\CAD\C3D\FIGR-114396-Site Layout_BRADY.dwg 12/8/2022 2:11:08 PM

Appendix G:
DVD of Digital Files

DIGITAL FILES
PENDING
FINAL REPORT

APPENDIX D

Wetlands

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Type and Boundary Application/Jurisdictional Status

Kohner Property Wetland Delineation

Wabasha, Minnesota

July 6, 2020

Submitted by:
Bolton & Menk, Inc.
12224 Nicollet Ave
Burnsville, MN 55337
P: 952-890-0509

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PART THREE: GENERAL PROJECT/SITE INFORMATION 1
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PART FIVE: APPLICANT SIGNATURE 2
ATTACHMENT A 3
ATTACHMENT B 4

Appendix

WETLAND DELINEATION REPORT

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name:	Chad Springer | City Administrator
Mailing Address:	900 Hiawatha Drive, East | PO Box 268 | Wabasha, MN 55981
Phone:	651-565-4568
E-mail Address:	cityadmin@wabasha.org

Authorized Contact (do not complete if same as above):	
Mailing Address:	
Phone:	
E-mail Address:	

Agent Name:	Brandon Bohks – Natural Resource Specialist
Mailing Address:	12224 Nicollet Avenue | Burnsville, MN 55337
Phone:	952-890-0509 ext. 3244
E-mail Address:	brandon.bohks@bolton-menk.com

PART TWO: Site Location Information

County:	**Wabasha**	**City/Township:**	**City of Wabasha**
Parcel ID and/or Address:	**27.00004.03 & 27.00005.03**		
Legal Description (Section, Township, Range):	**30, 111N, 10W**		
Lat/Long (decimal degrees):			
Attach a map showing the location of the site in relation to local streets, roads, highways.			
Approximate size of site (acres) or if a linear project, length (feet):	**48.3 acres**		

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted ***prior to*** this application then describe that here and provide the Corps of Engineers project number.

N/A

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

PART FOUR: Aquatic Resource Impact[1] Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	**Aquatic Resource Type** (wetland, lake, tributary etc.)	**Type of Impact** (fill, excavate, drain, or remove vegetation)	**Duration of Impact** Permanent (P) or Temporary (T)[1]	**Size of Impact**[2]	**Overall Size of Aquatic Resource** [3]	**Existing Plant Community Type(s)** in Impact Area[4]	**County, Major Watershed #, and Bank Service Area #** of Impact Area[5]

[1]If impacts are temporary; enter the **duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".**

. 8, otherwise enter "N/A".

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: _____ Date:

I hereby authorize **Bolton & Menk, Inc.** to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

[1] **The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify**

Attachment A

Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☒ **Wetland Type Confirmation**

☒ **Delineation Concurrence**. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☐ **Preliminary Jurisdictional Determination**. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☐ **Approved Jurisdictional Determination**. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).
http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx

Attachment B

Supporting Information for Applications Involving Exemptions, No Loss Determinations, and Activities Not Requiring Mitigation

Complete this part ***if*** you maintain that the identified aquatic resource impacts in Part Four do not require wetland replacement/compensatory mitigation OR ***if*** you are seeking verification that the proposed water resource impacts are either exempt from replacement or are not under CWA/WCA jurisdiction.

Identify the specific exemption or no-loss provision for which you believe your project or site qualifies:

Provide a detailed explanation of how your project or site qualifies for the above. Be specific and provide and refer to attachments and exhibits that support your contention. Applicants should refer to rules (e.g. WCA rules), guidance documents (e.g. BWSR guidance, Corps guidance letters/public notices), and permit conditions (e.g. Corps General Permit conditions) to determine the necessary information to support the application. Applicants are strongly encouraged to contact the WCA LGU and Corps Project Manager prior to submitting an application if they are unsure of what type of information to provide:

Appendix

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Wetland Delineation Report

Kohner Property Wetland Delineation

Wabasha, Minnesota

July 6, 2020

Submitted by:
Bolton & Menk, Inc.
12224 Nicollet Avenue
Burnsville, MN 55337
P: 952-890-0509



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II. WETLAND DELINEATION METHODOLOGY 1
III. BACKGROUND INFORMATION 2
IV. CLIMATE DATA 3
V. FINDINGS 4
VI. CONCLUSION 5

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Exhibits

MONTHLY TEMPERATURE RANGE 3
ANTECEDENT PRECIPITATION CONDITIONS 3

Appendix

Exhibit A: Site Location Map
Exhibit B: Site Topography – 2 Foot LiDAR Contours
Exhibit C: National Wetlands Inventory
Exhibit D: Public Waters Inventory
Exhibit E: Wabasha County Soil Survey
Exhibit F: Delineated Aquatic Resources
Exhibit G: Delineation Data Sheets
Exhibit H: Off-Site Hydrology Assessment

I. INTRODUCTION

The City of Wabasha requested a wetland delineation on two parcels (27.00004.00 & 27.00005.03) owned by the Kohner Sand & Gravel Company. The delineation was conducted to determine the limits of all aquatic resources within the study parcels.

The sites are considered significantly disturbed due to a large sand mining operation that began in the 1930s and was in service for many decades to come. The undisturbed landcover is dominated by deciduous floodplain forest. It is apparent that the aquatic resources with this study corridor have been heavily influenced, if not created by excavation.

The project is found in Section 19 in Township 109 North of Range 9 West.

II. WETLAND DELINEATION METHODOLOGY

The wetland boundaries were delineated and staked in the field on June 18, 2020 and June 25, 2020, using methods described in the "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)". Wetlands identified were classified using "Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979)", "Wetlands of the United States (United States Fish and Wildlife Service Circular No. 39, 1971 edition)" and "Wetland Plants and Plant Communities of Minnesota and Wisconsin" (Eggers and Reed Third Edition). Subsequently, the three mandatory technical criteria for wetland determinations are as follows:

Hydrophytic Vegetation. A hydrophytic plant community is present when the dominant plant species present can endure prolonged inundation and/or soil saturation during the growing season. A plant's Wetland Indicator Status is determined using the 2016 National Wetland Plant List for Minnesota, published by the Army Corp of Engineers.

Hydric Soils. A hydric soil is defined as a soil that is formed under conditions of saturation, flooding or ponding long enough during the growing season (the portion of the year when there is above ground growth and development of vascular plants and/or soil temperature at 12 inches below the soil surface is above 41 degrees Fahrenheit or higher) to develop anaerobic conditions in the upper part.

Wetland Hydrology. An area has wetland hydrology if it experiences 14 or more consecutive days of flooding, ponding or a water table within 12 inches of the surface during the growing season at a minimum frequency of five out of ten years. This is determined by using both primary and secondary Wetland Hydrology indicators.

III. BACKGROUND INFORMATION

Prior to conducting a field investigation of this site, Exhibits A through E were used to complete a preliminary evaluation. The data gathered during the preliminary investigation was used as described below:

Exhibit A is a location map of the study area.

Exhibits B is an aerial photo with topographic information overlaid on it. This provides information regarding topography of the site, helping to identify areas that may have wetland characteristics.

Exhibit C is the National Wetlands Inventory of the site and surrounding properties. This information is used to complete a preliminary investigation of the wetlands that may or may not exist on the site.

Exhibit D is used to identify waters that are regulated by the DNR. This exhibit shows where there are DNR public waters relative to the site.

Exhibit E is the Wabasha County Soil Survey and is used to identify hydric soils that may lie within the study area.

Exhibit F is the site map showing the delineated aquatic resources.

Exhibit G includes the wetland delineation data sheets.

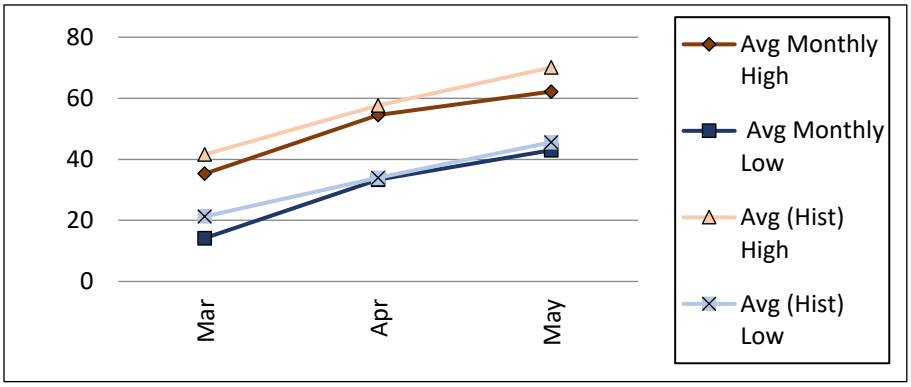
Exhibits F and G were prepared from the information gathered at the site.

Exhibit H is the Off-Site Hydrology Assessment.

IV. CLIMATE DATA

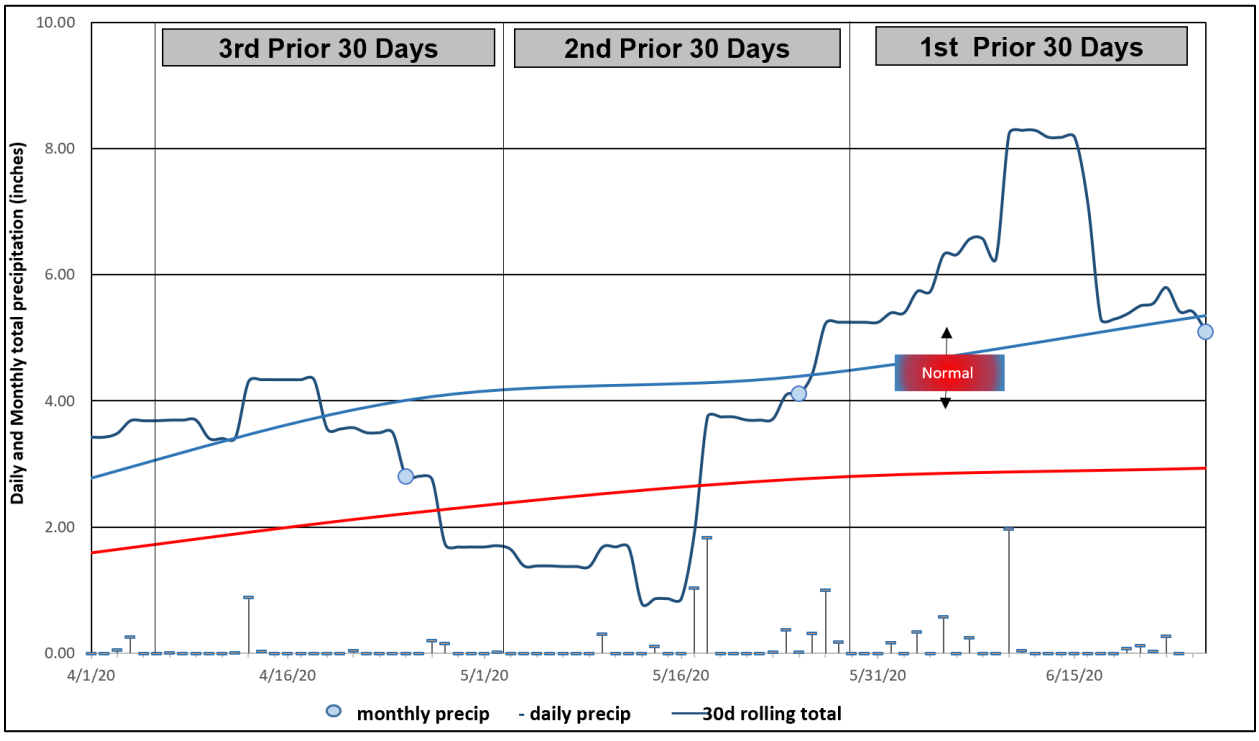
The monthly temperature table below shows the average high and low temperatures for the three months prior to the field delineation, along with the historical averages for these months. The average monthly highs were well below the historical averages, while the average monthly lows have also been below the historic averages over the past three months.

MONTHLY TEMPERATURE RANGE



Antecedent precipitation was evaluated using a combination of the NRCS Method and the Rolling Totals Method. The analysis found that precipitation totals were above at the time of the delineation.

ANTECEDENT PRECIPITATION CONDITIONS



This climatic data was gathered using the Climatology Working Group Website, http://climate.umn.edu/ and the National Weather Service Forecast Office, http://w2.weather.gov/climate/. The information for the investigation was retrieved from the WETS Station: Wabasha–Minneiska-Weaver (County–City-Township).

V. FINDINGS

On June 18 and 25, of 2020, a field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the proposed study corridor. The field investigation found that a total of four wetlands were found to exist within the study corridor. The following describes the aquatic resources identified, together with a brief description of wetland types and observations made during the field investigation.

Along with a field investigation, an off-site hydrology assessment was performed to identify locations within agricultural field that may possess wetland signatures. Eight years of aerial imagery was reviewed, of which five years were considered to have normal precipitation. Only one site was identified and reviewed. According to the off-site hydrology decision matrix, the site was not considered wetland.

Wetland 1 (W1):
NWI Cowardin: PFO1Cx
PWI (Hydro) ID: None
Field Observation Circular 39: Type 1
Field Observation Eggers and Reed: Seasonally Flooded Basin
Soil Mapping Unit(s): Kalmarville complex, frequently flooded



Wetland 1

Wetland 1 is located along the northern boundary of the study area, close to the bank of the Mississippi River. Wetland 1 appears to have been excavated while sand mining operations took place beginning in the 1930s.

The field investigation found that W1 has met all three wetland indicators and should be considered a palustrine forested broad-leaved deciduous seasonally flooded excavated (PFO1Cx) wetland. One transect and several sample points were taken to determine the wetland boundary. Soils, hydrology and topography aided in determining the wetland boundary.

At the wetland pit location, the plant community is dominated by American elm, box elder, buckthorn, and jewel weed. At the upland pit location, the plant community is dominated by buckthorn, creeping jenny, and poison ivy. Both plant communities are considered hydrophytic.

Soils at the wetland pit location were dug to a depth of 12-inches and met hydric soil indicator A11 – Depleted Below Dark Surface. Soils at the upland pit location were dug to a depth of 12-inches and failed to meet any of the hydric soil indicators.

Soils at the wetland pit location were saturated within 10-inches of the soil surface. Soils at the wetland pit location also met primary wetland indicators B8 – Sparsely Vegetated Concave Surface and B9 – Water Stained Leaves. Secondary hydrology indicators D2 – Geomorphic Position and D5 – FAC Neutral Test were also present. Soils at the upland pit location only met secondary hydrology indicator D5, therefore failing to meet wetland hydrology criteria.

The determining factor for this delineation was the lack of hydric soils and wetland hydrology at the upland pit location. The boundary was determined by following the topographic breaks.

Wetland 2 (W2):
NWI Cowardin: PFO1C
PWI (Hydro) ID: None
Field Observation Circular 39: Type 1
Field Observation Eggers and Reed: Seasonally Flooded Wetland
Soil Mapping Unit(s): Kalmarville complex, frequently flooded

Wetland 2 is a large floodplain wetland that begins along the northeast corner of the study area and extends to the southeast. Although there was no surface water present at the time of the site visit, several other primary wetland indicators were identified.

The field investigation found that W2 has met all three wetland indicators and should be considered a PFO1C. One transect and several sample points were taken to determine the wetland boundary. Soils, hydrology and topography aided in determining the wetland boundary.

At the wetland pit locations, the plant community is dominated by silver maple and buckthorn. At the upland pit location, the plant community is dominated by buckthorn, prickly ash, white vervain. Both plant communities are considered hydrophytic.

Soils at wetland pit location were dug to a depth of 12-inches and met hydric soil indicator A11. Soils at the upland pit location were dug to 13-inches and failed to meet any of the hydric soil indicators.

Soils at the wetland pit location were not saturated. Soils at the wetland pit location did meet primary hydrology indicators B3 – Drift Deposits and B9. Soils at the wetland pit location also met secondary hydrology indicators D2 and D5. Soils at the upland pit location were not saturated and failed to meet any secondary hydrology indicators, therefore failing to meet wetland hydrology criteria.

The determining factor for this delineation was the lack of hydric soils and wetland hydrology at the upland pit locations. The boundary was determined by following the topographic breaks.



Wetland 2

Wetland 3 (W3):
NWI Cowardin: PEM1C/PSS1C
PWI (Hydro) ID: 52296
Field Observation Circular 39: Type 1
Field Observation Eggers and Reed: Seasonally Flooded Wetland
Soil Mapping Unit(s): Kalmarville complex, frequently flooded

Wetland 3 makes up a large floodplain wetland complex beginning in the northcentral portion of the study area and extending to the northwest. Wetland 3 appears to be a very active floodplain and is fed by a channel inlet. Although there was no surface water present at the time of the site visit, several other primary wetland indicators were identified.

The field investigation found that wetland W3 has met all three wetland indicators and should be considered a PFO1C wetland. One transects and several sample points were taken to determine the wetland boundary. Soils, hydrology and topography aided in determining the wetland boundary.

At the wetland pit location, the plant communities are dominated silver maple, white vervain, and clear weed. At the upland pit location, the plant communities are dominated by green ash, buckthorn, and wood nettle. Both plant communities are considered hydrophytic.

Soils at wetland pit location were dug to a depth of 15-inches and met hydric soil indicator A11. Soils at the upland pit location were dug to 18-inches and failed to meet any of the hydric soil indicators.



Wetland 3

Soils at the wetland pit location were saturated within 7-inches of the soil surface, with the water table present at 10-inches. Soils at the wetland pit location also met primary wetland indicators B3, B4 – Algal Mat or Crust, and B9. Secondary hydrology indicator D5 was also present. Soils at the upland pit location only met secondary hydrology indicator D5, therefore failing to meet wetland hydrology criteria.

The determining factor for this delineation was the lack of hydric soils and wetland hydrology at the upland pit location. The boundary was determined by following the topographic breaks.

Wetland 4 (W4):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Type 1
Field Observation Eggers and Reed: Seasonally Flooded Wetland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Wetland 4 is a small basin/depression located close to the southeastern boarder of the study area. It appears W4 was created as the result of sand mining activity which began in the 1930s.

The field investigation found that wetland (W4) has met all three wetland indicators and should be considered a PFO1A. One transect and several sample points were taken to determine the wetland boundary. Soils, hydrology and topography aided in determining the wetland boundary.

At the wetland pit location, the plant community is dominated by bebb's willow and green ash. At the upland pit location, the plant community is dominated by cottonwood, buckthorn, and creeping jenny. Both plant communities are considered hydrophytic.

Soils at the wetland pit location were dug to a depth of 14-inches and met hydric soil indicator A11. Soils at the upland pit location were dug to a depth of 16-inches and failed to meet any of the hydric soil indicators.

Soils at the wetland pit location were saturated within 7-inches of the soil surface, with the water table present at 11-inches. Soils at the wetland pit location also met primary wetland indicators B8, B8 and B9. Secondary hydrology indicators D2 and D5 were also present. Soils at the upland pit location only met secondary hydrology indicator D5, therefore failing to meet wetland hydrology criteria.

The determining factor for this delineation was the hydric soils and wetland hydrology indicators at the upland pit location. The boundary was determined by following the topographic breaks.

Sample Point (SP-1):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 1 (SP-1) was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by American elm, buckthorn, and jewel weed, therefore hydrophytic vegetation is considered present. Soils at SP-1 were dug to a depth of 5-inches before a restrictive layer was observed. Hydric soils were not encountered within the upper 5-inches. Soils at SP-1 did meet secondary wetland hydrology indicator D2 and D5. The determining factor for this investigation was the lack of hydric soils at the sample pit location, therefore this area is considered upland.

Sample Point (SP-2):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 2 (SP-2 was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by Siberian elm and switch grass, therefore hydrophytic vegetation is considered absent. Soils at SP-2 were dug to a depth of 3-inches before a

restrictive layer was observed. Hydric soils were not encountered within the upper 3-inches. Soils at SP-2 only met secondary wetland hydrology indicator D2. The determining factor for this investigation was the lack of all three wetland indicators at the sample pit location, therefore this area is considered upland.

Sample Point (SP-3):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 3 (SP-3) was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by cottonwood, green ash, American germander, and Canada thistle, therefore hydrophytic vegetation is considered present. Soils at SP-3 were dug to a depth of 15-inches and failed to meet any hydric soil indicators. Soils at SP-3 only met secondary wetland hydrology indicator D5. The determining factor for this investigation was the lack of hydric soils and wetland hydrology at the sample pit location, therefore this area is considered upland.

Sample Point (SP-4):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 4 (SP-4) was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by American elm, green ash, buckthorn, and poison ivy, therefore hydrophytic vegetation is considered present. Soils at SP-4 were dug to a depth of 4-inches before a restrictive layer was observed. Hydric soils were not encountered within the upper 4-inches. Soils at SP-4 did meet secondary wetland hydrology indicators D2 and D5. The determining factor for this investigation was the lack of hydric soils at the sample pit location, therefore this area is considered upland.

Sample Point (SP-5):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 5 (SP-5) was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by pin oak, buckthorn, green ash, and Virginia creeper, therefore hydrophytic vegetation is considered present. Soils at SP-5 were dug to a depth of 14-inches and failed to meet any hydric soil indicators. Soils at SP-5 did meet secondary wetland hydrology indicators D2 and D5. The determining factor for this investigation was the lack of hydric soils at the sample pit location, therefore this area is considered upland.

Sample Point (SP-6):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 6 (SP-6) was taken to investigate the presence of potential wetland indicators.

Vegetation at the sample pit location is dominated by black walnut, prickly ash, black snakeroot, and wood nettle, therefore hydrophytic vegetation is considered absent. Soils at SP-6 were dug to a depth of 17-inches and failed to meet any hydric soil indicators. Soils at SP-6 only met secondary wetland hydrology indicators D2. The determining factor for this investigation was the lack of all three wetland indicators at the sample pit location, therefore this area is considered upland.

Sample Point (SP-7):
NWI Cowardin: None
PWI (Hydro) ID: None
Field Observation Circular 39: Upland
Field Observation Eggers and Reed: Upland
Soil Mapping Unit(s): Pits, gravel-Udispsammetents

Sample point 7 (SP-7) was taken to investigate the presence of potential wetland indicators. Vegetation at the sample pit location is dominated by box elder, green ash, cottonwood, buckthorn, wood nettle and jumpseed, therefore hydrophytic vegetation is considered present. Soils at SP-7 were dug to a depth of 20-inches and failed to meet any hydric soil indicators. Soils at SP-7 did meet secondary wetland hydrology indicators D2 and D5. The determining factor for this investigation was the lack of hydric soils at the sample pit location, therefore this area is considered upland.

VI. CONCLUSION

This delineation was performed on June 18, 2020 and June 25, 2020. The boundaries of the wetlands were staked in the field with three foot "Wetland Delineation" pin flags. The location of the pin flags were surveyed by Bolton & Menk, Inc. using a Trimble Geo-XH GPS Data Collector and tied to the Wabasha County coordinate system. The delineated limits are believed to be the upper limits of where all three of the required wetland criteria were present.

Bolton & Menk, Inc., was asked to determine the boundaries of those jurisdictional wetlands that exist upon this property as defined by the Wetland Conservation Act.

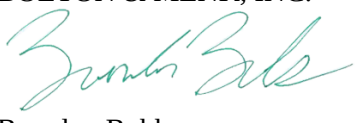
Based upon all available information, the existing conditions that currently prevail, and the on-site investigation, evidence supports the presence of four wetlands within the boundaries of the study corridor.

WETLAND SUMMARY

Id #	Wetland Type^	Size*
W1	Type 1	0.40 ac
W2	Type 1	0.92 ac
W3	Type 1	14.8 ac
W4	Type 1	0.02 ac

**size measured within study area.*
^wetland type within study area

Sincerely,
BOLTON & MENK, INC.



Brandon Bohks
Certified Wetland Delineator, No. 1341

APPENDIX

Kohner Property Wetland Delineation

July 2020

Exhibit A: Location Map

BOLTON & MENK
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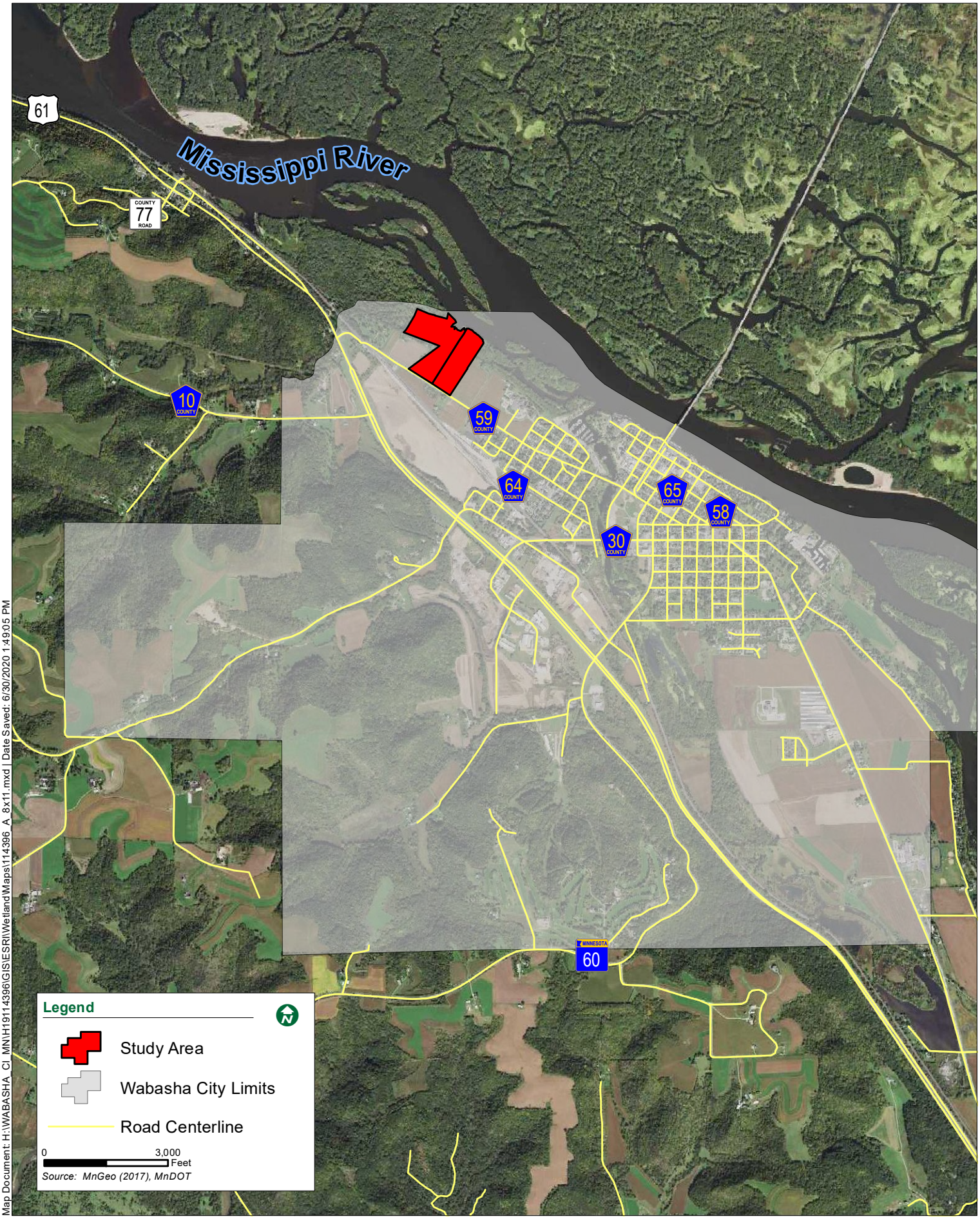

Map Document: H:\WABASHA_CI_MN\H191144396\GIS\ESRI\Wetland\Maps\114396_A_8x11.mxd | Date Saved: 6/30/2020 1:49:05 PM

Kohner Propety Wetland Delineation

July 2020

Exhibit B: 2-Foot LiDAR Contours

BOLTON & MENK
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Legend

Study Area

Elevation

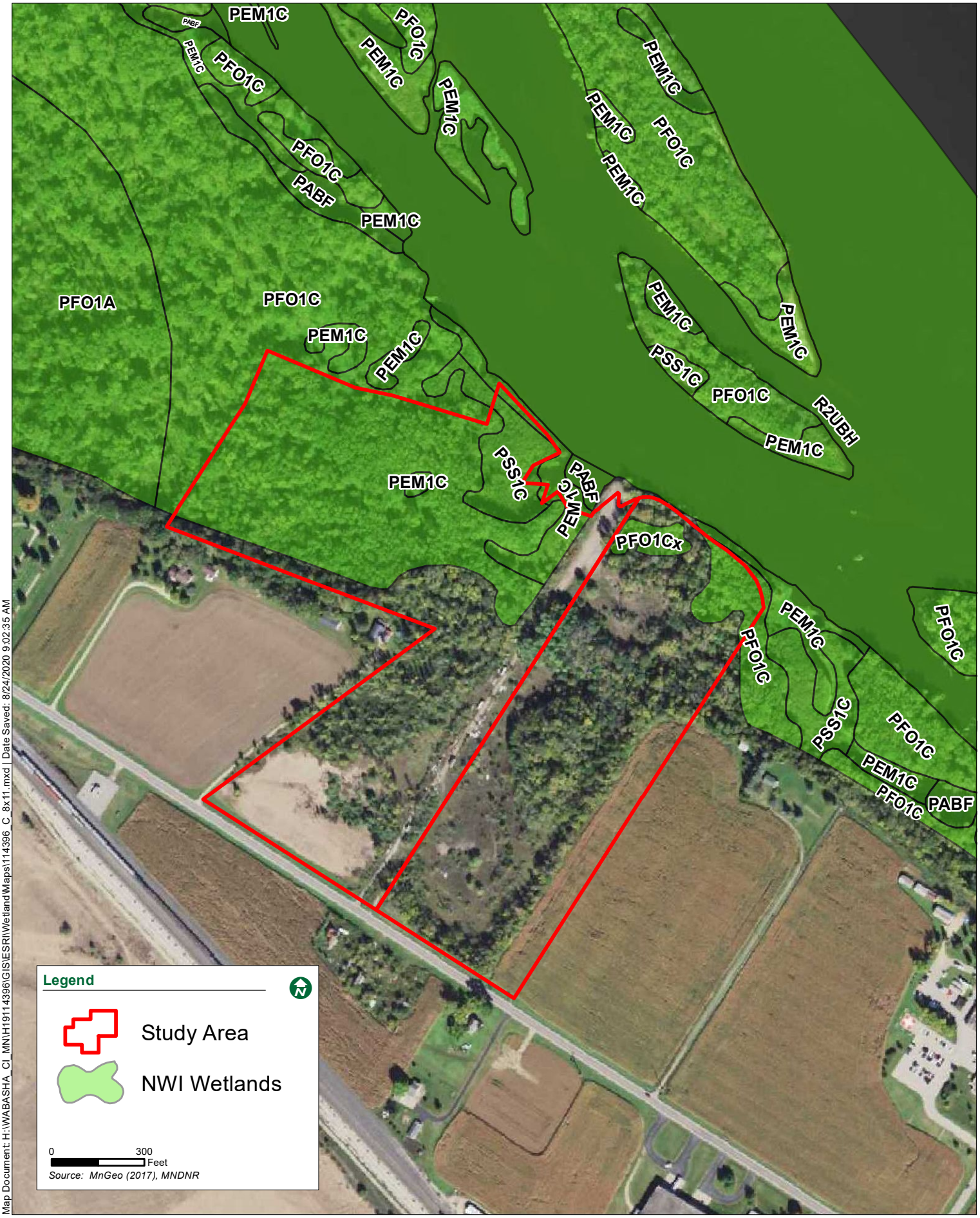
Major Contours

Minor Contours

0 300 Feet

Source: MnGeo (2017), Wabasha County

Map Document: H:\WABASHA_CI_MN\H19114396\GIS\ESRI\Wetland\Maps\114396_B_8x11.mxd | Date Saved: 8/24/2020 9:01:03 AM



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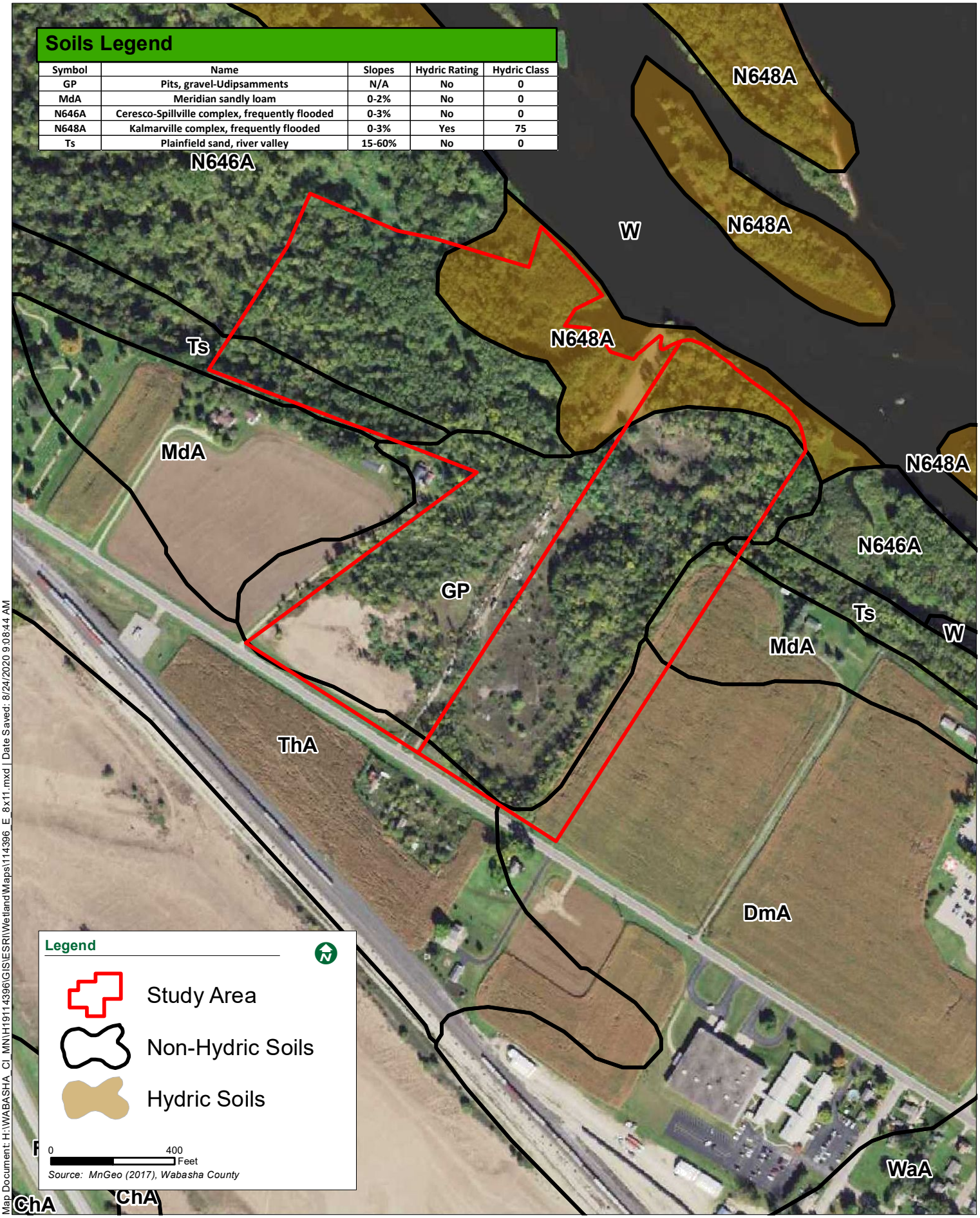

Map Document: H:\WABASHA_CI_MN\H191114396\GIS\ESRI\Wetland\Maps\114396_E_8x11.mxd | Date Saved: 8/24/2020 9:08:44 AM

W3: Type 1/PFO1C
Seasonally Flooded Wetland
14.8 ac

W1: Type 1/PFO1C
Seasonally Flooded Wetland
0.40 ac

Site 3

W3-A

W3-B

W1-B

W1-A

W2: Type 1/PFO1C
Seasonally Flooded Wetland
0.92 ac

W2-A

W2-B

Site 4

W4-B

Site 5

W4-A

W4: Type 1/PFO1C
Seasonally Flooded Wetland
0.02 ac

Site 7

Site 2

Site 6

Site 1

Legend

Study Area

Delineated Wetlands

Soil Boring

Sampled Sites

0 200
Feet

Source: MnGeo (2017)

Map Document: H:\WABASHA_CI_MN\H19114396\GIS\ESRI\Wetland\Maps\114396_F_8x11T.mxd | Date Saved: 8/24/2020 9:10:46 AM

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W1-A**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Toeslope/Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification: **PFO1Cx**

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**Yes**
Wetland hydrology present?	**Yes**

Is the sampled area within a wetland? **Yes**

Remarks: **Very likely the site was previously excavated du eto mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Ulmus americana**	**35**	**Yes**	**FACW**
2 **Acer negundo**	**15**	**Yes**	**FAC**
3			
4			
5			
	50	=Total Cover	
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**25**	**Yes**	**FAC**
2			
3			
4			
5			
	25	=Total Cover	
Herb stratum: (Plot size: 5 feet)			
1 **Impatiens capensis**	**3**	**No**	**FACW**
2			
3			
4			
5			
6			
7			
8			
9			
10			
	3	=Total Cover	
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**38**	x 2 =	**76**
FAC Species:	**40**	x 3 =	**120**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**78** (A)		**196** (B)

Prevalence Index (B/A): **2.51**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W1-A**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	**10YR 2/1**	**100**					**Mucky Mod**	
3-12+	**10YR 5/1**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes**

Remarks: **Soik pit dug to 12 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? **Yes** Depth (inches): **10**

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W1-B**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Terrace** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: Longitude: Datum:

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**No**

Is the sampled area within a wetland? **No**

Remarks: **Very likely the site was previously excavated due to mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	=Total Cover	

Sapling/Shrub stratum (Plot size: 15 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Rhamnus cathartica**	**80**	**Yes**	**FAC**
2 **Zanthoxylum americanum**	**10**	**No**	**FACU**
3			
4			
5			
	90	=Total Cover	

Herb stratum: (Plot size: 5 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Lysimachia nummularia**	**60**	**Yes**	**FACW**
2 **Toxicodendron radicans**	**20**	**Yes**	**FACW**
3 **Rhamnus cathartica**	**15**	**No**	**FAC**
4 **Euthamia graminifolia**	**3**	**No**	**FACW**
5			
6			
7			
8			
9			
10			
	98	=Total Cover	

Woody vine stratum: (Plot size: 15 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**83**	x 2 =	**166**
FAC Species:	**95**	x 3 =	**285**
FACU species:	**10**	x 4 =	**40**
UPL Species:	**0**	x 5 =	**0**
Totals:	**188** (A)		**491** (B)

Prevalence Index (B/A): **2.61**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W1-B**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-12+	**10YR 4/4**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 12 inches.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W2-A**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Floodplain** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: Longitude: Datum:

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification: **PEM1C**

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

Are vegetation , soils , or hydrology significantly disturbed? Are normal circumstances present? **Yes**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**	**Is the sampled area within a wetland?** **Yes**
Hydric soils present?	**Yes**	
Wetland hydrology present?	**Yes**	

Remarks:

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Acer saccharinum**	**75**	**Yes**	**FACW**
2 **Salix nigra**	**15**	**No**	**FACW**
3 **Fraxinus pennsylvanica**	**10**	**No**	**FACW**
4			
5			
	100	=Total Cover	
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**55**	**Yes**	**FAC**
2			
3			
4			
5			
	55	=Total Cover	
Herb stratum: (Plot size: 5 feet)			
1 **Acer saccharinum**	**8**	**Yes**	**FACW**
2 **Toxicodendron radicans**	**3**	**No**	**FAC**
3 **Impatiens capensis**	**3**	**No**	**FACW**
4			
5			
6			
7			
8			
9			
10			
	14	=Total Cover	
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**111**	x 2 =	**222**
FAC Species:	**58**	x 3 =	**174**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**169** (A)		**396** (B)

Prevalence Index (B/A): **2.34**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W2-A**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-3	**10YR 2/2**	**100**					**Mucky Mod**	
3-12+	**10YR 4/1**	**90**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes**

Remarks: **Soik pit dug to 12 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W2-B**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Terrace** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: Longitude: Datum:

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification:

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

Are vegetation , soils , or hydrology significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**No**

Is the sampled area within a wetland? **No**

Remarks:

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	=Total Cover	

Sapling/Shrub stratum (Plot size: 15 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Rhamnus cathartica**	**65**	**Yes**	**FAC**
2 **Zanthoxylum americanum**	**20**	**Yes**	**FACU**
3			
4			
5			
	85	=Total Cover	

Herb stratum: (Plot size: 5 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Verbena urticifolia**	**35**	**Yes**	**FAC**
2 **Carex pensylvanica**	**10**	**No**	**FACU**
3 **Parthenocissus quinquefolia**	**10**	**No**	**FACU**
4 **Rhamnus cathartica**	**8**	**No**	**FAC**
5 **Viola sororia**	**7**	**No**	**FAC**
6 **Toxicodendron radicans**	**3**	**No**	**FAC**
7			
8			
9			
10			
	73	=Total Cover	

Woody vine stratum: (Plot size: 15 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **2** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **67%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**0**	x 2 =	**0**
FAC Species:	**118**	x 3 =	**354**
FACU species:	**40**	x 4 =	**160**
UPL Species:	**0**	x 5 =	**0**
Totals:	**158** (A)		**514** (B)

Prevalence Index (B/A): **3.25**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W2-B**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	**10YR 2/2**	**100**					**Sandy Loam**	
6-13+	**10YR 4/1**	**95**	**7.5YR 4/6**	**5**	**C**	**M**	**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 13 inches.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W3-A**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Floodplain** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: _____ Longitude: _____ Datum: _____

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification: **PEM1C**

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

Are vegetation _____, soils _____, or hydrology _____ significantly disturbed? Are normal circumstances present? **Yes**

Are vegetation _____, soils _____, or hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**Yes**
Wetland hydrology present?	**Yes**
Is the sampled area within a wetland?	**Yes**

Remarks:

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Acer saccharinum**	**85**	**Yes**	**FACW**
2			
3			
4			
5			
	85 =Total Cover		
Sapling/Shrub stratum (Plot size: 15 feet)			
1			
2			
3			
4			
5			
	0 =Total Cover		
Herb stratum: (Plot size: 5 feet)			
1 **Verbena urticifolia**	**10**	**Yes**	**FAC**
2 **Pilea pumila**	**5**	**Yes**	**FACW**
3 **Lysimachia nummularia**	**3**	**No**	**FACW**
4 **Impatiens capensis**	**3**	**No**	**FACW**
5			
6			
7			
8			
9			
10			
	21 =Total Cover		
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0 =Total Cover		

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**96**	x 2 =	**192**
FAC Species:	**10**	x 3 =	**30**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**106** (A)		**222** (B)

Prevalence Index (B/A): **2.09**

Hydrophytic Vegetation Indicators

_____ Rapid test for hydrophytic vegetation

X Dominance test >50%

X Prevalence index is ≤3.0*

_____ Morphological adaptations* (Provide supporting data in remarks)

_____ Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W3-A**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	**10YR 2/2**	**100**					**Mucky Mod**	
6-15+	**10YR 5/1**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes**

Remarks: **Soik pit dug to 15 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	**Yes**	Depth (inches):	**10**
Saturation Present?	**Yes**	Depth (inches):	**7**

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W3-B**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Backslope** Local Relief (concave, convex, none): **Convex**

Slope (%): **6-8** Latitude: Longitude: Datum:

Soil Map Unit Name: **Ceresco-Spillville complex, frequently flooded** NWI Classification:

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

Are vegetation , soils , or hydrology significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**No**

Is the sampled area within a wetland? **No**

Remarks:

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Fraxinus pennsylvanica**	**20**	**Yes**	**FACW**
2 **Ulmus americana**	**10**	**Yes**	**FACW**
3			
4			
5			
	30	=Total Cover	

Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**10**	**Yes**	**FAC**
2			
3			
4			
5			
	10	=Total Cover	

Herb stratum: (Plot size: 5 feet)			
1 **Laportea canadensis**	**55**	**Yes**	**FACW**
2 **Pilea fontana**	**5**	**No**	**FACW**
3			
4			
5			
6			
7			
8			
9			
10			
	60	=Total Cover	

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

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **4** (A)

Total number of dominant species across all strata: **4** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**90**	x 2 =	**180**
FAC Species:	**10**	x 3 =	**30**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**100** (A)		**210** (B)

Prevalence Index (B/A): **2.10**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W3-B**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-10	**10YR 2/1**	**100**					**Sandy Loam**	
10-18	**10YR 4/2**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 18 inches.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/25/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W4-A**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Toeslope/Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: _____ Longitude: _____ Datum: _____

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification: _____

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation _____, soils _____, or hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**	**Is the sampled area within a wetland?** **Yes**
Hydric soils present?	**Yes**	
Wetland hydrology present?	**Yes**	

Remarks: **Very likely the site was previously excavated du eto mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0 =Total Cover		
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Salix bebbiana**	**10**	**Yes**	**FACW**
2 **Fraxinus pennsylvanica**	**5**	**Yes**	**FACW**
3			
4			
5			
	15 =Total Cover		
Herb stratum: (Plot size: 5 feet)			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	0 =Total Cover		
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0 =Total Cover		

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **2** (A)

Total number of dominant species across all strata: **2** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**15**	x 2 =	**30**
FAC Species:	**0**	x 3 =	**0**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**15** (A)		**30** (B)

Prevalence Index (B/A): **2.00**

Hydrophytic Vegetation Indicators

X Rapid test for hydrophytic vegetation

_____ Dominance test >50%

_____ Prevalence index is ≤3.0*

_____ Morphological adaptations* (Provide supporting data in remarks)

_____ Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

BOLTON & MENK
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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W4-A**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-8	**10YR 2/1**	**100**					**Mucky Mod**	
8-14+	**10YR 5/1**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **Yes**

Remarks: **Soil pit dug to 14 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?		Depth (inches):	
Water Table Present?	**Yes**	Depth (inches):	**11**
Saturation Present?	**Yes**	Depth (inches):	**7**

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **W4-B**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Terrace** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**No**

Is the sampled area within a wetland? **No**

Remarks: **Very likely the site was previously excavated du eto mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Populus deltoides**	**20**	**Yes**	**FAC**
2			
3			
4			
5			
	20 =Total Cover		
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**80**	**Yes**	**FAC**
2 **Zanthoxylum americanum**	**5**	**No**	**FACU**
3			
4			
5			
	85 =Total Cover		
Herb stratum: (Plot size: 5 feet)			
1 **Lysimachia nummularia**	**30**	**Yes**	**FACW**
2 **Toxicodendron radicans**	**5**	**No**	**FACW**
3 **Rhamnus cathartica**	**5**	**No**	**FAC**
4			
5			
6			
7			
8			
9			
10			
	40 =Total Cover		
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0 =Total Cover		

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **3** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**35**	x 2 =	**70**
FAC Species:	**105**	x 3 =	**315**
FACU species:	**5**	x 4 =	**20**
UPL Species:	**0**	x 5 =	**0**
Totals:	**145** (A)		**405** (B)

Prevalence Index (B/A): **2.79**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **W4-B**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-8	**10YR 2/3**	**100**					**Sand**	
8-16+	**10YR 5/3**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 16 inches.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 1**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**	**Is the sampled area within a wetland?** **No**
Hydric soils present?	**No**	
Wetland hydrology present?	**Yes**	

Remarks: **Very likely the site was previously excavated du eto mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Ulmus americana**	**15**	**Yes**	**FACW**
2			
3			
4			
5			
	15 =Total Cover		
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**85**	**Yes**	**FAC**
2 **Lonicera ×bella**	**10**	**No**	**FACU**
3			
4			
5			
	95 =Total Cover		
Herb stratum: (Plot size: 5 feet)			
1 **Impatiens capensis**	**20**	**Yes**	**FACW**
2 **Rhamnus cathartica**	**6**	**Yes**	**FAC**
3			
4			
5			
6			
7			
8			
9			
10			
	26 =Total Cover		
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0 =Total Cover		

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **4** (A)

Total number of dominant species across all strata: **4** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**35**	x 2 =	**70**
FAC Species:	**91**	x 3 =	**273**
FACU species:	**10**	x 4 =	**40**
UPL Species:	**0**	x 5 =	**0**
Totals:	**136** (A)		**383** (B)

Prevalence Index (B/A): **2.82**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 1**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-5	**10YR 2/3**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: **Bedrock**

Depth (inches): **5**

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 5 inches when a restricitve layer was observed.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? ___ Depth (inches): ___

Water Table Present? ___ Depth (inches): ___

Saturation Present? ___ Depth (inches): ___

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 2**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**No**
Hydric soils present?	**No**
Wetland hydrology present?	**No**
Is the sampled area within a wetland?	**No**

Remarks: **Very likely the site was previously excavated du eto mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	=Total Cover	

Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Ulmus pumila**	**5**	**Yes**	**FACU**
2			
3			
4			
5			
	5	=Total Cover	

Herb stratum: (Plot size: 5 feet)			
1 **Panicum virgatum**	**65**	**Yes**	**FAC**
2 **Trifolium campestre**	**15**	**No**	**UPL**
3 **Poa pratensis**	**10**	**No**	**FACU**
4 **Vicia americana**	**6**	**No**	**FACU**
5			
6			
7			
8			
9			
10			
	96	=Total Cover	

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

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **0** (A)

Total number of dominant species across all strata: **2** (B)

Percent of dominant species that are OBL, FACW or FAC: **0%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**0**	x 2 =	**0**
FAC Species:	**65**	x 3 =	**195**
FACU species:	**21**	x 4 =	**84**
UPL Species:	**15**	x 5 =	**75**
Totals:	**101** (A)		**354** (B)

Prevalence Index (B/A): **3.50**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- Dominance test >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 2**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-2	**10YR 2/3**	**100**					**Sandy Loam**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: **Bedrock**

Depth (inches): **3**

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 3 inches when a restricitve layer was observed.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? ___ Depth (inches): ___

Water Table Present? ___ Depth (inches): ___

Saturation Present? ___ Depth (inches): ___

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/18/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 3**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Terrace** Local Relief (concave, convex, none): **Linear**

Slope (%): **1-3** Latitude: Longitude: Datum:

Soil Map Unit Name: **Kalmarville complex, frequently flooded** NWI Classification:

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

Are vegetation , soils , or hydrology significantly disturbed? Are normal circumstances present? **Yes**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**	**Is the sampled area within a wetland?** **No**
Hydric soils present?	**No**	
Wetland hydrology present?	**No**	

Remarks:

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Populus deltoides**	**35**	**Yes**	**FAC**
2			
3			
4			
5			
	35 =Total Cover		
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Fraxinus pennsylvanica**	**15**	**Yes**	**FACU**
2			
3			
4			
5			
	15 =Total Cover		
Herb stratum: (Plot size: 5 feet)			
1 **Teucrium canadens**	**35**	**Yes**	**FACW**
2 **Cirsium arvense**	**20**	**Yes**	**FACU**
3 **Phalaris arundincaea**	**15**	**No**	**FACW**
4 **Solidago gigantea**	**10**	**No**	**FACW**
5 **Toxicodendron radicans**	**10**	**No**	**FAC**
6 **Viola sororia**	**8**	**No**	**FAC**
7			
8			
9			
10			
	98 =Total Cover		
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0 =Total Cover		

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **2** (A)

Total number of dominant species across all strata: **4** (B)

Percent of dominant species that are OBL, FACW or FAC: **50%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**60**	x 2 =	**120**
FAC Species:	**53**	x 3 =	**159**
FACU species:	**35**	x 4 =	**140**
UPL Species:	**0**	x 5 =	**0**
Totals:	**148** (A)		**419** (B)

Prevalence Index (B/A): **2.83**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 3**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	**10YR 2/2**	**100**					**Sandy Loam**	
6-15	**10YR 3/4**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit was dug to 15 inches.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/25/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 4**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**Yes**

Is the sampled area within a wetland? **No**

Remarks: **Very likely the site was previously excavated du to mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Ulmus americana**	**15**	**Yes**	**FACW**
2 **Fraxinus pennsylvanica**	**8**	**Yes**	**FACW**
3			
4			
5			
	23	=Total Cover	

Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**15**	**Yes**	**FAC**
2			
3			
4			
5			
	15	=Total Cover	

Herb stratum: (Plot size: 5 feet)			
1 **Toxicodendron radicans**	**10**	**Yes**	**FAC**
2 **Rhamnus cathartica**	**6**	**Yes**	**FAC**
3 **Laportea canadensis**	**3**	**No**	**FACW**
4			
5			
6			
7			
8			
9			
10			
	19	=Total Cover	

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

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **4** (A)

Total number of dominant species across all strata: **5** (B)

Percent of dominant species that are OBL, FACW or FAC: **80%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**26**	x 2 =	**52**
FAC Species:	**31**	x 3 =	**93**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**57** (A)		**145** (B)

Prevalence Index (B/A): **2.54**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 4**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-4	**10YR 2/3**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: **Bedrock**

Depth (inches): **4**

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 4 inches when a restricitve layer was observed.**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? ___ Depth (inches): ___

Water Table Present? ___ Depth (inches): ___

Saturation Present? ___ Depth (inches): ___

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/25/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 5**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**	**Is the sampled area within a wetland?** **No**
Hydric soils present?	**No**	
Wetland hydrology present?	**Yes**	

Remarks: **Very likely the site was previously excavated du to mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Quercus ellipsoidalis**	**35**	**Yes**	**FACW**
2 **Ulmus americana**	**5**	**No**	**FACW**
3			
4			
5			
	40	=Total Cover	
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus cathartica**	**45**	**Yes**	**FAC**
2			
3			
4			
5			
	45	=Total Cover	
Herb stratum: (Plot size: 5 feet)			
1 **Fraxinus pennsylvanica**	**6**	**Yes**	**FACW**
2 **Parthenocissus quinquefolia**	**5**	**Yes**	**FACU**
3 **Rhamnus cathartica**	**2**	**No**	**FAC**
4			
5			
6			
7			
8			
9			
10			
	13	=Total Cover	
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **3** (A)

Total number of dominant species across all strata: **4** (B)

Percent of dominant species that are OBL, FACW or FAC: **75%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**46**	x 2 =	**92**
FAC Species:	**47**	x 3 =	**141**
FACU species:	**5**	x 4 =	**20**
UPL Species:	**0**	x 5 =	**0**
Totals:	**98** (A)		**253** (B)

Prevalence Index (B/A): **2.58**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 5**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-7	**10YR 2/32**	**100**					**Sandy Loam**	
7-14+	**10YR 4/3**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 14 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/25/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 6**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Pits, gravel-Udipsamments** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**No**
Hydric soils present?	**No**
Wetland hydrology present?	**No**
Is the sampled area within a wetland?	**No**

Remarks: **Very likely the site was previously excavated due to mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Juglans nigra**	**90**	**Yes**	**FACU**
2 **Ulmus americana**	**10**	**No**	**FACW**
3			
4			
5			
	100	=Total Cover	
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Zanthoxylum americanum**	**25**	**Yes**	**FACU**
2			
3			
4			
5			
	25	=Total Cover	
Herb stratum: (Plot size: 5 feet)			
1 **Sanicula canadensis**	**35**	**Yes**	**FACU**
2 **Laportea canadensis**	**30**	**Yes**	**FACW**
3 **Parthenocissus quinquefolia**	**20**	**No**	**FACU**
4 **Persicaria virginiana**	**15**	**No**	**FAC**
5 **Pilea fontana**	**15**	**No**	**FACW**
6 **Carex pensylvanica**	**5**	**No**	**FACU**
7			
8			
9			
10			
	120	=Total Cover	
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **1** (A)

Total number of dominant species across all strata: **4** (B)

Percent of dominant species that are OBL, FACW or FAC: **25%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**55**	x 2 =	**110**
FAC Species:	**15**	x 3 =	**45**
FACU species:	**175**	x 4 =	**700**
UPL Species:	**0**	x 5 =	**0**
Totals:	**245** (A)		**855** (B)

Prevalence Index (B/A): **3.49**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- Dominance test >50%
- Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **No**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM
(Midwest Region)

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha County** Sampling Date: **6/25/2020**

Applicant/Owner: **City of Wabasha** State: **MN** Sample Point: **Site 7**

Investigator(s): **Brandon Bohks** Section, Township, Range: **30, 111N, 10W**

Landforms (hillside, terrace, etc.): **Depression/Gully** Local Relief (concave, convex, none): **Concave**

Slope (%): **0-2** Latitude: Longitude: Datum:

Soil Map Unit Name: **Plainfield sand** NWI Classification:

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

Are vegetation **X**, soils **X**, or hydrology **X** significantly disturbed? Are normal circumstances present? **No**

Are vegetation , soils , or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	**Yes**
Hydric soils present?	**No**
Wetland hydrology present?	**Yes**

Is the sampled area within a wetland? **No**

Remarks: **Very likely the site was previously excavated due to mining practices.**

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet)	Absolute % Cover	Dominant Species	Indicator Status
1 **Acer negundo**	**30**	**Yes**	**FAC**
2 **Fraxinus pennsylvanica**	**25**	**Yes**	**FACW**
3 **Populus deltoides**	**20**	**Yes**	**FAC**
4			
5			
	75	=Total Cover	
Sapling/Shrub stratum (Plot size: 15 feet)			
1 **Rhamnus Cathartica**	**35**	**Yes**	**FAC**
2			
3			
4			
5			
	35	=Total Cover	
Herb stratum: (Plot size: 5 feet)			
1 **Laportea canadensis**	**65**	**Yes**	**FACW**
2 **Persicaria virginiana**	**45**	**Yes**	**FAC**
3			
4			
5			
6			
7			
8			
9			
10			
	110	=Total Cover	
Woody vine stratum: (Plot size: 15 feet)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of dominant species that are OBL, FACW, or FAC: **6** (A)

Total number of dominant species across all strata: **6** (B)

Percent of dominant species that are OBL, FACW or FAC: **100%** (A/B)

Prevalence Index Worksheet

Total % cover of:

OBL Species:	**0**	x 1 =	**0**
FACW Species:	**90**	x 2 =	**180**
FAC Species:	**130**	x 3 =	**390**
FACU species:	**0**	x 4 =	**0**
UPL Species:	**0**	x 5 =	**0**
Totals:	**220** (A)		**570** (B)

Prevalence Index (B/A): **2.59**

Hydrophytic Vegetation Indicators

- Rapid test for hydrophytic vegetation
- **X** Dominance test >50%
- **X** Prevalence index is ≤3.0*
- Morphological adaptations* (Provide supporting data in remarks)
- Problematic hydrophytic vegetation* (Explain in remarks)

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

Hydrophytic vegetation present? **Yes**

Remarks:

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EXHIBIT G:
WETLAND DETERMINATION DATA FORM

(Midwest Region)

Sample Point: **Site 7**

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-6	**10YR 2/1**	**100**					**Sandy Loam**	
6-20	**10YR 5/3**	**100**					**Sand**	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soils Present? **No**

Remarks: **Soil pit dug to 20 inches**

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? _____ Depth (inches): _____

Water Table Present? _____ Depth (inches): _____

Saturation Present? _____ Depth (inches): _____

Indicators of Wetland Hydrology Present? **Yes**

Remarks:

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EXHIBIT G:
OFF-SITE HYDROLOGY ASSESSMENT
RECORDING FORM

Project/Site: **Kohner Property Wetland Delineation** City/County: **Wabasha** Date: **6/15/2020**

Applicant/Owner: **City of Wabasha** State: **Minnesota**

Investigator(s): **Brandon Bohks** Sec, Twp, Ran: **19, 109N, 9W**

WETS Station ID: **Wabasha-Minneiska-Weaver (County-Township-City)**

Date:	Source:	Climatic Condition:	Image Interpretations							
			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
1979										
1980										
1981										
1982										
1983										
1984										
1985										
1986										
1987										
1988										
1989										
1990										
1991										
1992										
1993										
1994										
1995										
1996										
1997										
1998										
1999										
2000										
2001										
2002										
2003	FSA	Normal	NV							
2004										
2005										
2006										
2007										
2008	FSA	Normal	NV							
2009	FSA	Normal	NV							
2010	FSA	Dry	NV							
2011	Google	Normal	NV							
2012										
2013	FSA	Wet	NV							
2014										
2015	FSA	Normal	NV							
2016										
2017	FSA	Wet	CS							
		Hydric Soil	No							
		NWI	No							
		Normal Years	5							
		Wet Signatures	0							
		Percent Wet Signatures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		Field Verification required								

NV - Normal Vegetation, WS - Wet Signature, CS - Crop Stress, DO - Drown Out, SW - Standing Water, AP - Altered Pattern, NC - Not Cropped

Decision Matrix

Hydric soil	NWI	% Wet	Field visit?	Wetland?
Yes	Yes	>50%	No	Yes
Yes	Yes	30-50%	No	Yes
Yes	Yes	<30%	Yes	Yes, w/field hydro
Yes	No	>50%	No	Yes
Yes	No	30-50%	Yes	Yes, w/field hydro
Yes	No	<30%	No	No
No	Yes	>50%	No	Yes
No	Yes	30-50%	No	Yes
No	Yes	<30%	No	No
No	No	>50%	Yes	Yes, w/field hydro

Decision Table

Site	Hydric soil	NWI	% Wet	Field Hydro	ID #
1	No	No	0	No	
2	0	0	0		
3	0	0	0		
4	0	0	0		
5	0	0	0		
6	0	0	0		
7	0	0	0		
8	0	0	0		

Kohner Property Wetland Delineation

City of Wabasha

Exhibit H: Historical Photo Array (2003 - 2010)

July 2020

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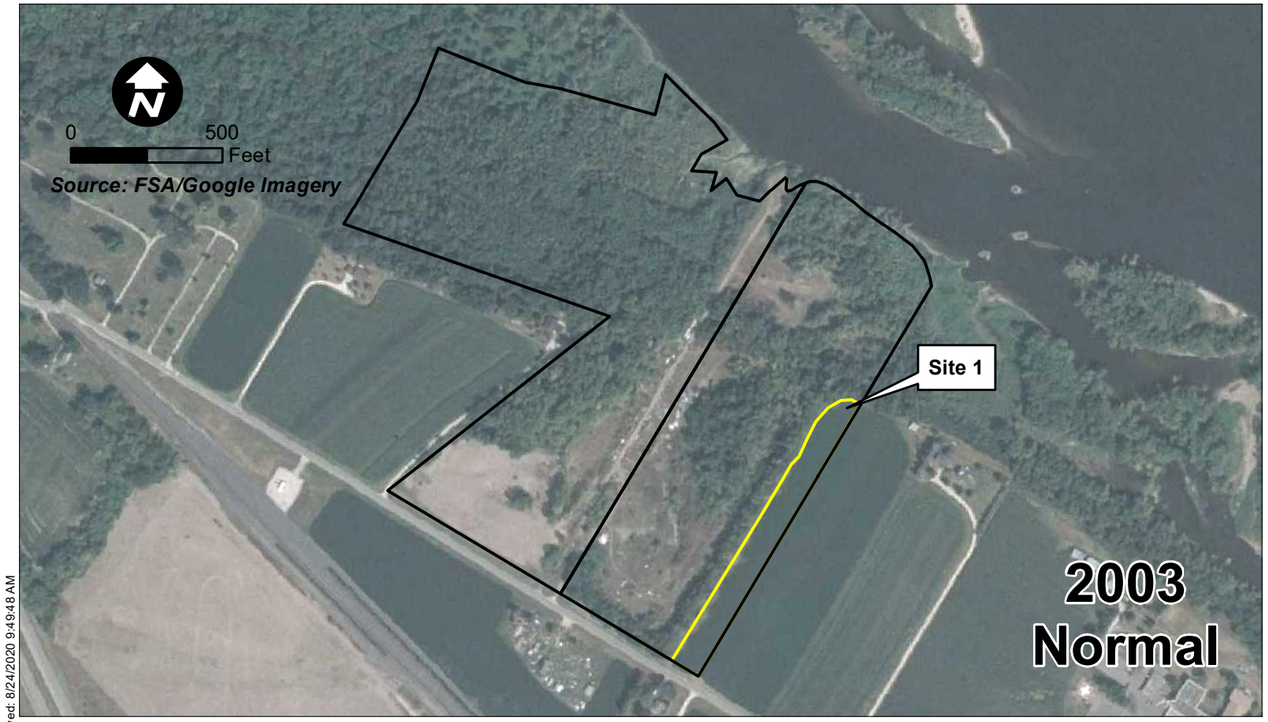







Map Document: H:\WABASHA_CI_MN\H19114396\GIS\ES RI\Wetland\Maps\Offsite\Photo_Array_H1_11x17.mxd | Date Saved: 8/24/2020 9:49:48 AM

Kohner Property Wetland Delineation

City of Wabasha

Exhibit H: Historical Photo Array 2011 - 2017)

July 2020

BOLTON & MENK

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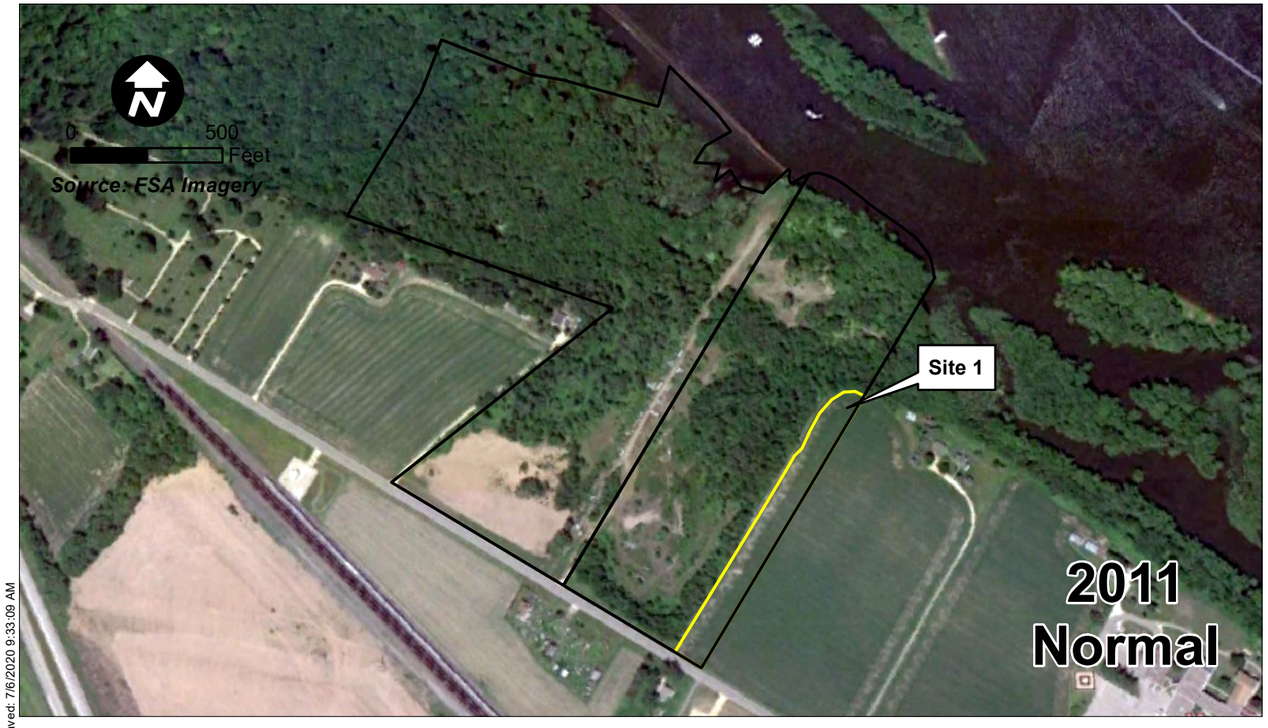







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BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit: Wabasha SWCD	**County:** Wabasha
Applicant Name: Chad Springer	**Applicant Representative:** Brandon Bohks (Bolton & Menk)
Project Name: Khoner Property Wetland Delineation	**LGU Project No. (if any):** 20-4
Date Complete Application Received by LGU: 8/26/2020	
Date of LGU Decision: 9/4/2020	
Date this Notice was Sent: 9/15/2020	

WCA Decision Type - check all that apply

☑ Wetland Boundary/Type ☐ Sequencing ☐ Replacement Plan ☐ Bank Plan (not credit purchase)
☐ No-Loss (8420.0415) ☐ Exemption (8420.0420)
Part: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H Subpart: ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

Replacement Plan Impacts (replacement plan decisions only)

Total WCA Wetland Impact Area:	No impact, delineation only
Wetland Replacement Type:	☐ Project Specific Credits: ☐ Bank Credits:
Bank Account Number(s):	

Technical Evaluation Panel Findings and Recommendations (attach if any)

☑ Approve ☐ Approve w/Conditions ☐ Deny ☐ No TEP Recommendation

LGU Decision

☐ Approved with Conditions (specify below)[1] ☑ Approved[1] ☐ Denied
List Conditions:

Decision-Maker for this Application: ☑ Staff ☐ Governing Board/Council ☐ Other:

Decision is valid for: ☑ 5 years (default) ☐ Other (specify):

[1] *Wetland Replacement Plan approval is not valid until BWSR confirms the withdrawal of any required wetland bank credits. For project-specific replacement a financial assurance per MN Rule 8420.0522, Subp. 9 and evidence that all required forms have been recorded on the title of the property on which the replacement wetland is located must be provided to the LGU for the approval to be valid.*

LGU Findings – Attach document(s) and/or insert narrative providing the basis for the LGU decision[1].

☐ Attachment(s) (specify):
☑ Summary:

This plan determination is for the plan orginally known as USACE Dredge Material Management Plan (NOA sent 8/19/2020 ammended and redistributed 9/15/2020).The plan was resubmitted as a delineation concurrence only with no impacts planned at this time. After a TEP discussion 8/20/2020 and site visit 9/4/2020 the TEP agreed with the delineations made.

[1] *Findings must consider any TEP recommendations.*

Attached Project Documents

☐ Site Location Map ☑ Project Plan(s)/Descriptions/Reports (specify):

Appeals of LGU Decisions

If you wish to appeal this decision, you must provide a written request within 30 calendar days of the date you received the notice. All appeals must be submitted to the Board of Water and Soil Resources Executive Director along with a check payable to BWSR for $500 *unless* the LGU has adopted a local appeal process as identified below. The check must be sent by mail and the written request to appeal can be submitted by mail or e-mail. The appeal should include a copy of this notice, name and contact information of appellant(s) and their representatives (if applicable), a statement clarifying the intent to appeal and supporting information as to why the decision is in error. Send to:

Appeals & Regulatory Compliance Coordinator
Minnesota Board of Water & Soils Resources
520 Lafayette Road North
St. Paul, MN 55155
travis.germundson@state.mn.us

Does the LGU have a local appeal process applicable to this decision?

☐ Yes[1] ☑ No

[1]*If yes, all appeals must first be considered via the local appeals process.*

Local Appeals Submittal Requirements (LGU must describe how to appeal, submittal requirements, fees, etc. as applicable)

Notice Distribution (include name)

Required on all notices:

☑ SWCD TEP Member: Terri Peters	☑ BWSR TEP Member: Alyssa Core
☑ LGU TEP Member (if different than LGU contact): Matt Kempinger & Darrin Thompson	
☑ DNR Representative: Taylor Huinker	
☐ Watershed District or Watershed Mgmt. Org.:	
☐ Applicant:	☑ Agent/Consultant: Brandon Bohks

Optional or As Applicable:

☑ Corps of Engineers: David Studenski and Meghan Brown
☐ BWSR Wetland Mitigation Coordinator (required for bank plan applications only):
☐ Members of the Public (notice only): ☐ Other:

Signature: Matthew J Kempinger	**Date:** 9/15/2020

This notice and accompanying application materials may be sent electronically or by mail. The LGU may opt to send a summary of the application to members of the public upon request per 8420.0255, Subp. 3.



Map Document: C:\Users\LOCAL_~1.PON\Temp\arcF2D2\1114396_Layout_8x11Tmxd | Date Saved: 8/28/2023 11:11:17 AM

Wabasha Barge Facility

City of Wabasha, MN

Appendix G, Exhibit 2: Wetland Impacts Map

August 2023

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Map Document: C:\Users\LOCAL_~1.PON\Temp\arc5E5A\AppG_Ex2_114396_Impacts.mxd | Date Saved: 8/28/2023 11:15:21 AM

Wabasha Barge Facility

City of Wabasha, MN

Appendix G, Exhibit 3: Minnesota Biological Survey Map

August 2023

BOLTON & MENK

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APPENDIX E

Preliminary Drainage Memo

BOLTON & MENK
Real People. Real Solutions.

12224 Nicollet Avenue
Burnsville, MN 55337-1649

Ph: (952) 890-0509
Fax: (952) 890-8065
Bolton-Menk.com

December 12, 2022

Tony Johnson – Public Works Director
900 Hiawatha Drive, East
Wabasha, MN 55981
pwdirector@wabasha.org
(651) 565-3404

RE: USACE Dredge Material Management Plan – Preliminary Drainage Memo
City of Wabasha, Wabasha County, MN
Project No.: H19.114396

I. INTRODUCTION

The City of Wabasha in conjunction with the Wabasha Port Authority is working on a dredge material management plan for the Mississippi River that includes constructing a barge facility on the north end of the City of Wabasha, MN (River Mile 760). Approximately 270,000 CY of sand will be dredged annually to maintain a 9-ft navigable channel in the river. This barge facility is intended to facilitate dredged material storage and, by extension, transportation of agricultural products and shipping containers on the Mississippi River. The primary purpose is to transport sand from the navigation channel dredging operations to offsite locations for beneficial re-use.

Specifically, the project includes the following activities:

1. Construction of infrastructure including a site access road, weighing station and small operations facility
2. Construction of a sheet pile dock wall, mooring and maneuvering facilities, and conveyers and hoppers for material processing
3. Temporary storage of dredged material on site
4. Channel dredging for barge access to the proposed docking and off-loading facilities
5. Use of dredged material as fill on the terminal site to raise the dredge material storage area above the 100-year flood elevation

The proposed project triggers NPDES Construction Stormwater permit requirements by adding 2.99 acres of impervious surface to the site. Wabasha is not an MS4 city nor is it subject to more specific pollutant reduction criteria. The site is shown in Figure 1.

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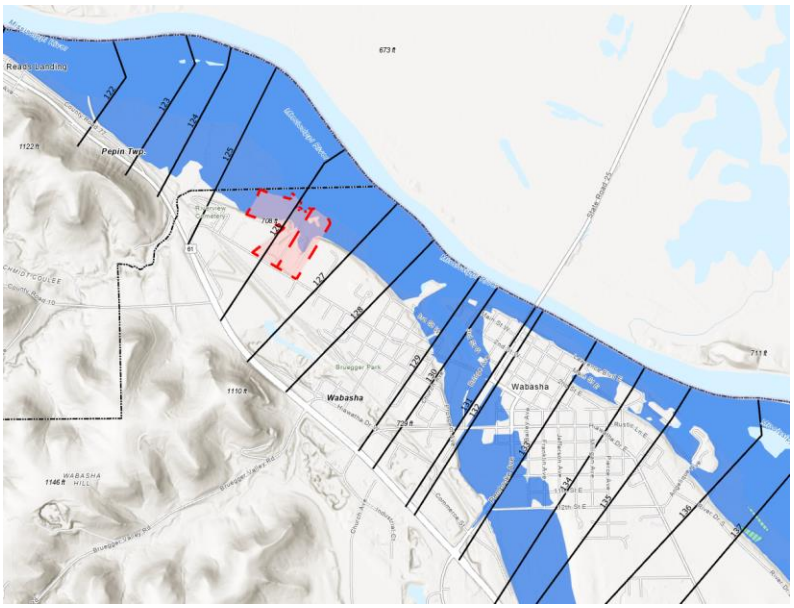

Figure 1: Vicinity Map
(not to scale)

The City is proposing an infiltration practice along the access road and offloading facilities to treat runoff on site before discharging to the Mississippi River. The preliminary site design and existing conditions hydrology and hydraulics were assessed using Storm and Sanitary Analysis (SSA) 2021. Design considerations and calculations are described in the following sections.

II. EXISTING CONDITIONS

The existing site includes two mostly undeveloped parcels totaling 48 acres north of Wabasha, MN off of Grant Blvd. W. The land cover is primarily forest and wetland. USGS soil data shows the site is primarily type A and B soils.

SCS methodology was using in SSA 2021 to analyze the existing conditions hydrology and hydraulics. Atlas 14 rainfall depths for the 2-year through 100-year 24-hour storm were applied in the modeling via the MSE 3 rainfall distribution curve. Curve Numbers (CN) were determined using weighted averages of existing land cover and USGS soils data by subbasin. The SCS TR-55 method for time of concentration (Tc) was used. Runoff follows ephemeral gullies and ravines down the major bluff system to flat wetlands and low-lying areas that buffer the Mississippi River. Peak flow rates contributing to the river at the bank line along the site boundary are reported in Table 1.

Table 1: Existing Discharge Rates

Storm Event	Site Peak Discharge (cfs)
2-year	5.9
10-year	23.0
100-year	82.7

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III. PROPOSED CONDITIONS

The proposed project adds 2.99 acres of impervious surface to the site by providing an access road and barge docking station with associated infrastructure. There are no local karst regions, the site is mostly A and B soils, and there are no DWSMA's within 1000 ft of the site, allowing for infiltration to treat stormwater runoff. An infiltration basin is proposed at the southern toe of the access road along the base of the bluff to treat stormwater runoff. CN values were determined based on weighted averages of proposed land uses and USGS soil type. The proposed infiltration basin was designed using the MN Stormwater Manual standards. A proposed conditions workmap is attached.

We assume an infiltration rate of 0.45 in/hr., the maximum for type B soils and note a required drawdown time of 48 hrs. Drainage area to the basin, provided storage volumes, and key elevations are reported in the table below. Pretreatment via rock check dams is included along the swale on the south side of the road. The low spot of the loading pad will be placed just upstream of the final check dam before entering the infiltration basin. If possible, water along the edge of the access road will be routed to this low point. Where runoff sheet flows into the infiltration basin directly, filter strips will be used.

Table 2: Water Quality BMP Design Summary

Parameter	Value	Unit
Drainage Area to Basin =	3.73	Acres
Site New Impervious Area =	2.99	Acres
Required Dead Storage Volume =	0	Cu. ft.
Required Water Quality Volume =	10,890[1]	Cu. ft.
Provided Water Quality Volume =	18,729	Cu. ft.
Hydrologic Soil Group =	B	
Infiltration Rate =	0.45	in/hr
Basin Bottom Area =	6065	Sq. ft.
Basin Bottom Elevation =	674.5	ft
Required Drawdown Time =	48	Hrs
Calculated Drawdown Time =	48	Hrs
Emergency Overflow Elevation =	677.5	ft

1. 1-in per acre of impervious surface.

One outlet is provided for the basin. This is one 8" corrugated pipe direct northeast towards the river. See the attached workmaps. Two separated overflow locations are provided at 677.5 ft along the southern edge of the ditch, which spill to existing ground and will sheet flow towards the river. These emergency overflows are accessed starting at roughly the 50-year storm.

Proposed infiltration basin flow attenuation, high water levels, and site discharge rates are presented in Table 3. The basin design and emergency overflow adequately provide rate control for the 2-, 10-, and 100-year flows off site.

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Table 3: Proposed Discharge Rates and High Water Levels

Storm Event	Basin Peak Inflow (cfs)	Basin Peak Outflow (cfs)	Basin Water Elevation (ft)	Site Peak Discharge (cfs)
Dry Condition	---	---	674.5	---
2-year	10.1	0.0	676.0	5.8
10-year	29.2	0.4	676.9	21.8
100-year	56.6	22.9	677.7	82.2

The high-water elevation is 677.7 ft. This is well below any proposed structures which are protected from the Mississippi River base flood elevation of 678.6 ft. The high water level does not threaten the proposed utilities or road infrastructure with regards to flooding.

The infiltration basin and pretreatment swale is easily accessible with an 8’ bottom and 3:1 side slopes. Stable vegetation in combination with the rock checks will adequately prevent scour with the ditch and infiltration basin. The basin would need to be inspected after high Mississippi River flows when fine sediment and other debris may be deposited in the basin, or if significant washout of onsite dredge material is observed. The City will oversee the maintenance of the basin and outlet.

Sincerely,

Bolton & Menk, Inc.

DRAFT

Roberta Cronquist, PE, CFM
Senior Water Resources Engineer

Attachments:

- Hydrologic Data
- SSA Workmaps
- Preliminary Site Layout

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NOAA Atlas 14, Volume 8, Version 2
Location name: Wabasha, Minnesota, USA*
Latitude: 44.3915°, Longitude: -92.0541°
Elevation: 695.36 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.369** (0.288-0.479)	**0.440** (0.343-0.571)	**0.559** (0.435-0.727)	**0.661** (0.511-0.863)	**0.807** (0.604-1.09)	**0.923** (0.675-1.25)	**1.04** (0.737-1.44)	**1.17** (0.791-1.65)	**1.34** (0.872-1.94)	**1.47** (0.933-2.15)
10-min	**0.540** (0.422-0.701)	**0.644** (0.502-0.836)	**0.819** (0.636-1.06)	**0.968** (0.748-1.26)	**1.18** (0.885-1.59)	**1.35** (0.988-1.84)	**1.53** (1.08-2.11)	**1.71** (1.16-2.42)	**1.96** (1.28-2.83)	**2.15** (1.37-3.15)
15-min	**0.659** (0.515-0.855)	**0.785** (0.613-1.02)	**0.998** (0.776-1.30)	**1.18** (0.913-1.54)	**1.44** (1.08-1.94)	**1.65** (1.21-2.24)	**1.86** (1.32-2.58)	**2.09** (1.41-2.95)	**2.39** (1.56-3.46)	**2.63** (1.67-3.84)
30-min	**0.917** (0.716-1.19)	**1.10** (0.859-1.43)	**1.41** (1.10-1.83)	**1.68** (1.30-2.19)	**2.05** (1.53-2.76)	**2.35** (1.72-3.19)	**2.65** (1.87-3.67)	**2.97** (2.01-4.20)	**3.40** (2.22-4.92)	**3.74** (2.37-5.47)
60-min	**1.20** (0.940-1.56)	**1.43** (1.12-1.86)	**1.84** (1.43-2.39)	**2.20** (1.70-2.87)	**2.75** (2.07-3.73)	**3.20** (2.35-4.37)	**3.68** (2.61-5.12)	**4.19** (2.85-5.96)	**4.92** (3.21-7.14)	**5.50** (3.49-8.04)
2-hr	**1.49** (1.18-1.91)	**1.77** (1.39-2.26)	**2.27** (1.78-2.91)	**2.73** (2.14-3.52)	**3.44** (2.63-4.64)	**4.05** (3.01-5.49)	**4.70** (3.37-6.50)	**5.41** (3.73-7.65)	**6.43** (4.25-9.30)	**7.26** (4.65-10.5)
3-hr	**1.68** (1.33-2.13)	**1.97** (1.57-2.50)	**2.52** (2.00-3.21)	**3.06** (2.41-3.90)	**3.89** (3.02-5.25)	**4.62** (3.48-6.27)	**5.43** (3.93-7.50)	**6.32** (4.39-8.92)	**7.61** (5.07-11.0)	**8.68** (5.59-12.5)
6-hr	**1.98** (1.59-2.47)	**2.30** (1.85-2.88)	**2.94** (2.36-3.70)	**3.57** (2.85-4.51)	**4.59** (3.61-6.15)	**5.49** (4.18-7.38)	**6.49** (4.77-8.91)	**7.62** (5.35-10.7)	**9.26** (6.24-13.3)	**10.6** (6.92-15.3)
12-hr	**2.23** (1.82-2.76)	**2.61** (2.13-3.23)	**3.34** (2.71-4.14)	**4.04** (3.26-5.02)	**5.15** (4.09-6.78)	**6.12** (4.71-8.11)	**7.18** (5.33-9.74)	**8.37** (5.94-11.6)	**10.1** (6.88-14.4)	**11.5** (7.58-16.4)
24-hr	**2.55** (2.11-3.10)	**2.93** (2.42-3.57)	**3.67** (3.02-4.48)	**4.38** (3.59-5.38)	**5.52** (4.44-7.18)	**6.52** (5.08-8.55)	**7.63** (5.73-10.2)	**8.85** (6.36-12.2)	**10.6** (7.33-15.0)	**12.1** (8.06-17.2)
2-day	**2.95** (2.47-3.54)	**3.31** (2.77-3.97)	**4.01** (3.35-4.83)	**4.72** (3.91-5.70)	**5.86** (4.78-7.54)	**6.88** (5.44-8.92)	**8.02** (6.10-10.7)	**9.30** (6.76-12.7)	**11.2** (7.79-15.7)	**12.8** (8.57-17.9)
3-day	**3.25** (2.75-3.87)	**3.59** (3.03-4.28)	**4.29** (3.60-5.12)	**4.99** (4.17-5.98)	**6.13** (5.04-7.83)	**7.16** (5.70-9.23)	**8.32** (6.38-11.0)	**9.62** (7.05-13.1)	**11.5** (8.10-16.1)	**13.1** (8.89-18.4)
4-day	**3.50** (2.97-4.13)	**3.86** (3.27-4.56)	**4.58** (3.87-5.43)	**5.29** (4.45-6.31)	**6.45** (5.32-8.17)	**7.48** (5.99-9.57)	**8.64** (6.65-11.3)	**9.93** (7.31-13.4)	**11.8** (8.34-16.5)	**13.4** (9.12-18.8)
7-day	**4.09** (3.51-4.78)	**4.58** (3.93-5.35)	**5.46** (4.67-6.40)	**6.27** (5.33-7.39)	**7.51** (6.21-9.30)	**8.55** (6.88-10.8)	**9.68** (7.50-12.5)	**10.9** (8.07-14.6)	**12.7** (8.98-17.4)	**14.1** (9.67-19.6)
10-day	**4.63** (4.00-5.37)	**5.22** (4.51-6.06)	**6.24** (5.37-7.26)	**7.14** (6.10-8.35)	**8.45** (7.00-10.3)	**9.53** (7.69-11.8)	**10.7** (8.28-13.6)	**11.9** (8.80-15.7)	**13.5** (9.62-18.5)	**14.9** (10.2-20.6)
20-day	**6.26** (5.49-7.15)	**7.03** (6.16-8.04)	**8.32** (7.26-9.54)	**9.40** (8.15-10.8)	**10.9** (9.14-13.1)	**12.1** (9.89-14.8)	**13.4** (10.5-16.8)	**14.6** (11.0-19.0)	**16.3** (11.7-22.0)	**17.6** (12.3-24.3)
30-day	**7.69** (6.80-8.71)	**8.61** (7.60-9.75)	**10.1** (8.89-11.5)	**11.3** (9.91-13.0)	**13.0** (11.0-15.5)	**14.4** (11.8-17.4)	**15.7** (12.4-19.6)	**17.0** (12.8-22.0)	**18.8** (13.6-25.2)	**20.1** (14.1-27.5)
45-day	**9.57** (8.53-10.7)	**10.7** (9.52-12.0)	**12.5** (11.1-14.1)	**14.0** (12.3-15.8)	**15.9** (13.5-18.6)	**17.3** (14.3-20.8)	**18.8** (14.9-23.2)	**20.2** (15.3-25.8)	**21.9** (15.9-29.2)	**23.2** (16.4-31.7)
60-day	**11.2** (10.0-12.5)	**12.5** (11.2-14.0)	**14.7** (13.1-16.4)	**16.3** (14.5-18.4)	**18.5** (15.7-21.4)	**20.0** (16.6-23.8)	**21.5** (17.1-26.4)	**22.9** (17.4-29.2)	**24.6** (17.9-32.5)	**25.8** (18.3-35.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

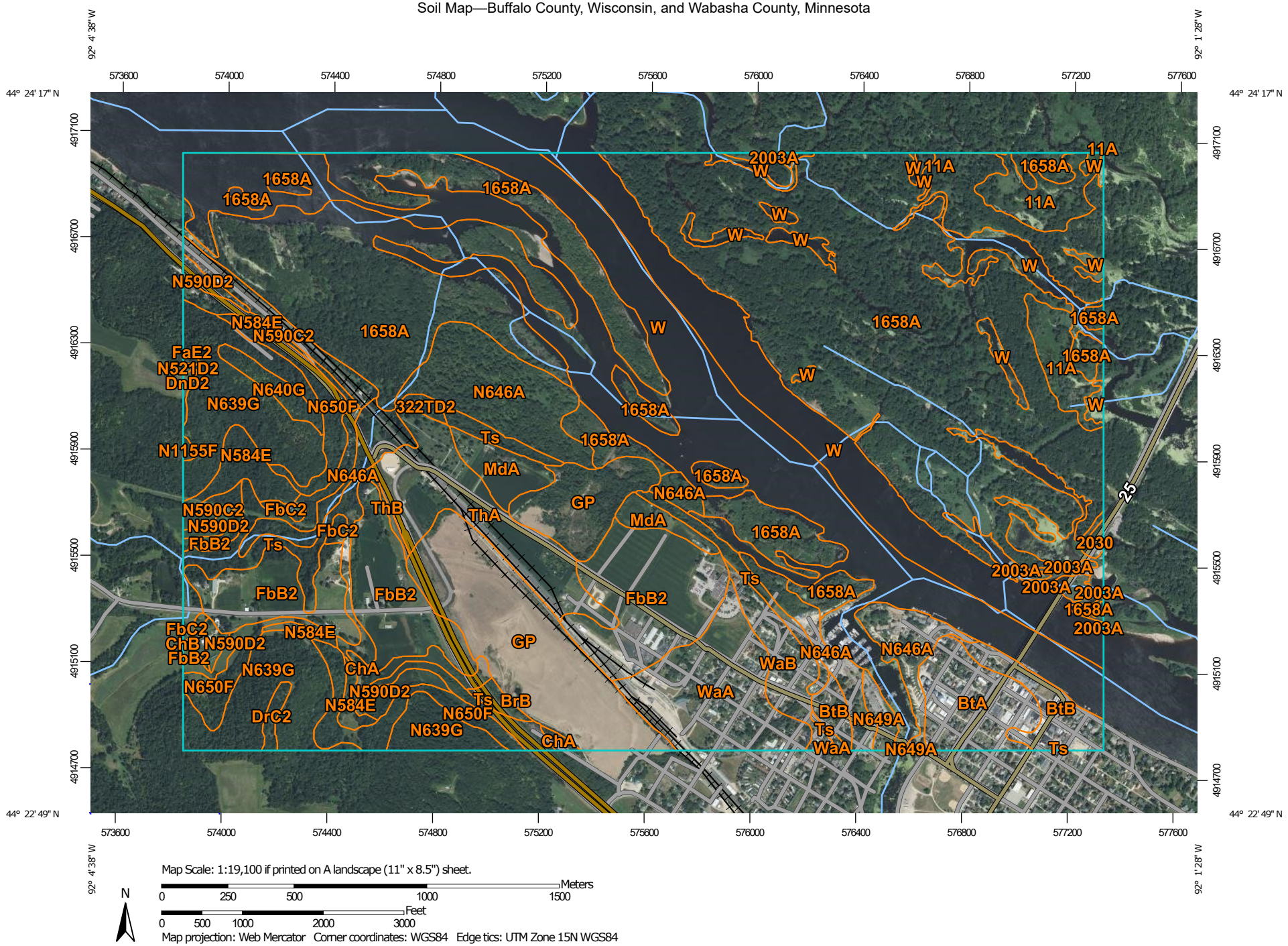
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical

Soil Map—Buffalo County, Wisconsin, and Wabasha County, Minnesota



Map Scale: 1:19,100 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:20,000.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Buffalo County, Wisconsin
Survey Area Data: Version 16, Sep 6, 2022

Soil Survey Area: Wabasha County, Minnesota
Survey Area Data: Version 19, Sep 6, 2022

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Aug 17, 2020—Sep 2, 2020

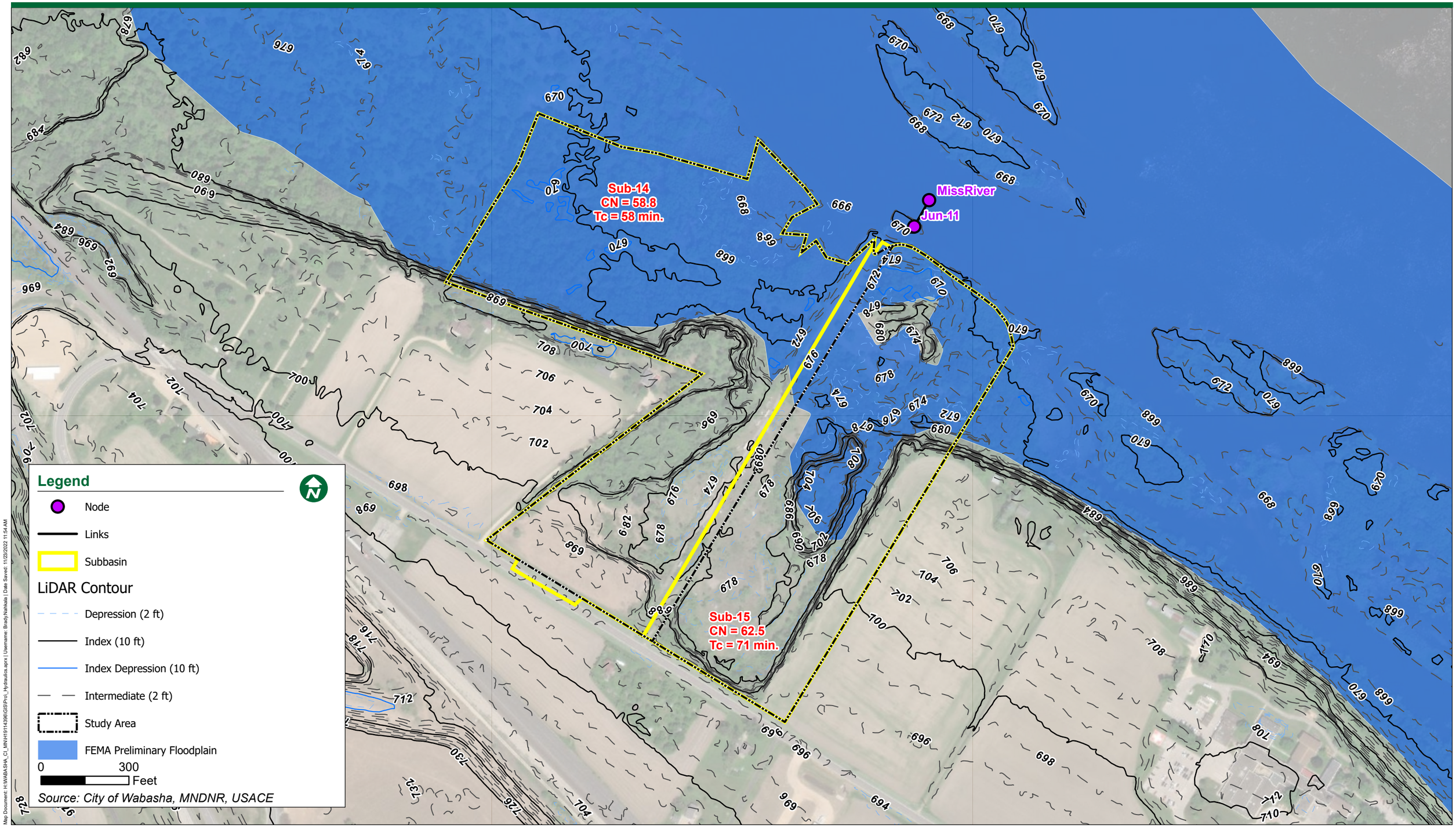
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11A	Markey muck, 0 to 1 percent slopes, frequently flooded	35.7	1.8%
1658A	Algansee-Kalmarville complex, river valleys, 0 to 3 percent slopes, frequently flooded	382.2	19.7%
2003A	Riverwash, nearly level	8.5	0.4%
2030	Udorthents and Udipsamments, cut or fill	1.8	0.1%
W	Water	158.7	8.2%
Subtotals for Soil Survey Area		**586.9**	**30.2%**
Totals for Area of Interest		**1,943.9**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
322TD2	Plumcreek silt loam, 20 to 45 percent slopes	2.4	0.1%
1658A	Algansee-Kalmarville complex, river valleys, 0 to 3 percent slopes, frequently flooded	235.5	12.1%
BrB	Burkhardt loam, 2 to 6 percent slopes	3.6	0.2%
BtA	Burkhardt sandy loam, 0 to 2 percent slopes	33.9	1.7%
BtB	Burkhardt sandy loam, 2 to 6 percent slopes	24.6	1.3%
ChA	Chaseburg silt loam, moderately well drained, 0 to 2 percent slopes	8.4	0.4%
ChB	Chaseburg silt loam, moderately well drained, 2 to 6 percent slopes	1.9	0.1%
DnD2	Dubuque silt loam, 12 to 18 percent slopes, moderately eroded	1.1	0.1%
DrC2	Dubuque silt loam, shallow, 6 to 12 percent slopes, moderately eroded	3.2	0.2%
FaE2	Fayette silt loam, 18 to 35 percent slopes, moderately eroded	0.6	0.0%
FbB2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	133.0	6.8%
FbC2	Festina silt loam, 6 to 12 percent slopes, moderately eroded	3.7	0.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GP	Pits, gravel-Udipsamments complex	113.8	5.9%
MdA	Meridian sandy loam, 0 to 2 percent slopes	20.7	1.1%
N521D2	Mt. Carroll silt loam, 12 to 20 percent slopes, moderately eroded	0.3	0.0%
N584E	Downs silt loam, valleys, 18 to 25 percent slopes	26.2	1.3%
N590C2	Tama silt loam, driftless valley, 6 to 12 percent slopes, moderately eroded	21.6	1.1%
N590D2	Tama silt loam, driftless valley, 12 to 18 percent slopes, moderately eroded	18.1	0.9%
N639G	Frontenac-Lacrescent complex, 30 to 70 percent slopes, rocky	104.2	5.4%
N640G	Lacrescent, flaggy-Frontenac-Rock outcrop complex, 45 to 90 percent slopes	8.0	0.4%
N646A	Ceresco-Spillville complex, 0 to 3 percent slopes, frequently flooded	100.9	5.2%
N649A	Shandep loam, channeled, 0 to 2 percent slopes, frequently flooded	5.5	0.3%
N650F	Downs-Oak Center complex, 25 to 35 percent slopes	42.2	2.2%
N1155F	Brodale-Bellechester complex, 30 to 60 percent slopes, rocky	0.7	0.0%
ThA	Tell silt loam, 0 to 2 percent slopes	53.6	2.8%
ThB	Tell silt loam, 2 to 6 percent slopes	1.8	0.1%
Ts	Plainfield sand, river valley, 15 to 60 percent slopes	58.3	3.0%
W	Water	251.4	12.9%
WaA	Waukegan silt loam, 0 to 2 percent slopes	57.6	3.0%
WaB	Waukegan silt loam, 2 to 6 percent slopes	20.3	1.0%
Subtotals for Soil Survey Area		**1,356.9**	**69.8%**
Totals for Area of Interest		**1,943.9**	**100.0%**



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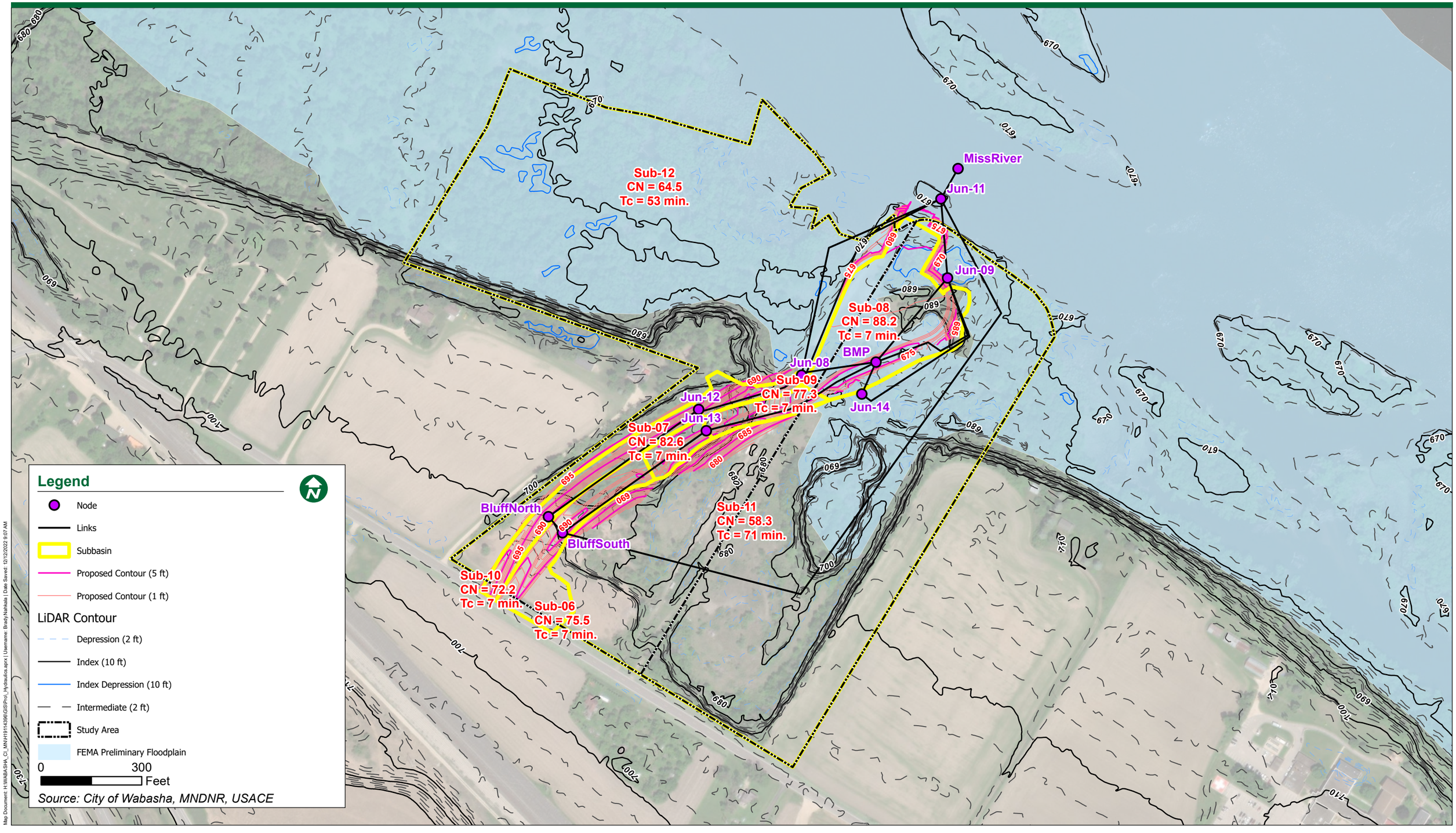


Map Document: H:\WABASHA_CI_MNH19114396\GIS\Pro_Hydraulics.aprx | Username: BradyNahkala | Date Saved: 12/12/2022 9:07 AM

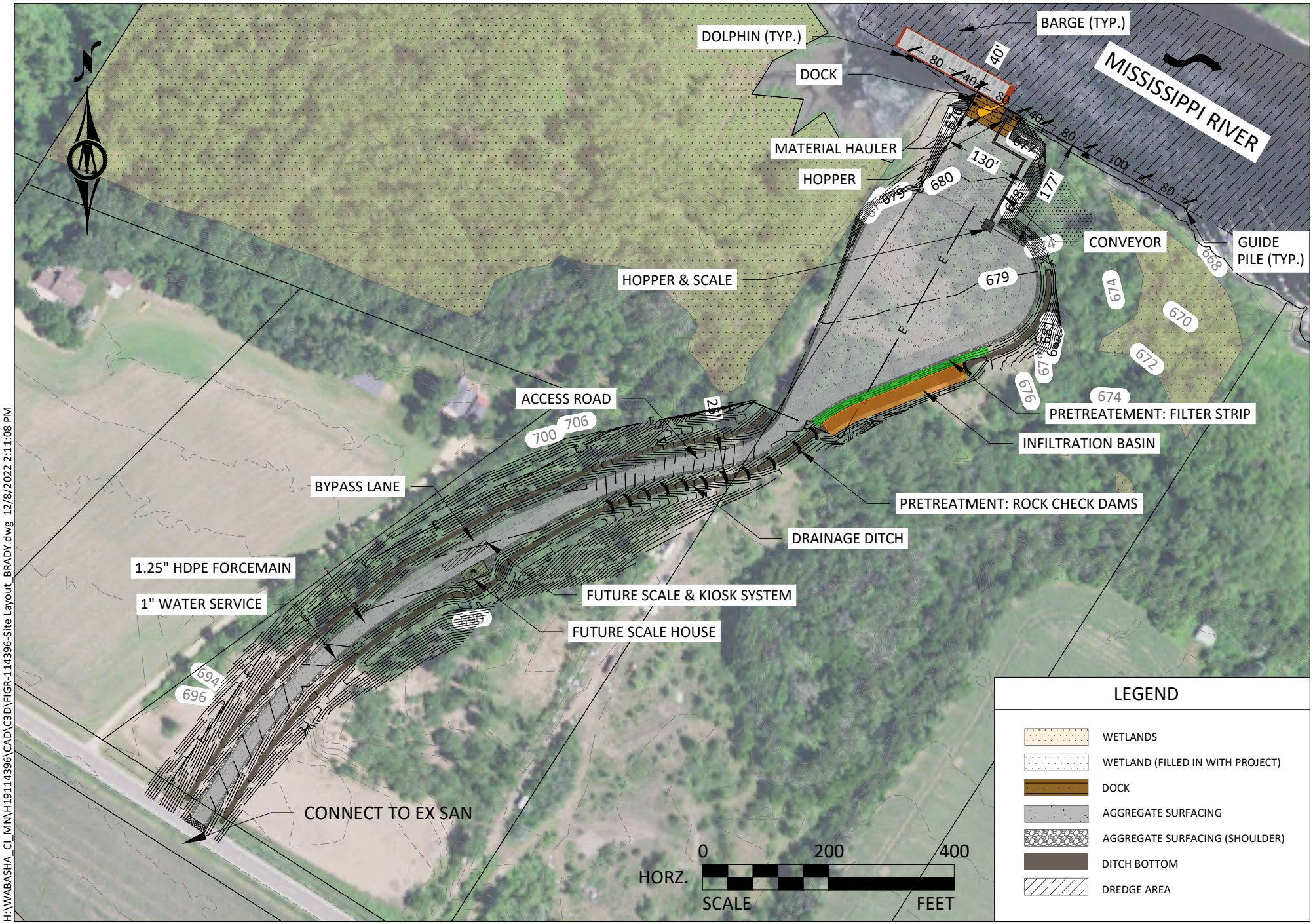
USACE Dredge Material Management Plan

City of Wabasha, MN

Preliminary Site Layout

December 2022

BOLTON & MENK



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APPENDIX F

Mussel Survey

FINAL REPORT

Mussel Survey of the Mississippi River for a Proposed Barge Terminal in Wabasha, MN

by

Brett J. K. Ostby
Daguna Consulting, LLC
617 20th Street NE
Rochester, MN 55906

for

Real People. Real Solutions.

July 20th
2023



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INTRODUCTION

A proposed barge terminal north of Wabasha, MN would disturb riverbed habitats of the Mississippi River along the Minnesota bank at 44.392760, -92.050422 (WGS84). The proposed footprint was mostly in a side channel of the river but included habitats adjacent to the navigation channel (Figure 1). Based on a site map provided by Bolton and Menk, the approximate extent of direct disturbance encompassed a 27,000 square meter (m^2) area of riverbed.

The Mississippi River is inhabited by several federally listed species, with the federally endangered Higgin's Eye Pearlymussel (*Lampsilis higginsii*) most likely to occur at the site. Other state-listed species are known from this pool of the Mississippi River, including but not limited to Wartyback (*Cyclonaias nodulata*), Butterfly (*Ellipsaria lineolata*), Mucket (*Actinonaias ligamentina*), and Monkeyface (*Theliderma metanerva*). A recent survey and relocation conducted by Daguna Consulting, LLC approximately 1.5 kilometers (km) downstream detected several state-listed species and native mussel densities of 18.6 mussels per square meter (m^{-2}) (Ostby 2022a,b).

As part of the environmental review for the project, the Minnesota Department of Natural Resources (DNR) and U. S. Fish and Wildlife Service (USFWS) required a mussel survey. The purpose of the survey was to determine the presence or absence of protected species and to assess the condition of the mussel assemblage in and around the proposed footprint.

Daguna Consulting, LLC conducted surveys on June 6-8, 2023. Surveys covered habitats in areas that may be directly and indirectly disturbed by proposed construction and operation activities. This area was defined as the study area and was approximately 45,000 m^2 in extent. According to the "Minnesota Freshwater Survey and Relocation Protocol", at least one "Level I" survey was required for each 2,000 m^2 of instream habitat in a study area. Thus, 23 Level I surveys were conducted. All mussel species native to the state were targeted in Level I surveys. Where Level I survey efforts encountered more than 1 mussel per minute or a listed species, "Level II" surveys were initiated.

METHODS

Level I surveys were conducted June 6-8, 2023 and a Level II survey was conducted on June 8th, 2023. Brett J. K. Ostby was the permit holder, led fieldwork, and was responsible for species identification. The SCUBA divers were Emory Hagemeyer and Hunter Poffinbarger. All work was covered by Minnesota DNR Special Permit No. 32812 and USFWS Recovery Permit ES59798B-2.

Level I Survey

The mussel assemblage in the defined study area was surveyed by biologists to qualitatively assess species composition, relative abundance, and the possible presence of protected species. All habitats in the study area were searched unless deemed "unsuitable" for mussels, based on the site visit. The "unsuitability" of any habitat for mussels was fully documented. Sufficient effort was expended to inspect all suitable habitat so that the biologists could state with

reasonable confidence that endangered and/or threatened species do or do not occur in the areas sampled. Based on the extent of the study area and desire to detect all species present, 23 timed dives were conducted, each lasting no fewer than 20 minutes. Due to average depth being greater than 2 m, biologists used SCUBA to conduct visual and tactile searches of the riverbed. During each dive, a biologist searched the riverbed while connected to the sampling boat and guided by the surface operator via an underwater communication system. All live mussels and shells encountered were collected and relayed to the surface. A GPS unit was used to georeference the approximate center of each survey (Table 1, Figure 2).

All mussels were identified to species and then measured for maximum length (in millimeters, mm) and aged by counting annual growth arrest lines. Any endangered or threatened mussels collected were returned to the riverbed by hand. Other species were returned to the substrate from the water surface.

If during Level I surveys more than 1 mussel per minute or a listed species were encountered, the Level II survey protocol was initiated for that habitat.

Level II Survey

Within selected habitats, sample locations assigned using a systematic grid. The base point of the grid was located randomly within the identified Level II unit to avoid bias in estimating density. Points were at most 20 m from each other. At each location, a 0.25 m^2 total substrate quadrat attached to a rope was thrown from the boat. A diver excavated the streambed within the quadrat to a depth of 10-15 cm and placed the contents of the sample into the mesh bag attached to the quadrat frame. At each quadrat location, all mussels collected were identified to species, measured for maximum length (in mm), and aged. After processing, mussels were promptly returned to the riverbed. Endangered or threatened species were hand-placed, while others were returned from the water surface. The locations of quadrats were geo-referenced using a GPS unit (Table 1, Figure 3).

RESULTS

Flow Conditions and Weather

On the morning of June 6th, flow was 42,000 cubic feet per second (cfs) at USGS Gage 05378500 in Winona, MN. Flow declined throughout the study period to 35,200 cfs on the afternoon of June 8th. These flows were just below median for early June, having rapidly dropped from flood stages observed in April due to the onset of a "flash drought" in May. The Winona gage used to approximate conditions was located approximately 49 kilometers (km) downstream and had flow data for the previous 95 years.

During the survey period, air temperatures were above average, ranging from 28ºC at mid-morning to as high as 33ºC in the afternoon on all three days. Skies were mostly to partly sunny during the survey period with haze from Canadian wildfires present every day, limiting visibility and air quality.

Water clarity was good for the Mississippi River, with habitats visible at a distance of 1.25 m. Water temperatures ranged from 23-25 ^{o}C.

Level I Surveys

Most Level I Surveys (16 of 23) were conducted in a side channel that was located between an unnamed island and the Minnesota bank (Figure 4). The side channel was separated from the main channel by the larger Drury Island, which was located farther upstream of the study area, and by the aforementioned unnamed island seen in Figures 1-4. Currents in the side channel were moderately strong. This made it difficult for divers to maintain position in some sandy habitats near the middle of the channel. The downstream portion of the side channel had unusual habitats for the hydrologically altered Mississippi River; a riffle was located between an anthropomorphic rock pile and the bank (Figure 5). Its location was marked in Figures 2 and 3. The riffle had a riverbed of boulder, cobble, gravel, and sand substrates. Another rock pile was located farther out from the bank in deeper waters. Areas around that outer rock pile likewise had larger substrates than observed elsewhere in the side channel (Survey 17). These habitats were unlike most of the side channel. In general, the side channel was 2 to 3 m deep with a sand dominated riverbed. Water depths in the side channel increased precipitously from both the Minnesota and the island bank, reaching a depth of 2 m or greater within 5 m of the bank. Both banks had some exposed clay along those steep submerged slopes. Mussels were mostly observed within 5-10 m of the Minnesota bank and also in riffle habitats near the inner rock pile. Mussels were rarer in the center of the channel and near the island.

Several Level I surveys were conducted in habitats adjacent to the navigation channel. Except for areas near wing dams, the riverbed was mostly sand. Depths and flows varied greatly over short distances, with a maximum depth of 4 m observed at the edge of the navigation channel and depths < 1 m near wing dams. Mussels were rare in the main channel and no listed species were detected there.

A list of species detected and their corresponding photographs are provided in Table 2. Photographs of all but one species are in Appendix A. Habitat information for each Level I survey can be found in Table 3.

Across all Level I surveys, a total of 418 live mussels (native) were detected in 8 person-hours of search. Live specimens of 15 species were detected (Table 5). Just over half of all live mussels were Threeridge (*Amblema plicata*). Threehorn Wartyback (*Obliquaria reflexa*) was the second most abundant species, comprising 12.4 % of live mussels. Mucket (*A. ligamentina*) was the only state listed species detected live and all specimens were found within 5 m of the Minnesota bank. Two species of special concern, Round Pigtoe (*Pleurobema sintoxia*) and Black Sandshell (*Ligumia recta*), were also detected live, with Black Sandshell detected throughout the entire study area, comprising 3.8% of live mussels. Round Pigtoe was only detected near the Minnesota bank, comprising 1.2% of live mussels. Catch-per-unit-effort (CPUE) for habitats along the Minnesota bank and in the riffle were, on average, more than 8 times greater than surveys conducted elsewhere in the study area.



Level II Survey

Level II surveys focused on habitats within 20 m of the Minnesota Bank and in the riffle habitat near the inner rock pile (see Figure 3). These habitats supported a state-listed species and relatively greater abundances. Mussel and habitat data for each Level II quadrat were summarized in Table 6. The Level II survey detected an additional species, Paper Pondshell (*Utterbackia imbecillis*). This species was not found during the Level I surveys. Density in the best habitats was estimated at 2.8 m^{-2}, with a 95% confidence interval of 1.97 – 3.63 m^{-2}. Sampling was sufficient for estimating population size, achieving a desired Coefficient of Variation (CV) of 0.146, generally CV < 0.2 is considered good for estimating mussel densities. The best habitats within the proposed project footprint were limited to a 4,000 m^2 area off the Minnesota bank and likely supported no more than 14,518 mussels Figure 3. Both Level I and II results suggest that Threeridge may be half of all mussels in these habitats. Habitats in the Level II survey area had a mean depth of 1.8 m and tended to have a sand/gravel riverbed. Some quadrats were in a shallow inlet, with much shallower depths where organic debris and silt were more common.

Demographics

Length and age statistics for a representative subset of mussels observed in both Level I and Level II surveys are presented in Table 6. Younger year classes were common in the study area, with 3 species demonstrating recruitment in the last year or so. Mussels ≤ 5 years old comprised 46.7% of mussels that were measured. Older mussels, defined as specimens ≥15 years old, were present but comprised only 14.7% of mussels that were measured.

Zebra Mussels

The invasive, non-native Zebra Mussel (*Driessen polymorpha*) was abundant in the study area. Most native mussels had more than 20 attached to their shells (Figure 6), so percent of a native mussel shell covered by Zebra Mussels was estimated in lieu of counting individual Zebra Mussels. Mean coverage was 32.8% (n =262). Some smaller natives, like Threehorn Wartyback and Deertoe, were covered by 1-2 layers of Zebra Mussels over >80% of their shell surface.

Species Curve

A species richness curve was produced with cumulative total species richness indexed with live individual encounters (Figure 7). A logarithmic model was fit using JMP 17.0 (© 2023 JMP Statistical Discovery LLC).

Richness = -1.814 + 2.850*Ln(Cumulative Live Mussels)

The model suggested that it would require 73 additional mussels to increase species richness by 1. This suggests 2 additional Level II surveys or 100 quadrats near the Minnesota bank would yield an additional species.



DISCUSSION

No federally listed mussel species were detected during surveys. Given the number of mussels encountered and number of surveys conducted, it was extremely unlikely that federally listed mussels inhabit the study area. Only one state-listed species was detected, the Mucket; it was relatively rare. Two species of special concern—Black Sandshell and Round Pigtoe—were detected live, with the Black Sandshell relatively common throughout the study area. It is likely that 1-2 additional species may be present in the best habitats. Nonetheless, sampling was more than adequate according to state guidelines.

The best habitats for mussels in the study area were identified, delineated, and quantified. These habitats would be impacted by the proposed project. One was located along the Minnesota bank, which formed the southwest boundary of the proposed project footprint. The second was a riffle habitat, located just downstream (southeast) of the proposed footprint. These habitats were relatively better than other areas sampled. Most of the project footprint (85%) was 2-3 m deep with a sand riverbed, supporting native mussel densities < 1 m^{-2}.

Habitats near the bank and in the riffle had mean mussel densities of 2.8 m^{-2}. For comparison, mussel assemblages documented 1.5 km downstream by Ostby (2022a) had a mean density of 18.6 m^{-2}, suggesting high quality habitats along the Minnesota bank in the Mississippi River have the compacity to support far greater numbers than detected in the study area. Richness was also low for this reach of the Mississippi River. This low density and richness was likely caused by the unstable sand dominated substrate observed in most of the side channel. Surveys and relocations downstream detected a total of 24 species (Ostby 2022a,b) compared to 16 detected in this study. There were historically 41 species known from the Minnesota reaches of the Mississippi River. Better Mississippi River mussel beds still support greater than 25 species.

The study area skewed toward younger mussels, with nearly half of all mussels measured being ≤ 5 years old. This suggests that mussels may have recently colonized the area or that many habitats are not stable over greater time scales.

Zebra Mussel densities were high for the Mississippi River, especially compared to those observed the previous year in habitats 1.5 km downstream. All but a few native mussels were infested, with some almost completely covered by Zebra Mussels. Many of the Zebra Mussels observed were <20mm, suggesting a recent population outbreak.

The riffle habitat downstream of the study area was a habitat type more common in tributaries and to the Mississippi River and in the river itself upstream of the metro area. These habitats are not common in the regulated reached of the Mississippi River downstream of St. Anthony Falls. This habitat type may have been more common in the unaltered river before navigation channels were maintained and dams built. Level II surveys #16-#18 focused on the riffle habitat and habitats associated with anthropogenic rockpiles. While unique features with potential for species like Spectaclecase and Salamander Mussel, focused efforts did not yield additional species.

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TABLES AND FIGURES





Table 1. Latitude and Longitude in WGS 84 for each Level I survey and Level II quadrat.

Level I Survey	Latitude	Longitude	Level II Quadrat	Latitude	Longitude
1	44.39338	-92.05257	1	44.39356	-92.05299
2	44.39379	-92.05209	2	44.39344	-92.05280
3	44.39324	-92.05206	3	44.39333	-92.05264
4	44.393668	-92.051568	4	44.39324	-92.05249
5	44.39334	-92.05153	5	44.39315	-92.05230
6	44.39307	-92.0516	6	44.39319	-92.05271
7	44.39382	-92.05123	7	44.39310	-92.05251
8	44.39347	-92.05101	8	44.39300	-92.05230
9	44.39302	-92.0509	9	44.39361	-92.05274
10	44.39275	-92.05093	10	44.39348	-92.05256
11	44.39363	-92.05065	11	44.39337	-92.05240
12	44.39291	-92.05023	12	44.39328	-92.05220
13	44.392568	-92.050307	13	44.39319	-92.05203
14	44.393199	-92.050347	14	44.39310	-92.05184
15	44.39273	-92.04953	15	44.39301	-92.05167
16	44.393014	-92.049077	16	44.39292	-92.05150
17	44.39275	-92.04879	17	44.39315	-92.05166
18	44.392431	-92.04934	18	44.39304	-92.05145
19	44.39284	-92.04825	19	44.39294	-92.05129
20	44.392589	-92.048481	20	44.39284	-92.05115
21	44.392612	-92.047628	21	44.39275	-92.05098
22	44.392886	-92.04725	22	44.39263	-92.05081
23	44.392623	-92.046734	23	44.39253	-92.05064
			24	44.39274	-92.05077
			25	44.39264	-92.05062
			26	44.39283	-92.05134
			27	44.39254	-92.05045
			28	44.39248	-92.04932
			29	44.39236	-92.04950
			30	44.39227	-92.04932
			31	44.39233	-92.04926
			32	44.39239	-92.04928
			33	44.39243	-92.04949
			34	44.39323	-92.05222
			35	44.39349	-92.05270
			36	44.39367	-92.05299
			37	44.39241	-92.05041
			38	44.39226	-92.05005
			39	44.39239	-92.05018
			40	44.39235	-92.04986



Table 2. Scientific name, common name, and status for native mussels detected in the study area during each survey type are provided. Corresponding figure numbers are listed (most are in Appendix A).

Species Name	Common Name	Status	Level I	Level II	Figure
Actinonaias ligamentina	Mucket	Minnesota Threatened	X		A1
Amblema plicata	Threeridge		X	X	A2, A3
Cyclonaias pustulosa	Pimpleback		X	X	A4
Fusconaia flava	Wabash Pigtoe		X	X	A5, A6
Lampsilis cardium	Plain Pocketbook		X		A7
Lampsilis siliquoidea	Fat Mucket		X		A8
Lasmigonia complanata	White Heelsplitter		X		A9
Leptodea fragilis	Fragile Papershell		X	X	6, A10
Ligumia recta	Black Sandshell	Minnesota Special Concern	X	X	A11, A12
Obliquaria reflexa	Threehorn Wartyback		X	X	A13, A14
Oblovaria olivaria	Hickorynut		X	X	A15, A16
Pleurobema sintoxia	Round Pigtoe	Minnesota Special Concern	X		A17, A18
Potamilus alatus	Pink Heelsplitter		X		A19
Pyganodon grandis	Giant Floater		X	X	A20
Truncilla truncata	Deertoe		X	X	A21
Utterbackia imbecillis	Paper Pondshell			X	Not pictured, lost in handling



Table 3. Average depths and percent riverbed for Level I surveys are listed. Most of the study area had a sand riverbed and was greater than 2 m deep.

Survey	Latitude	Longitude	Depth (m)	%Boulder	%Cobble	%Gravel	%Sand	%Silt	%Clay	Woody Debris
1	44.39338	-92.0526	2.1	0	0	10	80	0	10	0
2	44.39379	-92.0521	1.5	0	0	0	100	0	0	0
3	44.39324	-92.0521	2.4	0	0	20	80	0	0	0
4	44.39367	-92.0516	2.7	0	0	10	90	0	0	0
5	44.39334	-92.0515	1.5 - 3.0	0	0	0	100	0	0	0
6	44.39307	-92.0516	3.0	0	0	0	100	0	0	0
7	44.39382	-92.0512	2.1	0	0	20	80	0	0	0
8	44.39347	-92.051	2.4	0	0	10	90	0	0	0
9	44.39302	-92.0509	3.0	0	0	0	100	0	0	0
10	44.39275	-92.0509	3.4	0	0	30	70	0	0	0
11	44.39363	-92.0507	1.5	0	0	10	80	10	0	0
12	44.39291	-92.0502	3.4	0	0	0	100	0	0	0
13	44.39257	-92.0503	2.7	0	0	20	80	0	0	0
14	44.3932	-92.0503	0.9 - 2.1	0	0	0	60	0	40	0
15	44.39273	-92.0495	2.7	0	0	0	100	0	0	0
16	44.39301	-92.0491	0.6 - 1.5	0	0	5	95	0	0	0
17	44.39275	-92.0488	1.2	40	10	10	40	0	0	0
18	44.39243	-92.0493	0.3 - 2.4	5	20	20	35	0	20	0
19	44.39284	-92.0483	1.2 - 2.1	0	0	10	90	0	0	0
20	44.39259	-92.0485	0.9 - 2.0	0	0	10	90	0	0	0
21	44.39261	-92.0476	1.5 - 2.7	0	0	10	90	0	0	0
22	44.39289	-92.0473	0.9 - 4.0	20	10	10	50	0	0	10
23	44.39262	-92.0467	1.2 - 3.0	20	10	10	60	0	0	0
Mean			**2.1**	**3.7**	**2.2**	**9.3**	**80.9**	**0.4**	**3.0**	**0.4**



Table 4. Number of live mussels detected in each Level I survey and in the Level II survey. Survey effort for Level I surveys was recorded in person-hours, with the Catch-Per-Unit-Effort (CPUE) calculated by dividing total number of live by person hours effort.

Level I Survey	Effort (person-hours)	*A. ligamentina*	*A. plicata*	*C. pustulosa*	*F. flava*	*L. cardium*	*L. siliquoidea*	*L. complanata*	*L. fragilis*	*L. recta*	*O. reflexa*	*O. olivaria*	*P. sintoxia*	*P. alatus*	*P. grandis*	*T. truncata*	*U. imbecillis*	Total	CPUE
1	0.33	0	55	5	6	0	1	1	0	1	12	1	3	0	1	1	0	87	261
2	0.33	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	3	9
3	0.33	1	41	2	6	0	0	0	1	1	11	2	2	0	0	1	0	68	204
4	0.33	0	3	0	1	0	0	0	1	0	1	2	0	0	0	0	0	8	24
5	0.33	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
6	0.33	0	8	3	0	1	FD	0	1	0	2	0	0	0	0	0	0	15	45
7	0.33	0	3	1	0	0	0	0	1	1	1	0	0	0	0	0	0	7	21
8	0.33	0	1	0	0	0	0	0	0	0	5	0	0	0	0	0	0	6	18
9	0.33	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
10	0.33	FD	25	0	3	3	0	0	0	3	1	1	0	0	0	0	0	36	108
11	0.33	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	6
12	0.33	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	4	12
13	0.33	1	16	14	4	0	0	0	0	4	6	2	0	0	0	0	0	47	141
14	0.33	0	1	1	0	5	2	0	0	2	0	1	0	0	0	0	0	12	36
15	0.33	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
16	0.33	0	0	1	1	2	0	0	1	0	0	2	0	0	0	2	0	9	27
17	0.33	0	11	2	1	3	0	0	0	0	2	0	0	0	0	0	0	19	57
18	0.33	0	42	0	2	5	0	0	2	0	2	0	0	0	0	0	0	53	159
19	0.33	0	1	0	0	2	0	0	0	0	1	0	0	0	0	0	0	4	12
20	0.33	0	0	0	0	2	0	0	0	1	4	0	0	0	0	0	0	7	21
21	0.33	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	6
22	0.33	0	6	0	2	5	0	0	0	3	1	1	0	0	0	0	0	18	54
23	0.33	0	0	0	0	4	0	0	0	0	2	0	0	1	0	0	0	7	21
Level I Total	**8**	**2**	**220**	**30**	**26**	**33**	**3**	**1**	**10**	**16**	**52**	**13**	**5**	**2**	**1**	**4**	**0**	**418**	**52.3**
Assemblage %		**0.5**	**52.6**	**7.2**	**6.2**	**7.9**	**0.7**	**0.2**	**2.4**	**3.8**	**12.4**	**3.1**	**1.2**	**0.5**	**0.2**	**1.0**	**0.0**		
Level II Total		**0**	**11**	**2**	**4**	**0**	**0**	**0**	**2**	**2**	**2**	**1**	**0**	**0**	**1**	**2**	**1**	**28**	
Grand Total		**2**	**231**	**32**	**30**	**33**	**3**	**1**	**12**	**18**	**54**	**14**	**5**	**2**	**2**	**6**	**1**	**446**	



Table 5. Mussels detected and habitat information for each 0.25 m^2 quadrat in the Level II survey.

Quadrat	Latitude	Longitude	*A. plicata*	*C. pustulosa*	*F. flava*	*L. fragilis*	*L. recta*	*O. reflexa*	*O. olivaria*	*P. grandis*	*T. truncata*	*U. imbecillis*	Total	Depth (m)	%Gravel	%Sand	%Silt	%Clay	%Debris	%Organic Debris
1	44.39356	-92.05299	0	0	1	0	0	0	0	0	0	0	1	1.5	0	100	0	0	0	0
2	44.39344	-92.05280	0	0	0	0	0	0	0	0	0	1	1	1.5	5	95	0	0	0	0
3	44.39333	-92.05264	0	0	0	1	0	0	0	0	0	0	1	0.6	0	100	0	0	0	0
4	44.39324	-92.05249	0	0	1	0	0	0	0	0	0	0	1	1.8	10	70	20	0	0	0
5	44.39315	-92.05230	0	0	0	0	0	0	0	0	0	0	0	0.3	0	40	30	0	0	30
6	44.39319	-92.05271	0	0	0	0	0	0	0	1	0	0	1	0.9	0	40	30	0	0	30
7	44.39310	-92.05251	0	0	0	0	0	0	0	0	0	0	0	0.6	0	40	40	0	0	20
8	44.39300	-92.05230	0	0	0	0	0	0	0	0	0	0	0	0.3	0	40	30	0	0	30
9	44.39361	-92.05274	1	0	0	0	0	0	0	0	0	0	1	1.5	0	100	0	0	0	0
10	44.39348	-92.05256	1	0	0	0	0	0	0	0	0	0	1	2.7	0	100	0	0	0	0
11	44.39337	-92.05240	0	0	0	0	0	1	0	0	0	0	1	1.8	20	70	10	0	0	0
12	44.39328	-92.05220	1	0	0	0	0	0	0	0	0	0	1	2.1	0	10	90	0	0	0
13	44.39319	-92.05203	1	0	0	0	0	0	0	0	1	0	2	1.5	10	90	0	0	0	0
14	44.39310	-92.05184	0	0	0	0	1	0	0	0	0	0	1	2.1	0	60	0	0	40	0
15	44.39301	-92.05167	0	0	1	0	0	0	0	0	0	0	1	2.4	20	70	10	0	0	0
16	44.39292	-92.05150	1	0	0	0	0	0	0	0	0	0	1	2.4	20	70	10	0	0	0
17	44.39315	-92.05166	0	0	0	0	0	0	0	0	0	0	0	3.0	0	100	0	0	0	0
18	44.39304	-92.05145	0	0	0	1	0	0	0	0	0	0	1	3.1	30	60	10	0	0	0
19	44.39294	-92.05129	0	0	0	0	0	0	0	0	0	0	0	3.0	40	50	10	0	0	0
20	44.39284	-92.05115	0	0	0	0	0	0	0	0	0	0	0	3.1	30	60	10	0	0	0
21	44.39275	-92.05098	1	0	0	0	0	0	0	0	0	0	1	3.1	30	70	0	0	0	0
22	44.39263	-92.05081	0	0	0	0	0	0	0	0	0	0	0	2.7	30	70	0	0	0	0
23	44.39253	-92.05064	0	0	0	0	0	0	0	0	0	0	0	1.8	80	20	0	0	0	0
24	44.39274	-92.05077	0	0	0	0	0	0	0	0	0	0	0	3.4	10	90	0	0	0	0
25	44.39264	-92.05062	0	0	0	0	0	0	0	0	0	0	0	2.4	30	70	0	0	0	0
26	44.39283	-92.05134	0	0	0	0	0	0	0	0	0	0	0	0.9	30	60	10	0	0	0
27	44.39254	-92.05045	0	0	0	0	0	0	0	0	0	0	0	2.1	95	5	0	0	0	0
28	44.39248	-92.04932	0	0	0	0	0	0	0	0	0	0	0	0.6	60	20	0	20	0	0
29	44.39236	-92.04950	1	0	0	0	0	0	0	0	0	0	1	1.2	30	70	0	0	0	0
30	44.39227	-92.04932	0	0	0	0	1	0	0	0	0	0	1	1.2	0	0	100	0	0	0
31	44.39233	-92.04926	1	0	1	0	0	0	0	0	0	0	2	0.9	10	90	0	0	0	0
32	44.39239	-92.04928	1	0	0	0	0	0	0	0	0	0	1	0.5	80	20	0	0	0	0
33	44.39243	-92.04949	0	0	0	0	0	0	0	0	1	0	1	2.4	80	20	0	0	0	0
34	44.39323	-92.05222	1	1	0	0	0	0	0	0	0	0	2	2.4	10	90	0	0	0	0
35	44.39349	-92.05270	0	1	0	0	0	0	0	0	0	0	1	1.8	0	100	0	0	0	0
36	44.39367	-92.05299	0	0	0	0	0	1	1	0	0	0	2	1.4	0	100	0	0	0	0
37	44.39241	-92.05041	0	0	0	0	0	0	0	0	0	0	0	1.5	0	100	0	0	0	0
38	44.39226	-92.05005	0	0	0	0	0	0	0	0	0	0	0	1.8	0	100	0	0	0	0
39	44.39239	-92.05018	1	0	0	0	0	0	0	0	0	0	1	1.5	0	20	20	60	0	0
40	44.39235	-92.04986	0	0	0	0	0	0	0	0	0	0	0	1.5	10	90	0	0	0	0
Totals			**11**	**2**	**4**	**2**	**2**	**2**	**1**	**1**	**2**	**1**	**28**							
Mean*			**1.1**	**0.2**	**0.4**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.2**	**0.1**	**2.8**	**1.8**	**19**	**64**	**11**	**2**	**1**	**3**



Table 6. Mean, standard error, and range of lengths (mm) for a representative subset of each species (n). Age was also estimated and assigned here to age groups standard for the Mississippi River.

		Length (mm)			Age Range	% Age Groups (yrs)		
Species	**n**	**mean**	**SE**	**Range**	**(yrs)**	**≤ 5**	**6 to 10**	**≥ 15**
A.ligamentina	2	114.5	5.5	109-120	11-12	0.0	100.0	0.0
A. plicata	74	62.0	3	15-106	1-25+	44.6	37.8	17.6
C. pustulosa	45	59.6	1.9	45-79	4-25	8.0	68.0	24.0
F. flava	27	56.0	2.3	27-74	4-20	14.8	66.7	18.5
L. cardium	32	104.8	2.9	61-125	3-25+	41.9	35.5	22.6
L. siliquoidea	4	96.5	6.4	88-115	3-25+	50.0	25.0	25.0
L. complanata	1	156.0	n/a	156	20+	0.0	0.0	100.0
L. fragilis	12	69.6	8	21-108	1-5	100.0	0.0	0.0
L. recta	19	133.0	4.1	85-157	3-20+	15.8	68.4	15.8
O. olivaria	14	43.8	2.4	33-65	3-13	85.7	14.3	0.0
O. reflexa	24	40.1	1.5	24-57	3-14	85.7	11.4	2.9
P. alatus	2	85.0	27	58-112	2-5	100.0	0.0	0.0
P. grandis	2	121.5	18.5	103-140	3-5	100.0	0.0	0.0
P. sintoxia	5	57.4	5.3	46-73	6-15+	0.0	80.0	20.0
T. truncata	5	28.8	2.9	19-35	2-4	100.0	0.0	0.0
U. imbecillis	1	16.0	n/a	16	1	100.0	0.0	0.0
Assemblage						46.7	38.6	14.7

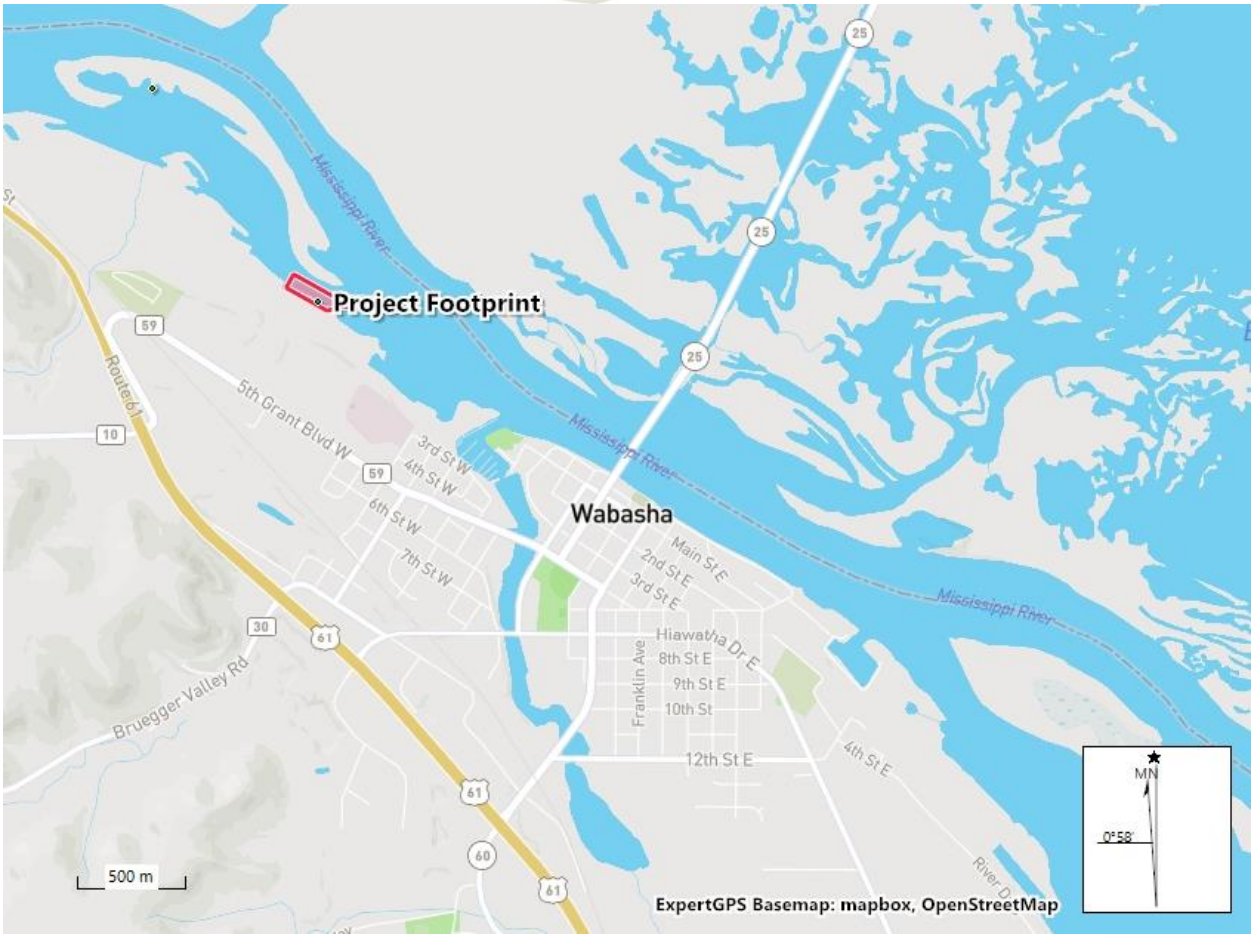

Figure 1. Street map demonstrating location of project footprint north of Wabasha, Minnesota.



Figure 2. Aerial image of the project footprint and centroid of each Level I survey. The locations of the riffle and rock piles are shown.

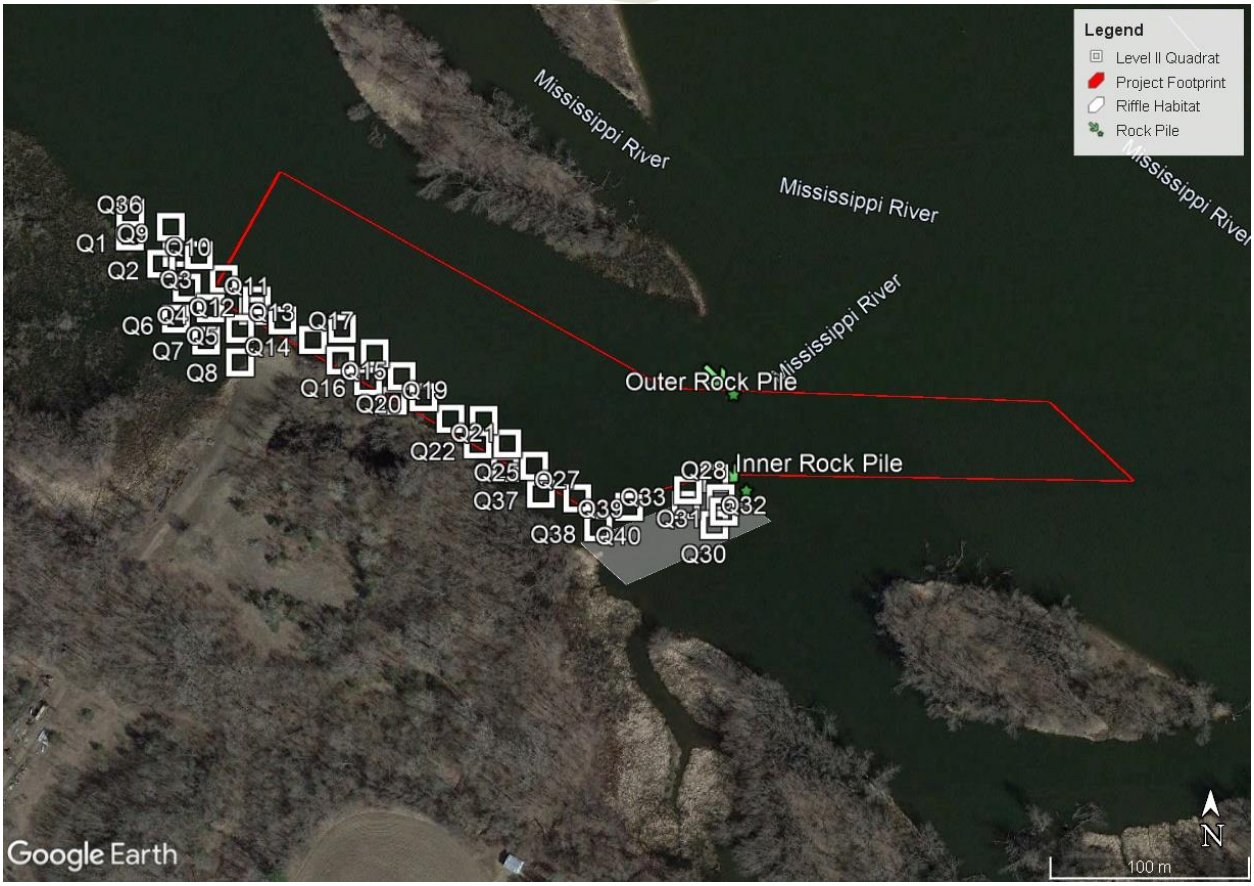

Figure 3. Quadrats were systematically distributed in areas with greater CPUE along the Minnesota bank and in the riffle habitat.



Figure 4. Side channel of the Mississippi River with the Minnesota bank photograph left to center. The unnamed island was photograph right and in the foreground. This photograph was taken facing upstream toward the northwest from the downstream corner of the unnamed island.



Figure 5. Diver sampling shallow riffle habitat with the inner rock pile pictured on the left. This photograph was taken while wading in shallows facing downstream towards the southeast.



Figure 6. Fragile Papershell (*L. fragilis*) heavily infested by Zebra Mussels (*Dreissena polymorpha*). This was a typical condition for mussels in the side channel of the Mississippi River that was surveyed.

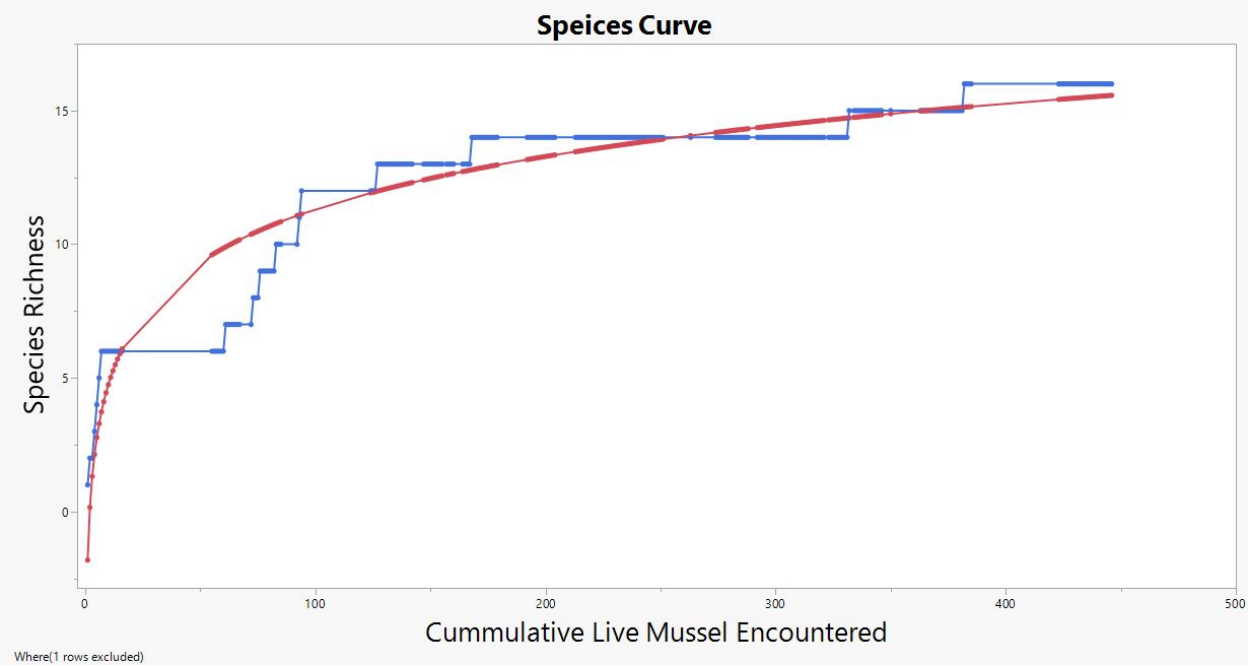

Figure 7. Cumulative total species richness (live) was plotted by live individual mussel encountered. Blue points and line are raw data. A logarithmic model was fit using JMP software (red points and line).

APPENDIX A

Representative Photographs



DAGUNA
CONSULTING



Figure A1. State-threatened Mucket (*A. ligamentina*) observed near the Minnesota bank.



Figure A2. Range of Threeridge (*A. plicata*) observed during Level I surveys.



Figure A3. Younger specimens of Threeridge with green coloration were observed in sandy habitats.



Figure A4. Live Pimpleback (*C. pustulosa*) observed during Level I surveys.



Figure A.5 Younger specimen of Wabash Pigtoe (*F. flava*) observed in the study area.



Figure A6. This specimen was identified as Wabash Pigtoe (*F. flava*) due to its deep sulcus and cloth-like periostracum.



Figure A7. Female (left) and male (right) specimens of Plain Pocketbook (*L. cardium*).



Figure A8. Fat Mucket (*L. siliquoidea*) with beak structure shown in the lower figure.



Figure A9. This live White Heelsplitter (*L. complanata*) was encrusted with Zebra Mussels.



Figure A10. Live Fragile Papershell (*L. fragilis*) observed during Level I surveys.



Figure A11. Live femail Black Sandshell (*L. recta*) observed in study area.



Figure A12. Black Sandshell observed in the side channel of the Misssippi River.



Figure A13. Threehorn Wartyback (*O. reflexa*) were common in the study area. Many were heavily encrusted by Zebra Mussels.



Figure A14. Side view of a Threehorn Wartyback.



Figure A15. Live Hickorynut (*O. olivaria*) detected in the study area.



Figure A16. Olive coloration of younger Hickorynuts detected in the side channel.



Figure A17. Live Round Pigtoe (*Pleurobema sintoxia*) observed near Minnesota bank.



Figure A18. View of same Round Pigtoe in A18 showing anterior of the shell and umbo.



Figure A19. Pink Heelpslitter (*P. alatus*) observed in the study area.



Figure A 20. Giant Floater (*P. grandis*) observed in the study area.



Figure A21. Deertoe (*T. truncata*) detected live in the study area.

APPENDIX G

MnDNR Correspondence – Natural Heritage Review

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

July 8, 2022
Correspondence # MCE 2022-00127

Robert Rogers
Bolton & Menk, Inc.

RE: Natural Heritage Review of the proposed Wabasha Barge Terminal Project,
T111N R10W Section 30; Wabasha County

Dear Robert Rogers,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The proposed project is within a site identified by the Minnesota Biological Survey (MBS) as a Site of *Moderate* Biodiversity Significance. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. Green dragon (*Arisaema dracontium*), Gary's sedge (*Carex grayi*), and cattail sedge (*Carex typhina*), all state-listed plant species of special concern, have been documented within this Site and may be impacted by this project.

  We encourage you to consider project alternatives that would avoid or minimize disturbance to this ecologically significant area. Actions to minimize disturbance may include, but are not limited to, the following recommendations:
  - Minimize vehicular disturbance in the MBS Site (allow only vehicles/equipment necessary for construction activities);
  - Do not park equipment or stockpile supplies in the MBS Site;
  - Do not place spoil within MBS Site or other sensitive areas;

- Retain a buffer between proposed activities and the MBS Site;
- If possible, conduct the work under frozen ground conditions;
- Use effective erosion prevention and sediment control measures;
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species;
- As much as possible, operate within already-disturbed areas;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (Lotus corniculatus) and crown vetch (Coronilla varia), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities community can be viewed using the Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact me if you do not have access to the appropriate mapping services. For information on interpreting the data, reference the MBS Site Biodiversity Significance and Native Plant Community websites.

- Pool 4 of the Mississippi River has been identified as a Lake of *Outstanding* Biological Significance. Lakes of Biological Significance were ranked as *Outstanding, High, or Moderate* based on unique plant and animal presence. It is important that effective erosion prevention and sediment control practices be implemented and maintained near lakes throughout the project. Indirect impacts, such as the introduction or spread of invasive species, should also be considered and minimized.

State-listed Species

- Several state-listed fish including paddlefish (*Polyodon spathula*), a state-listed threatened fish species have been documented in the Mississippi River near the proposed project. In Minnesota, paddlefish spawn in the spring in temporarily flooded tributaries to the large rivers. Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the take of threatened or endangered species without a permit. To protect this species, **work within the water needs to be avoided from April to mid-June.** Contact the DNR Endangered Species Environmental Review Coordinator, Lisa Joyal (Lisa.Joyal@state.mn.us or 651-259-5109) if this is not feasible as additional action may be needed.

- Timber rattlesnakes (*Crotalus horridus)*, a state-listed threatened species, have been reported from the vicinity of the proposed project and may be encountered on site. In Minnesota, the ideal habitat for this species is forested bluffs, south-facing rock outcrops, and bluff prairies, particularly in the Mississippi River Valley. Nearby forests, prairies, and agricultural lands are used as summer feeding grounds. Two necessary habitat components are open areas for thermoregulation, and dens for overwintering. The dens are often located on steep, south or

west-facing hillsides with rock outcroppings and ledges. Timber rattlesnakes emerge from their dens in late April to early May and return to them in late September to early October. In the spring and fall, timber rattlesnakes are active during the day; while during the hottest months of summer, they are mostly active at night.

Timber rattlesnake mortality in Minnesota is most commonly caused by poaching, vehicle collisions, and habitat destruction. The loss of a single adult, especially a female, can impact the population significantly. As such, crews working in the area should be advised that if they encounter any snakes, the snakes should not be disturbed. The use of erosion control blanket shall be limited to 'bio-netting' or 'naturalnetting' types, and specifically not products containing plastic mesh netting or other plastic components. Also, be aware that hydro-mulch products may contain small synthetic (plastic) fibers to aid in their matrix strength. These loose fibers could potentially re-suspend and make their way into Public Waters. As such, please review mulch products and not allow any materials with synthetic (plastic) fiber additives in areas that drain into Public Waters. Be aware, that there are also other species of snakes in the area that will mimic rattlesnakes. Contact the DNR Regional Nongame Wildlife Specialist, Bridgette Timm (952-207-9769 or bridgette.timm@state.mn.us) if timber rattlesnakes are encountered on-site or if you have any questions regarding this species.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts. For further assistance with these species, please contact the appropriate DNR Regional Nongame Specialist or Regional Ecologist.

Federally Protected Species

- Several federally and state-listed mussels, including the sheepnose (*Plethobasus cyphyus*), a federally and state-listed endangered species, have been documented in the Mississippi River in the vicinity of the proposed project, some as recently as 2021. As mussels are particularly vulnerable to deterioration in water quality, especially increased siltation, it is important that effective erosion prevention and sediment control practices be implemented and maintained near the river.

  Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and chapter 6134) prohibit the take of threatened or endangered species without a permit. In order to determine the potential for a take of state-protected mussels, **a qualified surveyor (see attached list) will need to conduct a mussel survey and/or relocation in any potential mussel habitat prior to construction within these habitats**.

  The surveyor will need to obtain a permit from the DNR Endangered Species Coordinator, Bridget Henning-Randa (Bridget.Henning-Randa@state.mn.us or 651-259-5073) before conducting any mussel surveys and will need to follow the mussel survey and relocation protocol. The extent of

the mussel survey should include all areas of the riverbed that will be directly impacted by excavation, pile driving, placing of fill or riprap, driving of equipment, or dewatering; as well as any areas downstream that will receive sediment from project activities. Please send the results of all survey work to the DNR Endangered Species Environmental Review Coordinator, Lisa Joyal. **No work in the riverbed shall occur until potential impacts to mussels have been resolved** to the satisfaction of the DNR's Endangered Species Coordinator, Bridget Henning-Randa.

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Hertiage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Samantha Bump

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

James Drake

James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Cc: Melissa Collins, Bridgette Timm, and Bridget Henning-Randa

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabahsa Barge Terminal Project

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Tree Removal;Waterbody, watercourse, streambed impacts (e.g., discharge, runoff, sedimentation, fill, excavation)

TRS: T111 R10 S30

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS

Project Description: The barge facility will serve to transport Mississippi River dredge materials from the river to offsite locations. The project area encompasses 54.0 acres ...

Existing Land Uses: Site consists of a combination of old gravel mining/burrow site, agricultural, and undeveloped/open space

Landcover / Habitat Impacted: Wooded/forest, brush/grassland, and agricultural cropland

Waterbodies Affected: The site is located adjacent to and will involve impacts to the Mississippi River with the proposed barge fleeting area

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	No Comments	No Further Review Required
Ecologically Significant Area	Comments	MBS Sites - Recommendations Potential RNC - Will Require Consultation Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	Needs Further Review
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review

DEPARTMENT OF NATURAL RESOURCES

April 6, 2022

Project Name: Wabahsa Barge Terminal Project
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2022-00127

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

Wabahsa Barge Terminal Project

Aerial Imagery With Locator Map



N
W E
S

0 0.125 0.25 0.5 0.75 1
Miles

Project Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 40.56

County(s): Wabasha

TRS: T111 R10 S30

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri



Wabahsa Barge Terminal Project

USA Topo Basemap With Locator Map



N
W E
S

0 0.125 0.25 0.5 0.75 1 Miles



Project Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 40.56

County(s): Wabasha

TRS: T111 R10 S30

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User

APPENDIX H

Traffic Impact Memorandum

BOLTON & MENK
Real People. Real Solutions.

111 Washington Avenue S
Suite 650
Minneapolis, MN 55401

Ph: (612) 416-0220
Fax: (612) 416-0222
Bolton-Menk.com

MEMORANDUM

Date: December 8, 2022

To: Caroline Gregerson, Wabasha City Administrator

From: Ross Tillman P.E.
Kelsey Retherford P.E., PTOE

Subject: Wabasha Barge Terminal Project Traffic Impacts
City of Wabasha
Project No.: H19114396

Introduction

A study of the intersections of TH 61 and County Road 59/5th Grant Boulevard, TH 61 and Shields Avenue, and 5th Grant Boulevard and the Wabasha Barge Site was completed to determine the recommended traffic control with for the proposed barge terminal site being constructed along the Mississippi River. As a part of the project, a new driveway will be constructed along 5th Grant Boulevard to allow trucks to access the new site. The project is located in northwest Wabasha and just northwest of Gundersen St. Elizabeth's Hospital. TH 61 is the main traffic artery connecting Wabasha to the surrounding communities up and down the Mississippi River, while 5th Grant Blvd is a low traffic connecting road between TH 61 and Wabasha. See **Figure 1** for the project location map. Trucks accessing the site will follow a specific truck route to and from the site, which will take them from the project site on 5th Grant Blvd, along TH 61, and then onto Shields Ave. The route map can be found in the **Appendix**.

Figure 1: Project Location Map



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Existing Conditions

The intersection of TH 61 and County Road 10/ 5th Grant Blvd has the following characteristics:

- Side street stop-controlled intersection
- The speed limit on TH 61 is 55 MPH
- The speed limit on County Road 10 is 40 MPH
- The speed limit on 5th Grant Blvd is 55 MPH
- TH 61 is an undivided 2 lane roadway north of the intersection, and a divided 4 lane roadway south of the intersection
- The intersection has left and right turn lanes along the northbound and southbound approaches
- TH 61 is classified as a Principal Arterial
- County Road 10 is classified as a Major Collector
- 5th Grant Blvd is classified as a Major Collector
- Downtown Wabasha and the intersection of Pembroke Ave and Main St W is approximately two miles east of the study intersection
- There is no pedestrian or bicycle infrastructure along TH 61, County Road 10, or 5th Grant Blvd

The intersection of TH 61 and Shields Ave has the following characteristics:

- Restricted Crossing U-Turn (RCUT) intersection (Built in 2019)
- Each U-Turn location includes a Loon bump out to accommodate trucks
- The speed limit on TH 61 is 55 MPH
- The speed limit on Shields Ave is 30 MPH
- TH 61 is a divided 4 lane highway
- Shields Ave at the study intersection is classified as a Local Road
- TH 61 is classified as a Principal Arterial
- Downtown Wabasha and the intersection of Pembroke Ave and Main St W is approximately 1.1 miles northeast of the study intersection
- There is no pedestrian or bicycle infrastructure along TH 61 or Shields Ave immediately adjacent to the study intersection

Currently, the 5th Grant Boulevard and Project Driveway intersection does not exist.

Data Collection

A traffic count was completed on September 29, 2022. A 13-hour count was completed for the intersection of County Road 10/5th Grant Blvd and Highway 61. The AM peak hour was found to be 9:30-10:30 AM and the PM peak hour was found to be 3:45-4:45 PM. A 13-hour count from 2015 for the intersection of TH 61 and Shields Ave was available from a previous study. Traffic volumes from the peak hours of the previous count was compared to the new count. The volumes were found to differ by at most 25 vehicles, or approximately 10%. The previous counts were adjusted to match in with the new count. The turning movement counts are included in the **Appendix**.

Safety Analysis

A crash review was completed for the three intersections being investigated in this study. This review analyzed the last three years (2019-2021) of crash data, which was obtained from the Minnesota Crash Mapping Analysis Tool (MnCMAT2). Over the past three years, no crashes were recorded at the

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intersection of TH 61 and County Road 10 and on 5th Grant Ave near the barge site. At the intersection of TH 61 and Shields Ave there were four reported crashes, one minor injury crash, one possible injury crash, and two property damage only crashes. The RCUT at the TH 61 and Shields Ave intersection was built during 2019, and one of the four crashes occurred while construction was ongoing. That crash was the minor injury crash, which was a left turn crash involving a northbound left turning vehicle and a southbound vehicle. The possible injury incident was a rear end crash involving an eastbound right turn vehicle onto southbound TH 61 who turned in front of another southbound vehicle and was not being able to speed up in time. Weather was not a factor in either crash.

MnDOT uses a comparison of the crash rate and the critical rate when determining whether there is a safety issue at an intersection. The crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside of the expected, normal range. The critical index reports the magnitude of this difference and a critical index of less than one indicates that the intersection is operating within the normal range.

At TH 61 and Shields Ave, the total crash critical index is less than one for the analysis period which concludes that this intersection is operating within the normal range. The observed crash rate with three years of crash data was found to be 0.45, which is above the average of 0.19 for similar intersections statewide but below the critical rate of 0.61. The fatal and serious injury critical index is 0, as no fatal or serious injury crashes have occurred in the last three years. The intersection crash worksheets for each intersection are included in the **Appendix**.

Future Conditions

Traffic Forecasting

Future traffic volumes for 2042 were developed based on current and past volume data collected from the MnDOT Traffic Mapping Application. Historic growth rates throughout the project area are listed below:

- TH 61 north of County Road 10: 0.48%
- TH 61 south of Shields Ave: 0.85%
- 5th Grant Blvd east of TH 61: -0.08%
- County Road 10 west of TH 61: 0.96%
- Shields Ave/Hiawatha Dr east of TH 61: 0.16%

Based on the historic growth rates, a growth rate of 0.5% per year was assumed for TH 61 north of County Road, 5th Grant Blvd east of TH 61, and Shields Ave/Hiawatha Dr east of TH 61. A growth rate of 1% per year was assumed for TH 61 south of Shields Ave and County Road 10 west of TH 61.

The existing and 2042 average daily traffic volumes (ADTs) are listed in **Table 1** below.

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Table 1 – Traffic Volumes

Location	2022 ADT	2042 ADT
TH 61 north of County Road 10	5,500	6,050
County Road 10 west of TH 61	560	675
5th Grant Blvd east of TH 61	525	575
TH 61 south of County Road 10	5,700	6,300
Shields Ave/Hiawatha Dr east of TH 61	3,100	3,400
Shields Ave west of TH 61	1,700	1,800
TH 61 south of Shields Ave	3,600	4,300

Proposed Development

The site is currently agricultural. A new barge terminal facility is proposed that will receive Mississippi River dredge material from the US Corps of Engineers and transport the material offsite. The barge facility is planned to be built on the north side of 5th Grant Blvd approximately 1,500 feet northwest of Steele Rd. Concept plans showing the proposed development are included in the **Appendix**.

The site will be operational between April and October. 100 truckloads per day on average are planned into and out of the site between 7:00 AM and 5:30 PM with the truckloads evenly distributed throughout the day. Based on this information 10 trucks were assumed to both enter and exit the site during the AM and PM peak hours. The proposed development will have access to TH 61 via 5th Grant Blvd, with the TH 61 at 5th Grant Blvd and TH 61 at Shields Ave intersections being primary intersections along the truck route to and from the barge facility.

Operational Analysis

The traffic operation analysis for the intersection included an evaluation of existing intersection delay and Level of Service (LOS). LOS results are described using letters ranging from A to F. These letters serve to describe a range of operating conditions for different types of facilities. Levels of Service are calculated based on the Highway Capacity Manual (HCM) 6th Edition, which defines the LOS, based on control delay. Control delay is the delay experienced by vehicles slowing down as they are approaching the intersection, the wait time at the intersection, and the time for the vehicle to speed up through the intersection and enter into the traffic stream. The average intersection control delay is a volume weighted average of delay experienced by all motorists entering the intersection on all intersection approaches. The control delay is modeled within the analysis software Trafficware Synchro. LOS D is commonly taken as an acceptable design year LOS.

Existing and forecasted turning movement counts were analyzed in Synchro for the intersections of TH 61 and CR 10/5th Grant Blvd, and TH 61 and Shields Ave. The intersection of TH 61 and Hiawatha Avenue was not analyzed, as the only traffic added as a result of the project are approximately 10 vehicles per hour of mainline traffic, approximately a 4% increase. There are no additional vehicles turning at this intersection as a result of completing the project. The TH 61 and Shields Ave intersection is an RCUT, and both U turns are included in the analysis, separately. **Table 1** shows the operational results for the existing conditions.

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Table 1: Existing Conditions (2022) Traffic Operations Analysis

Intersection	Approach	Traffic Delay (sec/veh)											
		AM Peak Hour						PM Peak Hour					
		Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)	Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)
		U	L	T	R			U	L	T	R		
TH 61 at CR 10/5th Grant Blvd	EB	-	10 - B	10 - B	10 - B	10 - B	2 - A	-	11 - B	11 - B	11 - B	11 - B	2 - A
	WB	-	10 - B	10 - B	10 - B	10 - B		-	12 - B	12 - B	12 - B	12 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	2 - A		-	8 - A	0 - A	0 - A	1 - A	
North U-Turn	NB	9 - A	-	0 - A	-	3 - A	2 - A	9 - A	-	0 - A	-	3 - A	1 - A
	SB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
TH 61 at Shields	EB	-	-	-	9 - A	9 - A	4 - A	-	-	-	10 - B	10 - B	4 - A
	WB	-	-	-	10 - B	10 - B		-	-	-	10 - B	10 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	3 - A		-	8 - A	0 - A	0 - A	3 - A	
South U-Turn	NB	-	-	0 - A	-	0 - A	1 - A	-	-	0 - A	-	0 - A	1 - A
	SB	8 - A	-	0 - A	-	2 - A		9 - A	-	0 - A	-	3 - A	

Table 1 shows the overall intersection delay and movement delays for each intersection on TH 61, including the U-Turn locations for the RCUT at Shields Ave. The overall intersection delay at all four locations operate with LOS A during both peak hours, while the approach delay for the side streets of TH 61 operate at LOS B.

Table 2 shows the 2042 No Build traffic operations.

Table 2: 2042 Traffic Operations Analysis – No Build Scenario

Intersection	Approach	Traffic Delay (sec/veh)											
		AM Peak Hour						PM Peak Hour					
		Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)	Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)
		U	L	T	R			U	L	T	R		
TH 61 at CR 10/5th Grant Blvd	EB	-	10 - B	10 - B	10 - B	10 - B	2 - A	-	12 - B	12 - B	12 - B	12 - B	2 - A
	WB	-	10 - B	10 - B	10 - B	10 - B		-	14 - B	14 - B	14 - B	14 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	2 - A		-	8 - A	0 - A	0 - A	1 - A	
North U-Turn	NB	9 - A	-	0 - A	-	3 - A	2 - A	10 - B	-	0 - A	-	3 - A	1 - A
	SB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
TH 61 at Shields	EB	-	-	-	10 - B	10 - B	4 - A	-	-	-	10 - B	10 - B	4 - A
	WB	-	-	-	10 - B	10 - B		-	-	-	10 - B	10 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	3 - A		-	9 - A	0 - A	0 - A	3 - A	
South U-Turn	NB	-	-	0 - A	-	0 - A	1 - A	-	-	0 - A	-	0 - A	1 - A
	SB	8 - A	-	0 - A	-	2 - A		9 - A	-	0 - A	-	3 - A	

Table 2 shows that with 2042 volumes the overall intersection delay operates at LOS A during both peak hours and all approaches operate with LOS A or B which is consistent with 2022 volumes.

Tables 3 and 4 show the operational analysis of the 2022 and 2042 traffic volumes with the proposed barge facility. These tables help to illustrate how the proposed facility would affect operations.

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Table 3: 2022 Traffic Operations Analysis – Build Scenario

Intersection	Approach	Traffic Delay (sec/veh)											
		AM Peak Hour						PM Peak Hour					
		Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)	Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)
		U	L	T	R			U	L	T	R		
TH 61 at CR 10/5th Grant Blvd	EB	-	10 - B	10 - B	10 - B	10 - B	2 - A	-	11 - B	11 - B	11 - B	11 - B	3 - A
	WB	-	13 - B	13 - B	13 - B	13 - B		-	17 - C	17 - C	17 - C	17 - C	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	2 - A		-	8 - A	0 - A	0 - A	1 - A	
North U-Turn	NB	9 - A	-	0 - A	-	3 - A	2 - A	9 - A	-	0 - A	-	3 - A	1 - A
	SB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
TH 61 at Shields	EB	-	-	-	9 - A	9 - A	5 - A	-	-	-	10 - B	10 - B	4 - A
	WB	-	-	-	10 - B	10 - B		-	-	-	10 - B	10 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	3 - A		-	9 - A	0 - A	0 - A	3 - A	
South U-Turn	NB	-	-	0 - A	-	0 - A	1 - A	-	-	0 - A	-	0 - A	2 - A
	SB	8 - A	-	0 - A	-	3 - A		9 - A	-	0 - A	-	3 - A	
New Driveway Access / 5th Grant Blvd	EB	-	1 - A	0 - A	-	1 - A	2 - A	-	2 - A	0 - A	-	1 - A	2 - A
	WB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
	WB	-	8 - A	-	-	8 - A		-	9 - A	-	-	9 - A	

Table 3 shows that the overall intersections continue to operate with LOS A during both peak hours. The westbound approach of TH 61 at CR 10/5th Grant Blvd worsens to LOS C during the PM peak hour with the proposed development. All other approaches continue to operate with LOS A or B during both peak hours.

Table 4: 2042 Traffic Operations Analysis – Build Scenario

Intersection	Approach	Traffic Delay (sec/veh)											
		AM Peak Hour						PM Peak Hour					
		Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)	Movement (Delay - LOS)				Approach (Delay - LOS)	Intersection (Delay - LOS)
		U	L	T	R			U	L	T	R		
TH 61 at CR 10/5th Grant Blvd	EB	-	10 - B	10 - B	10 - B	10 - B	2 - A	-	12 - B	12 - B	12 - B	12 - B	3 - A
	WB	-	12 - B	12 - B	12 - B	12 - B		-	19 - C	19 - C	19 - C	19 - C	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	2 - A		-	8 - A	0 - A	0 - A	1 - A	
North U-Turn	NB	9 - A	-	0 - A	-	3 - A	1 - A	10 - B	-	0 - A	-	3 - A	1 - A
	SB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
TH 61 at Shields	EB	-	-	-	10 - B	10 - B	4 - A	-	-	-	11 - B	11 - B	4 - A
	WB	-	-	-	10 - B	10 - B		-	-	-	10 - B	10 - B	
	NB	-	8 - A	0 - A	0 - A	1 - A		-	8 - A	0 - A	0 - A	1 - A	
	SB	-	8 - A	0 - A	0 - A	3 - A		-	9 - A	0 - A	0 - A	3 - A	
South U-Turn	NB	-	-	0 - A	-	0 - A	1 - A	-	-	0 - A	-	0 - A	2 - A
	SB	8 - A	-	0 - A	-	2 - A		9 - A	-	0 - A	-	3 - A	
New Driveway Access / 5th Grant Blvd	EB	-	1 - A	0 - A	-	1 - A	2 - A	-	2 - A	0 - A	-	1 - A	2 - A
	WB	-	-	0 - A	-	0 - A		-	-	0 - A	-	0 - A	
	WB	-	8 - A	-	-	8 - A		-	9 - A	-	-	9 - A	

Table 4 shows that, similar to the 2022 conditions the overall intersection delay at all four locations is LOS A during both peak hours. The approach delay for the most approaches along side streets of TH 61 operate at LOS B, with the Westbound approach of TH 61 at CR 10/5th Grant Blvd operating at LOS C.

The operational analysis indicates that both intersections are expected to operate acceptably as a side through 2042 whether or not the barge facility is built. Detailed operational results are included in the **Appendix**.

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Summary

TH 61 and County Road 10/5th Grant Boulevard

With the current volumes and geometry, the intersection of TH 61 and CR 10/5th Grant Blvd operates well. There have been no crashes at the intersection in the last three years. This intersection will see an increase in truck traffic with the development of the proposed barge facility, and due to the operational schedule, there will not be peak times with large volumes of truck traffic, but instead the trucks will be well dispersed throughout the day. This will not lead to a significant impact in traffic, as the estimates are there will be 10 truck arrivals to the site and 10 truck departures from the site every hour. The current two way stop configuration is sufficient for current 2022 and for future 2040 volumes, and no additional intersection control should be required during this time period. The operational analysis indicated that all approaches would operate with LOS C or better during both peak hours.

TH 61 and Shields Avenue

Under current conditions, the intersection of TH 61 and Shields Ave operates well. There have been four crashes at the intersection over the last three years, but none have resulted in serious injury or fatality. The crash that occurred during construction of the RCUT was a minor injury crash. With the opening of the proposed barge facility, there will be an increase of truck traffic at this intersection, however with the operation schedule being spread out throughout the day, there will not be peak times during the day that sees increased truck traffic, and it will remain rather consistent. The operational analysis indicated that all approaches would operate with LOS B or better during both peak hours.

5th Grant Boulevard and Barge Site Driveway

Currently there is no intersection at the project site, and 5th Grand Boulevard operates at LOS A. With construction, very little will change in terms of operation. The new intersection will operate at LOS A, and intersection delay times will be minimal. Turn lanes for site access are not necessary based upon both the vehicle volumes and the speed limit of the roadway.

Recommendation

Based on the analysis reviewed in this memorandum, no mitigation measures are recommended with the construction of the barge facility. The operational analysis indicated that the intersections in the project area will continue to operate with minimal delay through 2042. The existing safety analysis indicated that there are no crash concerns in the project area that need to be addressed.

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Appendix

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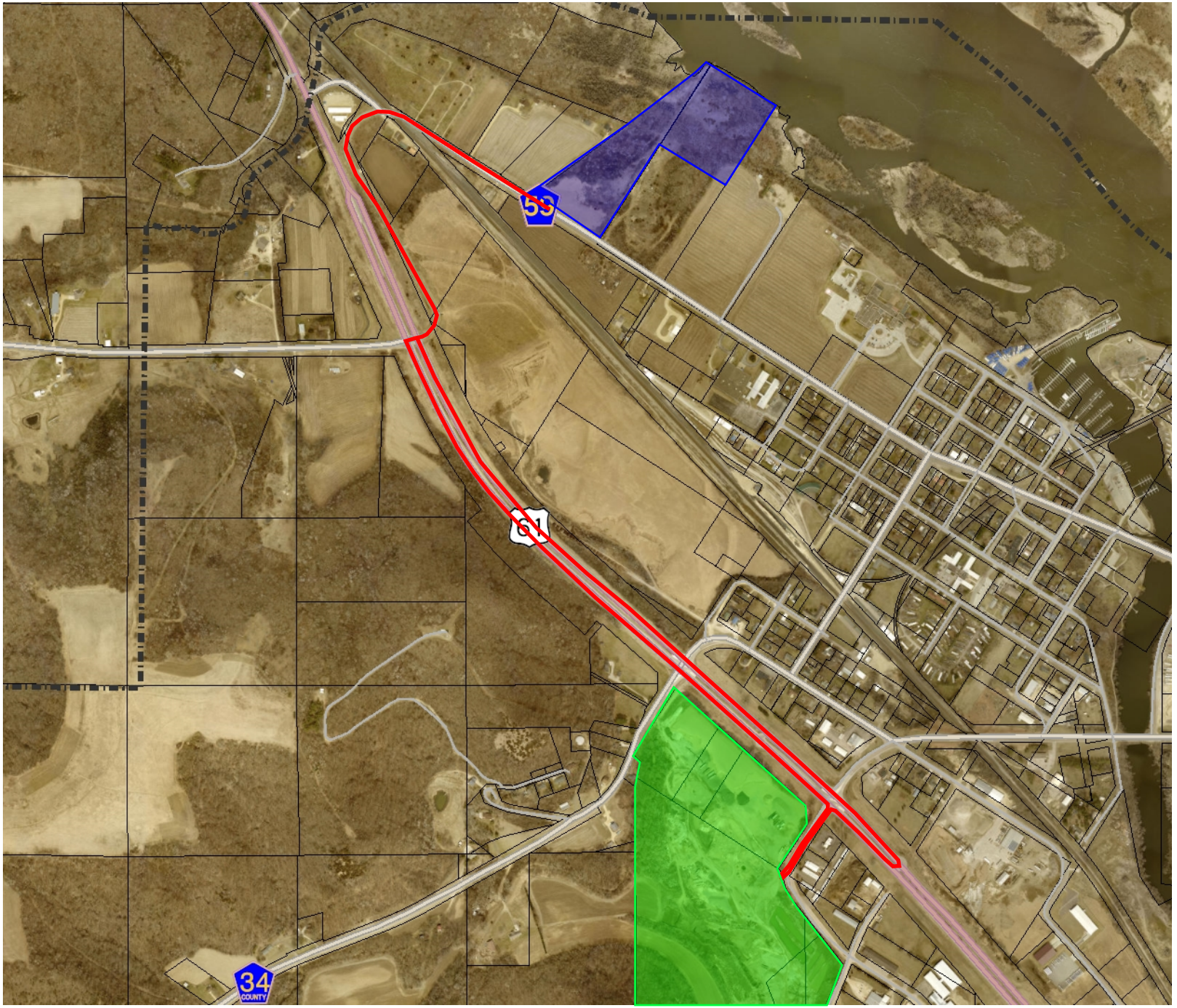
CITY OF WABASHA
Legend
City Limits
Roads
Local Roads
Interstate
US Highway
State Highway
County Roads
Parcels (09/01/22)
Truck Route
61
34
COUNTY
0
1,053 Feet
© Bolton & Menk, Inc - Web GIS 9/28/2022 10:04 AM
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Real People. Real Solutions.
Disclaimer:
This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data located in various city, county, and state offices, and other sources affecting the area shown, and is to be used for reference purposes only. The City of Wabasha is not responsible for any inaccuracies herein contained.

Bolton & Menk, Inc.

Turning Movement Counts

File Name : Hwy 61 & CR 10-5th Grant Blvd, 9-29-22, 6am-7pm
Site Code : 4
Start Date : 9/29/2022
Page No : 1

Hwy 61 & 5th Grant Blvd/CR 10
Wabasha, MN

Groups Printed- Cars + - Trucks

	Highway 61 Southbound						5th Grant Blvd Westbound						Highway 61 Northbound						County Rd 10 Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
06:00 AM	0	14	1	0	0	15	0	1	0	0	0	1	0	33	0	0	0	33	2	0	0	0	0	2	51
06:15 AM	0	17	3	0	0	20	0	0	0	0	0	0	0	26	0	0	0	26	0	2	0	0	0	2	48
06:30 AM	0	15	1	0	0	16	2	0	0	0	0	2	0	31	1	0	0	32	1	0	1	0	0	2	52
06:45 AM	1	25	0	0	0	26	2	0	0	0	0	2	0	30	3	1	0	34	0	0	0	0	0	0	62
Total	1	71	5	0	0	77	4	1	0	0	0	5	0	120	4	1	0	125	3	2	1	0	0	6	213
07:00 AM	1	33	1	0	0	35	1	0	0	0	0	1	0	39	1	0	0	40	7	1	0	0	0	8	84
07:15 AM	0	42	3	0	0	45	1	1	0	0	0	2	0	35	4	0	0	39	4	2	0	0	0	6	92
07:30 AM	0	34	7	0	0	41	3	0	0	0	0	3	2	28	3	0	0	33	9	0	0	0	0	9	86
07:45 AM	0	27	1	0	0	28	2	1	0	0	0	3	1	27	5	0	0	33	5	2	0	0	0	7	71
Total	1	136	12	0	0	149	7	2	0	0	0	9	3	129	13	0	0	145	25	5	0	0	0	30	333
08:00 AM	0	30	0	0	0	30	3	1	0	0	0	4	1	35	2	0	0	38	4	1	0	0	0	5	77
08:15 AM	0	42	1	0	0	43	1	0	1	0	0	2	1	25	2	3	0	31	2	1	1	0	0	4	80
08:30 AM	0	24	1	0	0	25	1	0	2	0	0	3	0	31	1	1	0	33	7	0	0	0	0	7	68
08:45 AM	0	37	1	0	0	38	3	0	0	0	0	3	2	34	2	0	0	38	5	0	0	0	0	5	84
Total	0	133	3	0	0	136	8	1	3	0	0	12	4	125	7	4	0	140	18	2	1	0	0	21	309
09:00 AM	0	41	4	0	0	45	1	0	0	0	0	1	1	38	2	0	0	41	2	0	0	0	0	2	89
09:15 AM	0	21	2	0	0	23	2	0	0	0	0	2	0	40	2	0	0	42	7	0	1	0	0	8	75
09:30 AM	0	41	9	0	0	50	1	0	1	0	0	2	0	38	3	1	0	42	3	1	1	0	0	5	99
09:45 AM	1	31	8	0	0	40	4	1	0	0	0	5	0	31	0	1	0	32	5	1	1	0	0	7	84
Total	1	134	23	0	0	158	8	1	1	0	0	10	1	147	7	2	0	157	17	2	3	0	0	22	347
10:00 AM	0	51	3	0	0	54	3	0	1	0	0	4	1	42	3	1	0	47	2	1	1	0	0	4	109
10:15 AM	0	38	5	0	0	43	6	0	0	0	0	6	1	31	4	1	0	37	3	0	0	0	0	3	89
10:30 AM	1	40	3	0	0	44	1	0	2	0	0	3	0	30	2	0	0	32	4	0	0	0	0	4	83
10:45 AM	0	40	3	0	0	43	4	0	1	0	0	5	0	44	1	0	0	45	1	0	0	0	0	1	94
Total	1	169	14	0	0	184	14	0	4	0	0	18	2	147	10	2	0	161	10	1	1	0	0	12	375
11:00 AM	0	40	3	0	0	43	3	0	0	0	0	3	0	32	5	0	0	37	1	1	0	0	0	2	85
11:15 AM	0	32	7	0	0	39	3	0	1	0	0	4	0	36	1	0	0	37	2	0	0	0	0	2	82
11:30 AM	1	41	3	0	0	45	6	0	0	0	0	6	0	36	2	0	0	38	1	1	0	0	0	2	91
11:45 AM	0	55	0	0	0	55	0	0	2	0	0	2	1	48	1	1	0	51	1	0	0	0	0	1	109
Total	1	168	13	0	0	182	12	0	3	0	0	15	1	152	9	1	0	163	5	2	0	0	0	7	367

Bolton & Menk, Inc.

Turning Movement Counts

File Name : Hwy 61 & CR 10-5th Grant Blvd, 9-29-22, 6am-7pm
Site Code : 4
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Hwy 61 & 5th Grant Blvd/CR 10
Wabasha, MN

Groups Printed- Cars + - Trucks

	Highway 61 Southbound						5th Grant Blvd Westbound						Highway 61 Northbound						County Rd 10 Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
12:00 PM	0	56	2	0	0	58	4	0	0	0	0	4	0	37	3	0	0	40	2	0	0	0	0	2	104
12:15 PM	1	33	4	0	1	39	5	0	2	0	0	7	1	44	4	1	0	50	4	0	0	0	0	4	100
12:30 PM	1	59	6	0	0	66	2	0	0	0	0	2	1	42	5	1	0	49	2	0	0	0	0	2	119
12:45 PM	0	35	1	0	0	36	3	1	1	0	0	5	1	44	6	1	0	52	3	1	0	0	0	4	97
Total	2	183	13	0	1	199	14	1	3	0	0	18	3	167	18	3	0	191	11	1	0	0	0	12	420
01:00 PM	1	38	3	0	1	43	5	1	0	0	0	6	0	56	1	2	0	59	1	2	0	0	0	3	111
01:15 PM	0	48	2	0	0	50	5	1	0	0	0	6	0	36	4	2	0	42	9	0	1	0	0	10	108
01:30 PM	0	63	4	0	0	67	4	0	0	0	0	4	1	37	3	0	0	41	5	2	1	0	0	8	120
01:45 PM	0	40	3	0	0	43	7	2	0	0	0	9	0	58	5	1	0	64	2	1	0	0	0	3	119
Total	1	189	12	0	1	203	21	4	0	0	0	25	1	187	13	5	0	206	17	5	2	0	0	24	458
02:00 PM	1	41	1	0	0	43	4	0	1	0	0	5	2	53	5	0	0	60	1	0	0	0	0	1	109
02:15 PM	1	44	4	0	0	49	7	0	2	0	0	9	0	65	3	1	0	69	2	1	0	0	0	3	130
02:30 PM	0	58	5	0	0	63	4	2	0	0	0	6	0	58	5	1	0	64	3	1	0	0	0	4	137
02:45 PM	2	50	4	0	0	56	7	0	3	0	0	10	0	57	6	0	0	63	3	0	0	0	0	3	132
Total	4	193	14	0	0	211	22	2	6	0	0	30	2	233	19	2	0	256	9	2	0	0	0	11	508
03:00 PM	0	47	5	0	0	52	6	2	0	0	0	8	0	60	8	1	0	69	6	3	0	0	0	9	138
03:15 PM	0	65	7	0	0	72	1	0	1	0	0	2	0	49	4	2	0	55	2	2	0	0	0	4	133
03:30 PM	1	54	6	0	0	61	6	0	0	0	0	6	1	58	4	0	0	63	1	0	0	0	0	1	131
03:45 PM	0	51	3	0	0	54	2	1	1	0	0	4	0	58	5	1	0	64	3	1	1	0	0	5	127
Total	1	217	21	0	0	239	15	3	2	0	0	20	1	225	21	4	0	251	12	6	1	0	0	19	529
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04:15 PM	1	89	3	0	0	93	6	1	2	0	0	9	1	54	4	0	0	59	8	0	1	0	0	9	170
04:30 PM	0	61	1	0	0	62	5	1	0	0	0	6	0	52	8	1	0	61	7	1	0	0	0	8	137
04:45 PM	0	53	1	0	0	54	2	4	0	0	0	6	1	51	4	0	0	56	7	1	0	0	0	8	124
Total	1	247	10	0	0	258	21	8	2	0	0	31	2	225	22	3	0	252	28	2	1	0	0	31	572
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05:15 PM	0	60	4	0	0	64	0	0	2	0	0	2	0	56	7	0	0	63	6	0	0	0	0	6	135
05:30 PM	0	49	3	0	0	52	3	1	0	0	0	4	0	41	4	1	0	46	2	2	0	0	0	4	106
05:45 PM	1	39	3	1	0	44	2	1	0	0	0	3	0	31	3	1	0	35	3	0	0	0	0	3	85
Total	1	203	16	1	0	221	8	6	2	0	0	16	1	183	17	2	0	203	15	4	1	0	0	20	460
06:00 PM	0	44	0	0	0	44	2	0	0	0	0	2	0	31	4	1	0	36	9	0	0	0	0	9	91
06:15 PM	0	42	1	0	0	43	2	0	0	0	0	2	1	35	8	0	0	44	11	0	0	0	0	11	100
06:30 PM	0	48	3	0	0	51	2	0	1	0	0	3	0	24	9	0	0	33	5	2	1	0	0	8	95
06:45 PM	2	30	4	0	1	37	1	0	0	0	0	1	0	19	5	0	0	24	2	1	0	0	0	3	65
Total	2	164	8	0	1	175	7	0	1	0	0	8	1	109	26	1	0	137	27	3	1	0	0	31	351

Bolton & Menk, Inc.

Turning Movement Counts

File Name : Hwy 61 & CR 10-5th Grant Blvd, 9-29-22, 6am-7pm
Site Code : 4
Start Date : 9/29/2022
Page No : 3

Hwy 61 & 5th Grant Blvd/CR 10
Wabasha, MN

Groups Printed- Cars + - Trucks

	Highway 61 Southbound						5th Grant Blvd Westbound						Highway 61 Northbound						County Rd 10 Eastbound						
	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
Grand Total	17	2207	164	1	3	2392	161	29	27	0	0	217	22	2149	186	30	0	2387	197	37	12	0	0	246	5242
Apprch %	0.7	92.3	6.9	0	0.1		74.2	13.4	12.4	0	0		0.9	90	7.8	1.3	0		80.1	15	4.9	0	0		
Total %	0.3	42.1	3.1	0	0.1	45.6	3.1	0.6	0.5	0	0	4.1	0.4	41	3.5	0.6	0	45.5	3.8	0.7	0.2	0	0	4.7	
Cars +	17	1939	154	1	3	2114	149	29	23	0	0	201	22	1894	167	29	0	2112	183	36	12	0	0	231	4658
% Cars +	100	87.9	93.9	100	100	88.4	92.5	100	85.2	0	0	92.6	100	88.1	89.8	96.7	0	88.5	92.9	97.3	100	0	0	93.9	88.9
Trucks	0	268	10	0	0	278	12	0	4	0	0	16	0	255	19	1	0	275	14	1	0	0	0	15	584
% Trucks	0	12.1	6.1	0	0	11.6	7.5	0	14.8	0	0	7.4	0	11.9	10.2	3.3	0	11.5	7.1	2.7	0	0	0	6.1	11.1

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Turning Movement Counts

File Name : Hwy 61 & CR 10-5th Grant Blvd, 9-29-22, 6am-7pm
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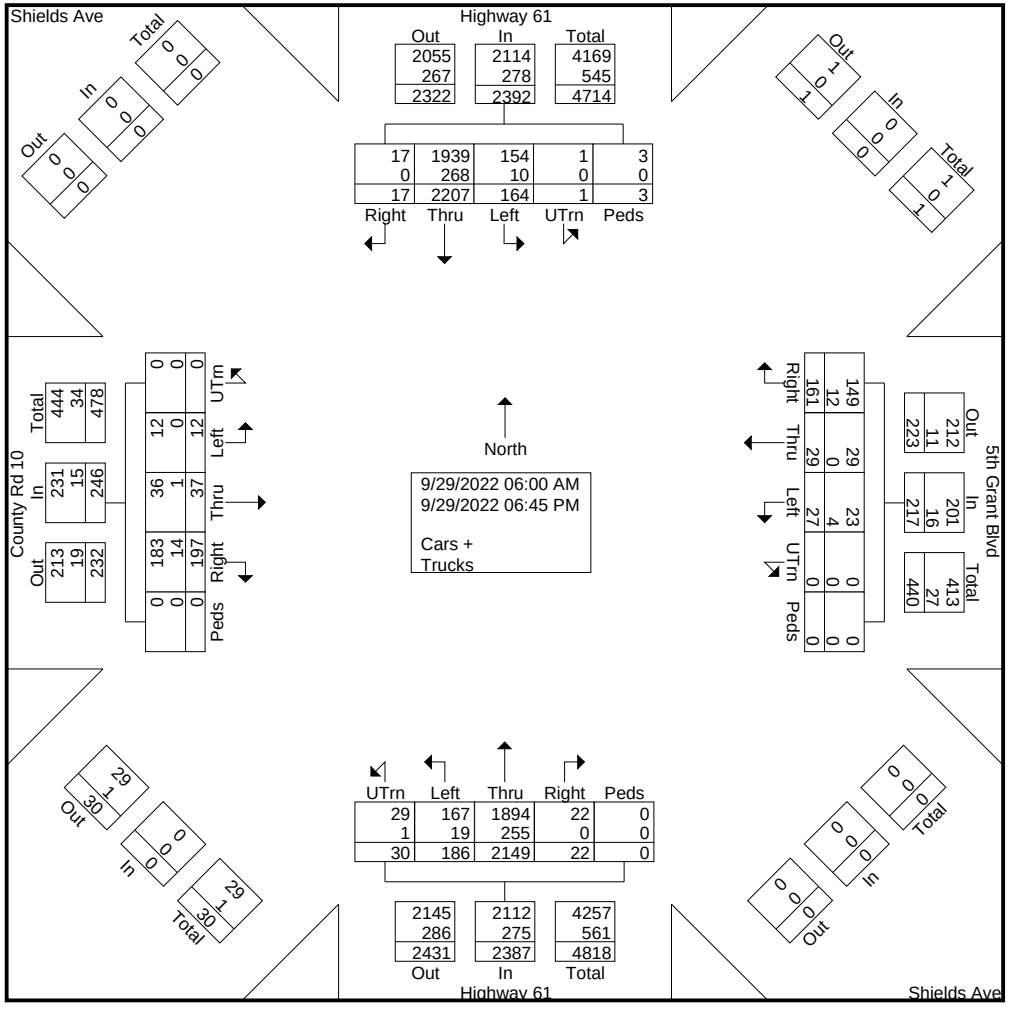
Hwy 61 & 5th Grant Blvd/CR 10
Wabasha, MN



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Turning Movement Counts

File Name : Hwy 61 & CR 10-5th Grant Blvd, 9-29-22, 6am-7pm
Site Code : 4
Start Date : 9/29/2022
Page No : 5

Hwy 61 & 5th Grant Blvd/CR 10
Wabasha, MN

	Highway 61 Southbound						5th Grant Blvd Westbound						Highway 61 Northbound						County Rd 10 Eastbound						
Start Time	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 11:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 09:30 AM																									
09:30 AM	0	41	**9**	0	0	50	1	0	**1**	0	0	2	0	38	3	**1**	0	42	3	**1**	**1**	0	0	5	99
09:45 AM	**1**	31	8	0	0	40	4	**1**	0	0	0	5	0	31	0	1	0	32	**5**	1	1	0	0	**7**	84
10:00 AM	0	**51**	3	0	0	**54**	3	0	1	0	0	4	**1**	**42**	3	1	0	**47**	2	1	1	0	0	4	**109**
10:15 AM	0	38	5	0	0	43	**6**	0	0	0	0	**6**	1	31	**4**	1	0	37	3	0	0	0	0	3	89
Total Volume	1	161	25	0	0	187	14	1	2	0	0	17	2	142	10	4	0	158	13	3	3	0	0	19	381
% App. Total	0.5	86.1	13.4	0	0		82.4	5.9	11.8	0	0		1.3	89.9	6.3	2.5	0		68.4	15.8	15.8	0	0		
PHF	.250	.789	.694	.000	.000	.866	.583	.250	.500	.000	.000	.708	.500	.845	.625	1.00	.000	.840	.650	.750	.750	.000	.000	.679	.874
Peak Hour Analysis From 12:00 PM to 06:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 03:45 PM																									
03:45 PM	0	51	3	0	0	54	2	1	1	0	0	4	0	58	5	1	0	64	3	**1**	**1**	0	0	5	127
04:00 PM	0	44	**5**	0	0	49	**8**	**2**	0	0	0	**10**	0	**68**	6	**2**	0	**76**	6	0	0	0	0	6	141
04:15 PM	**1**	**89**	3	0	0	**93**	6	1	**2**	0	0	9	**1**	54	4	0	0	59	**8**	0	1	0	0	**9**	**170**
04:30 PM	0	61	1	0	0	62	5	1	0	0	0	6	0	52	**8**	1	0	61	7	1	0	0	0	8	137
Total Volume	1	245	12	0	0	258	21	5	3	0	0	29	1	232	23	4	0	260	24	2	2	0	0	28	575
% App. Total	0.4	95	4.7	0	0		72.4	17.2	10.3	0	0		0.4	89.2	8.8	1.5	0		85.7	7.1	7.1	0	0		
PHF	.250	.688	.600	.000	.000	.694	.656	.625	.375	.000	.000	.725	.250	.853	.719	.500	.000	.855	.750	.500	.500	.000	.000	.778	.846

Traffic Data Inc

PO Box 16296
St. Louis Park, MN 55416

File Name : 4 - Hwy 61 & Shields Ave, 12-3-15, 6am-7pm
Site Code : 4
Start Date : 12/3/2015
Page No : 1

Hwy 61 & Shields Ave
Wabasha, MN

Groups Printed- Cars + - Trucks

	Highway 61 Southbound						Shields Ave Westbound						Highway 61 Northbound						Shields Ave Eastbound						
Start Time	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	Int. Total
06:00 AM	0	3	12	0	0	15	0	2	1	4	0	7	0	0	7	7	0	14	0	0	1	0	0	1	37
06:15 AM	0	5	11	0	0	16	0	1	3	14	0	18	0	0	16	5	0	21	0	0	0	1	0	1	56
06:30 AM	0	3	11	0	0	14	0	4	1	14	0	19	0	1	16	6	0	23	0	0	0	0	0	0	56
06:45 AM	0	6	14	4	0	24	0	2	4	8	0	14	0	1	19	13	0	33	0	0	0	0	0	0	71
Total	0	17	48	4	0	69	0	9	9	40	0	58	0	2	58	31	0	91	0	0	1	1	0	2	220
07:00 AM	0	8	19	2	0	29	0	4	6	12	0	22	0	4	19	5	0	28	0	0	2	0	0	2	81
07:15 AM	0	15	32	3	0	50	0	1	11	19	0	31	0	2	12	6	0	20	0	0	7	0	0	7	108
07:30 AM	0	19	21	4	0	44	0	6	7	18	0	31	0	2	24	11	0	37	0	1	2	0	0	3	115
07:45 AM	0	15	25	6	0	46	0	1	19	13	0	33	0	5	16	10	0	31	0	2	9	0	0	11	121
Total	0	57	97	15	0	169	0	12	43	62	0	117	0	13	71	32	0	116	0	3	20	0	0	23	425
08:00 AM	0	12	25	6	0	43	0	8	12	12	0	32	0	1	17	7	0	25	0	0	6	2	0	8	108
08:15 AM	0	12	20	1	0	33	0	6	9	10	0	25	0	2	20	3	0	25	0	1	7	0	0	8	91
08:30 AM	0	9	22	2	0	33	0	7	7	9	0	23	0	3	22	6	1	32	0	2	7	4	0	13	101
08:45 AM	0	8	24	1	0	33	0	3	8	13	0	24	0	2	14	5	0	21	0	2	6	1	0	9	87
Total	0	41	91	10	0	142	0	24	36	44	0	104	0	8	73	21	1	103	0	5	26	7	0	38	387
09:00 AM	0	10	14	2	0	26	0	6	8	7	0	21	0	1	12	1	0	14	0	2	7	2	0	11	72
09:15 AM	0	11	23	2	0	36	0	4	14	8	0	26	0	6	21	4	0	31	0	4	5	1	0	10	103
09:30 AM	0	8	18	5	0	31	0	3	10	11	0	24	0	2	23	4	0	29	0	3	14	3	0	20	104
09:45 AM	0	10	19	1	0	30	0	2	13	14	0	29	0	1	19	4	0	24	0	2	12	3	0	17	100
Total	0	39	74	10	0	123	0	15	45	40	0	100	0	10	75	13	0	98	0	11	38	9	0	58	379
10:00 AM	0	12	21	3	1	37	0	4	5	12	0	21	0	3	17	2	0	22	0	1	9	2	0	12	92
10:15 AM	0	10	21	6	0	37	0	3	12	15	0	30	0	3	26	2	0	31	0	1	7	4	0	12	110
10:30 AM	0	12	23	5	0	40	0	4	8	11	0	23	1	2	21	4	0	28	0	3	13	2	0	18	109
10:45 AM	0	7	18	7	0	32	0	5	3	9	0	17	0	1	34	5	0	40	0	4	8	5	0	17	106
Total	0	41	83	21	1	146	0	16	28	47	0	91	1	9	98	13	0	121	0	9	37	13	0	59	417
11:00 AM	0	12	17	2	0	31	0	3	8	10	0	21	0	2	21	9	0	32	0	3	9	3	0	15	99
11:15 AM	0	7	22	2	0	31	0	10	13	7	0	30	0	3	18	4	0	25	0	2	10	1	0	13	99
11:30 AM	0	8	14	4	0	26	0	3	15	14	0	32	0	2	20	3	0	25	0	5	5	5	0	15	98
11:45 AM	0	8	21	6	0	35	0	3	14	10	0	27	0	6	25	4	0	35	0	4	20	4	0	28	125
Total	0	35	74	14	0	123	0	19	50	41	0	110	0	13	84	20	0	117	0	14	44	13	0	71	421
12:00 PM	0	10	29	1	0	40	0	3	13	10	0	26	0	3	20	3	0	26	0	6	12	7	0	25	117
12:15 PM	0	12	20	7	0	39	0	2	15	11	0	28	0	1	19	6	0	26	0	5	18	2	0	25	118
12:30 PM	0	7	27	4	0	38	0	4	10	12	0	26	0	10	17	7	0	34	0	2	20	6	0	28	126
12:45 PM	0	7	16	4	0	27	0	10	12	12	0	34	0	4	20	4	0	28	0	4	4	3	0	11	100
Total	0	36	92	16	0	144	0	19	50	45	0	114	0	18	76	20	0	114	0	17	54	18	0	89	461
01:00 PM	0	12	30	3	0	45	0	3	9	15	0	27	0	8	25	8	0	41	0	6	12	3	0	21	134
01:15 PM	0	10	20	3	0	33	0	3	14	11	0	28	0	2	23	4	0	29	0	2	12	3	0	17	107
01:30 PM	0	5	30	3	0	38	0	2	10	11	0	23	0	3	27	3	0	33	0	5	10	4	0	19	113
01:45 PM	0	12	25	3	0	40	0	5	11	12	0	28	0	3	29	5	0	37	0	4	10	3	0	17	122
Total	0	39	105	12	0	156	0	13	44	49	0	106	0	16	104	20	0	140	0	17	44	13	0	74	476

Traffic Data Inc

PO Box 16296
St. Louis Park, MN 55416

File Name : 4 - Hwy 61 & Shields Ave, 12-3-15, 6am-7pm
Site Code : 4
Start Date : 12/3/2015
Page No : 2

Hwy 61 & Shields Ave
Wabasha, MN

Groups Printed- Cars + - Trucks

	Highway 61 Southbound						Shields Ave Westbound						Highway 61 Northbound						Shields Ave Eastbound						
Start Time	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	Int. Total
02:00 PM	0	7	22	3	0	32	0	4	5	10	0	19	0	0	21	7	0	28	0	3	8	5	0	16	95
02:15 PM	0	16	16	1	0	33	0	6	9	17	0	32	0	1	21	6	0	28	0	2	12	2	0	16	109
02:30 PM	0	12	25	4	0	41	0	5	9	14	0	28	0	1	40	5	0	46	0	2	5	2	0	9	124
02:45 PM	0	12	27	7	0	46	0	0	10	13	0	23	0	6	29	6	0	41	0	5	3	2	0	10	120
Total	0	47	90	15	0	152	0	15	33	54	0	102	0	8	111	24	0	143	0	12	28	11	0	51	448
03:00 PM	0	17	24	4	0	45	0	10	19	21	0	50	0	5	23	3	0	31	0	6	13	2	0	21	147
03:15 PM	0	37	29	2	0	68	0	6	11	21	0	38	0	1	25	3	0	29	0	2	7	7	0	16	151
03:30 PM	0	23	30	3	1	57	0	12	5	22	0	39	0	3	23	7	0	33	0	6	19	7	0	32	161
03:45 PM	0	19	35	4	0	58	0	5	2	12	0	19	0	4	33	7	0	44	0	3	11	3	0	17	138
Total	0	96	118	13	1	228	0	33	37	76	0	146	0	13	104	20	0	137	0	17	50	19	0	86	597
04:00 PM	0	24	15	1	0	40	0	10	9	18	0	37	0	0	37	4	0	41	0	6	19	4	0	29	147
04:15 PM	0	25	38	1	0	64	0	7	8	15	0	30	0	3	33	5	0	41	0	2	9	3	0	14	149
04:30 PM	0	15	30	5	0	50	0	6	2	19	0	27	0	2	30	1	0	33	0	3	16	3	0	22	132
04:45 PM	0	21	29	1	0	51	0	11	6	17	0	34	0	2	26	3	0	31	0	4	10	3	0	17	133
Total	0	85	112	8	0	205	0	34	25	69	0	128	0	7	126	13	0	146	0	15	54	13	0	82	561
05:00 PM	0	16	21	2	0	39	0	8	3	21	0	32	0	3	23	3	0	29	0	4	14	6	0	24	124
05:15 PM	0	12	28	1	0	41	0	4	3	8	0	15	0	3	20	3	0	26	0	1	7	3	0	11	93
05:30 PM	0	12	18	0	0	30	0	5	2	12	0	19	0	2	26	6	0	34	0	1	3	5	0	9	92
05:45 PM	0	8	16	2	0	26	0	2	2	7	0	11	0	3	23	1	0	27	0	2	8	1	0	11	75
Total	0	48	83	5	0	136	0	19	10	48	0	77	0	11	92	13	0	116	0	8	32	15	0	55	384
06:00 PM	0	6	29	0	0	35	0	5	1	6	0	12	0	1	25	5	0	31	0	1	4	1	0	6	84
06:15 PM	0	13	21	2	0	36	0	1	0	8	0	9	0	0	15	0	0	15	0	0	0	1	0	1	61
06:30 PM	0	13	16	1	0	30	0	1	3	9	0	13	0	2	18	2	0	22	0	2	3	4	0	9	74
06:45 PM	0	8	22	2	0	32	0	2	3	3	0	8	0	0	11	0	0	11	0	0	2	2	0	4	55
Total	0	40	88	5	0	133	0	9	7	26	0	42	0	3	69	7	0	79	0	3	9	8	0	20	274
Grand Total	0	621	1155	148	2	1926	0	237	417	641	0	1295	1	131	1141	247	1	1521	0	131	437	140	0	708	5450
Apprch %	0	32.2	60	7.7	0.1		0	18.3	32.2	49.5	0		0.1	8.6	75	16.2	0.1		0	18.5	61.7	19.8	0		
Total %	0	11.4	21.2	2.7	0	35.3	0	4.3	7.7	11.8	0	23.8	0	2.4	20.9	4.5	0	27.9	0	2.4	8	2.6	0	13	
Cars +	0	574	959	96	2	1631	0	214	331	577	0	1122	0	114	942	224	1	1281	0	84	355	125	0	564	4598
% Cars +	0	92.4	83	64.9	100	84.7	0	90.3	79.4	90	0	86.6	0	87	82.6	90.7	100	84.2	0	64.1	81.2	89.3	0	79.7	84.4
Trucks	0	47	196	52	0	295	0	23	86	64	0	173	1	17	199	23	0	240	0	47	82	15	0	144	852
% Trucks	0	7.6	17	35.1	0	15.3	0	9.7	20.6	10	0	13.4	100	13	17.4	9.3	0	15.8	0	35.9	18.8	10.7	0	20.3	15.6

Traffic Data Inc

PO Box 16296
St. Louis Park, MN 55416

File Name : 4 - Hwy 61 & Shields Ave, 12-3-15, 6am-7pm
Site Code : 4
Start Date : 12/3/2015
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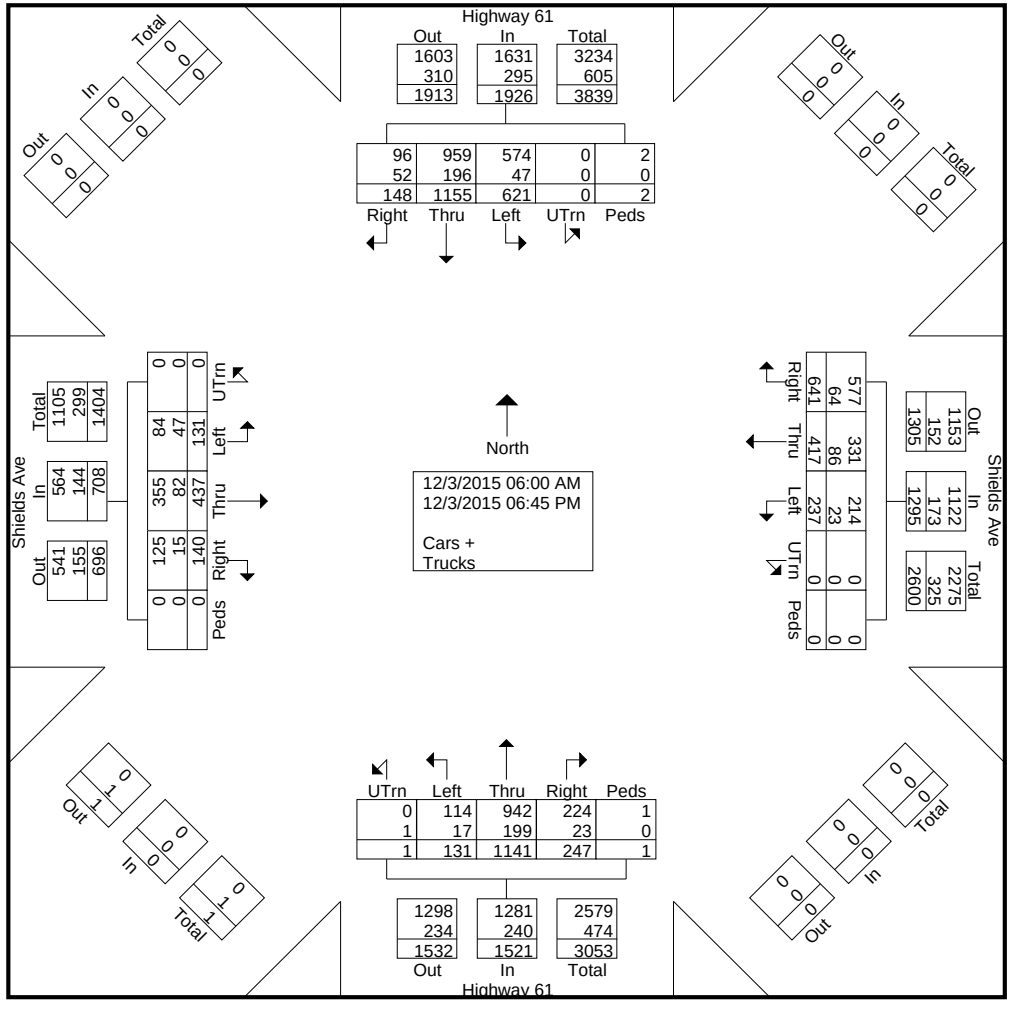
Hwy 61 & Shields Ave
Wabasha, MN



Traffic Data Inc

PO Box 16296
St. Louis Park, MN 55416

File Name : 4 - Hwy 61 & Shields Ave, 12-3-15, 6am-7pm
Site Code : 4
Start Date : 12/3/2015
Page No : 4

Hwy 61 & Shields Ave
Wabasha, MN

	Highway 61 Southbound						Shields Ave Westbound						Highway 61 Northbound						Shields Ave Eastbound						
Start Time	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:00 AM to 09:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	0	15	32	3	0	50	0	1	11	19	0	31	0	2	12	6	0	20	0	0	7	0	0	7	108
07:30 AM	0	19	21	4	0	44	0	6	7	18	0	31	0	2	24	11	0	37	0	1	2	0	0	3	115
07:45 AM	0	15	25	6	0	46	0	1	19	13	0	33	0	5	16	10	0	31	0	2	9	0	0	11	121
08:00 AM	0	12	25	6	0	43	0	8	12	12	0	32	0	1	17	7	0	25	0	0	6	2	0	8	108
Total Volume	0	61	103	19	0	183	0	16	49	62	0	127	0	10	69	34	0	113	0	3	24	2	0	29	452
% App. Total	0	33.3	56.3	10.4	0		0	12.6	38.6	48.8	0		0	8.8	61.1	30.1	0		0	10.3	82.8	6.9	0		
PHF	.000	.803	.805	.792	.000	.915	.000	.500	.645	.816	.000	.962	.000	.500	.719	.773	.000	.764	.000	.375	.667	.250	.000	.659	.934
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 11:45 AM																									
11:45 AM	0	8	21	6	0	35	0	3	14	10	0	27	0	6	25	4	0	35	0	4	20	4	0	28	125
12:00 PM	0	10	29	1	0	40	0	3	13	10	0	26	0	3	20	3	0	26	0	6	12	7	0	25	117
12:15 PM	0	12	20	7	0	39	0	2	15	11	0	28	0	1	19	6	0	26	0	5	18	2	0	25	118
12:30 PM	0	7	27	4	0	38	0	4	10	12	0	26	0	10	17	7	0	34	0	2	20	6	0	28	126
Total Volume	0	37	97	18	0	152	0	12	52	43	0	107	0	20	81	20	0	121	0	17	70	19	0	106	486
% App. Total	0	24.3	63.8	11.8	0		0	11.2	48.6	40.2	0		0	16.5	66.9	16.5	0		0	16	66	17.9	0		
PHF	.000	.771	.836	.643	.000	.950	.000	.750	.867	.896	.000	.955	.000	.500	.810	.714	.000	.864	.000	.708	.875	.679	.000	.946	.964
Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 03:00 PM																									
03:00 PM	0	17	24	4	0	45	0	10	19	21	0	50	0	5	23	3	0	31	0	6	13	2	0	21	147
03:15 PM	0	37	29	2	0	68	0	6	11	21	0	38	0	1	25	3	0	29	0	2	7	7	0	16	151
03:30 PM	0	23	30	3	1	57	0	12	5	22	0	39	0	3	23	7	0	33	0	6	19	7	0	32	161
03:45 PM	0	19	35	4	0	58	0	5	2	12	0	19	0	4	33	7	0	44	0	3	11	3	0	17	138
Total Volume	0	96	118	13	1	228	0	33	37	76	0	146	0	13	104	20	0	137	0	17	50	19	0	86	597
% App. Total	0	42.1	51.8	5.7	0.4		0	22.6	25.3	52.1	0		0	9.5	75.9	14.6	0		0	19.8	58.1	22.1	0		
PHF	.000	.649	.843	.813	.250	.838	.000	.688	.487	.864	.000	.730	.000	.650	.788	.714	.000	.778	.000	.708	.658	.679	.000	.672	.927

Intersection Safety Screening

Intersection: 5th Grant Ave and Barge Site Road

Crash Data, 2019-2021.

Crashes by Crash Severity	
Fatal	0
Incapacitating Injury	0
Non-incapacitating Injury	0
Possible Injury	0
Property Damage	0
Total Crashes	0

Intersection Characteristics	
Entering Volume	400
Traffic Control	Thru / stop
Environment	Suburban
Speed Limit	40 mph

Annual crash cost = $0

Statewide Comparison *Urban Thru / Stop*

Total Crash Rate	
Observed	0.00
Statewide Average	0.19
Critical Rate	3.01
Critical Index	**0.00**

Fatal & Serious Injury Crash Rate	
Observed	0.00
Statewide Average	0.36
Critical Rate	126.07
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference.

The observed total crash rate for this period is 0.00 per MEV; this is 100% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the three years would indicate this intersection operaters outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Intersection Safety Screening

Intersection: Highway 61 and CR 10

Crash Data, 2019-2021.

Crashes by Crash Severity	
Fatal	0
Incapacitating Injury	0
Non-incapacitating Injury	0
Possible Injury	0
Property Damage	0
Total Crashes	0

Intersection Characteristics	
Entering Volume	5,239
Traffic Control	Thru / stop
Environment	Suburban
Speed Limit	55 mph

Annual crash cost = $0

Statewide Comparison *Urban Thru / Stop*

Total Crash Rate	
Observed	0.00
Statewide Average	0.19
Critical Rate	0.74
Critical Index	**0.00**

Fatal & Serious Injury Crash Rate	
Observed	0.00
Statewide Average	0.36
Critical Rate	12.27
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference.

The observed total crash rate for this period is 0.00 per MEV; this is 100% below the critical rate. Based on similar statewide intersections, an additional 5 crashes over the three years would indicate this intersection operaters outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Intersection Safety Screening

Intersection: Highway 61 and Shields Ave

Crash Data, 2019-2021.

Crashes by Crash Severity	
Fatal	0
Incapacitating Injury	0
Non-incapacitating Injury	1
Possible Injury	1
Property Damage	2
Total Crashes	4

Intersection Characteristics	
Entering Volume	8,200
Traffic Control	Thru / stop
Environment	Suburban
Speed Limit	55 mph

Annual crash cost = $89,400

Statewide Comparison *Urban Thru / Stop*

Total Crash Rate	
Observed	0.45
Statewide Average	0.19
Critical Rate	0.61
Critical Index	**0.74**

Fatal & Serious Injury Crash Rate	
Observed	0.00
Statewide Average	0.36
Critical Rate	8.48
Critical Index	**0.00**

The observed crash rate is the number of crashes per million entering vehicles (MEV). The critical rate is a statistical comparison based on similar intersections statewide. An observed crash rate greater than the critical rate indicates that the intersection operates outside the expected, normal range. The critical index reports the magnitude of this difference.

The observed total crash rate for this period is 0.45 per MEV; this is 26% below the critical rate. Based on similar statewide intersections, an additional 2 crashes over the three years would indicate this intersection operaters outside the normal range.

The observed fatal and serious injury crash rate for this period is 0.00 per 100 MEV; this is 100% below the critical rate. The intersection operates within the normal range.

Crash Detail Report - Short Form

TH 61 and Shields Ave

Report Version 1.0
February 2020

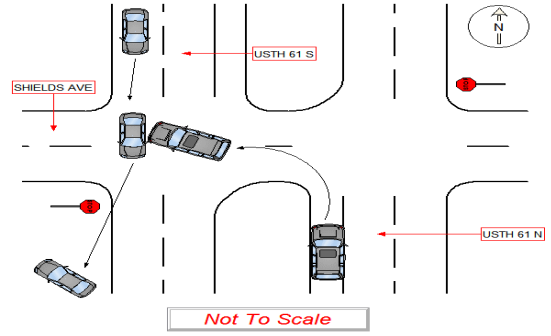
INCIDENT ID	ROUTE SYS	ROUTE NUM	MEASURE	ROUTE NAME	ROUTE ID	COUNTY	CITY
00735404	02-USTH	0061	59.806	USTH 61	0200000000000061-D	79-Wabasha	Wabasha

INTERSECT WITH	# VEH	# KILL	DATE	TIME	DAY	LAT	LONG	UTM X	UTM Y	WORK ZONE TYPE
	2	0	07/21/19	14:34	Sun	44.376392	-92.047027	575919.7	4914119.9	Lane Closure

BASIC TYPE	CRASH SEVERITY	FIRST HARMFUL	LIGHT CONDITION	WEATHER PRIMARY
Left Turn	B - Minor Injury	Motor Vehicle In Transport	Daylight	Clear

	Unit 1	Unit 2	Unit 3	Unit 4
Unit Type	Motor Vehicle in Transport	Motor Vehicle in Transport		
Vehicle Type	Sport Utility Vehicle	Passenger Car		
Direction of Travel	Northbound	Southbound		
Manuever	Turning Left	Moving Forward		
Age/Sex	21 M	28 M		
Physical Cond	Apparently Normal	Apparently Normal		
Contributing Factor 1	Failure to Yield Right-of-Way	No Clear Contributing Action		

OFFICER SKETCH



NARRATIVE

BAUER WAS THE DRIVER OF THE CHEVROLET TRAVELING NORTHBOUND USTH 61 ATTEMPTING TO MAKE A LEFT TURN ONTO SHIELDS AVE. GERSON WAS THE DRIVER OF THE TOYOTA TRAVELING SOUTHBOUND USTH 61. THE AREA IS AN ACTIVE CONSTRUCTION ZONE. BAUER STATED THERE WAS A VEHICLE IN THE SOUTHBOUND LEFT TURN LANE. BAUER DID NOT SEE GERSON TRAVELING SOUTHBOUND AND PERCEIVED SOUTHBOUND LANE TO BE CLEAR OF TRAFFIC AND STARTED TO MAKE A LEFT TURN. GERSON STEERED TO THE RIGHT IN ORDER TO AVOID A COLLISION. BAUER'S CHEVROLET COLLIDED WITH THE DRIVERS SIDE OF GERSON'S TOYOTA. GERSON'S TOYOTA RAN OF THE ROAD TO THE RIGHT SIDE AND ROLLED ONCE, COMING TO REST BACK ON ITS WHEELS. BAUER WAS NOT INJURED IN THE CRASH. WAS BELTED. NO AIRBAG DEPLOYMENT. GERSON SUSTAINED MINOR INJURIES AND WAS TRANSPORTED TO THE WABASHA HOSPITAL VIA GROUND AMBULANCE. ONCE AT THE

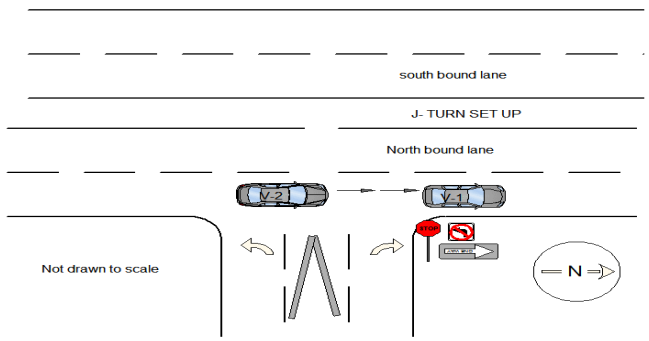
INCIDENT ID	ROUTE SYS	ROUTE NUM	MEASURE	ROUTE NAME	ROUTE ID	COUNTY	CITY
00781833	02-USTH	0061	59.842	USTH 61	0200000000000061-I	79-Wabasha	Wabasha

INTERSECT WITH	# VEH	# KILL	DATE	TIME	DAY	LAT	LONG	UTM X	UTM Y	WORK ZONE TYPE
	2	0	01/20/20	16:16	Mon	44.377618	-92.048319	575815.3	4914255.0	NOT APPLICABLE

BASIC TYPE	CRASH SEVERITY	FIRST HARMFUL	LIGHT CONDITION	WEATHER PRIMARY
Rear End	C - Possible Injury	Motor Vehicle In Transport	Daylight	Clear

	Unit 1	Unit 2	Unit 3	Unit 4
Unit Type	Motor Vehicle in Transport	Motor Vehicle in Transport		
Vehicle Type	Passenger Car	Passenger Car		
Direction of Travel	Westbound	Westbound		
Manuever	Turning Right	Moving Forward		
Age/Sex	25 M	59 F		
Physical Cond	Apparently Normal	Apparently Normal		
Contributing Factor 1	Other Contributing Action	No Clear Contributing Action		

OFFICER SKETCH



NARRATIVE

VEHICLE #1 WAS TRAVELING ON SHIELDS AVE COMING TO THE INTERSECTION OF HWY 61. DRIVER OF VEHICLE #1 STATED THAT THE ACCIDENT WAS HIS FAULT. HE STATED THAT HE BELIEVED THE INTERSECTION WAS A ROUND ABOUT. DRIVER #1 STATED HE THOUGHT THE OTHER VEHICLE WAS SLOWING DOWN SINCE IT WAS A ROUND ABOUT AND THAT HE PULLED OUT ON TO HIGHWAY 61 NORTHBOUND. HE STATED HE THEN REALIZED THAT IT WAS NOT A ROUND ABOUT AND THAT THE CAR BEHIND HIM WAS STILL COMING. HE STATED THAT HE TRIED TO ACCELERATE QUICKLY TO AVOID THE CRASH BUT WAS UNABLE TO DO SO AND WAS STRUCK FROM BEHIND. NO AIRBAGS DEPLOYED AND HE ADVISED THAT HE WAS NOT INJURED. DRIVER #1 PROVIDED INSURANCE INFORMATION AND HIS VEHICLE WAS TOWED BY WABASHA TOWING. VEHICLE #2 WAS TRAVELING NORTH ON HWY 61 COMING TO THE INTERSECTION AT SHIELDS AVE. DRIVER #2 STATED THAT SHE SAW THE VEHICLE PULL

Crash Detail Report - Short Form

TH 61 and Shields Ave

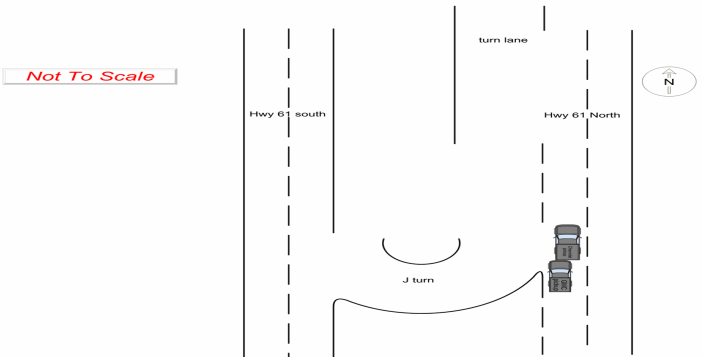
INCIDENT ID	ROUTE SYS	ROUTE NUM	MEASURE	ROUTE NAME	ROUTE ID	COUNTY	CITY
00841541	02-USTH	0061	59.853	USTH 61	0200000000000061-I	79-Wabasha	Wabasha

INTERSECT WITH	# VEH	# KILL	DATE	TIME	DAY	LAT	LONG	UTM X	UTM Y	WORK ZONE TYPE
SHIELDS AVE	2	0	09/18/20	16:27	Fri	44.377721	-92.048472	575802.9	4914266.2	NOT APPLICABLE

BASIC TYPE	CRASH SEVERITY	FIRST HARMFUL	LIGHT CONDITION	WEATHER PRIMARY
Rear End	N - Prop Damage Only	Motor Vehicle In Transport	Daylight	Clear

	Unit 1	Unit 2	Unit 3	Unit 4
Unit Type	Motor Vehicle in Transport	Motor Vehicle in Transport		
Vehicle Type	Pickup	Pickup		
Direction of Travel	Northbound	Northbound		
Manuever	Entering Traffic Lane	Moving Forward		
Age/Sex	20 M	68 M		
Physical Cond	Apparently Normal	Apparently Normal		
Contributing Factor 1	Failure to Yield Right-of-Way	Failure to Yield Right-of-Way		

OFFICER SKETCH



NARRATIVE

ON SEPTEMBER 18, 2020 AT 16:27 HOURS I, SERGEANT WAGONER RESPONDED TO A TRAFFIC CRASH WITH NO INJURIES AT THE J TURN LOCATED ON NORTHBOUND HIGHWAY 61 AND SHIELDS AVENUE. I ARRIVED ON SCENE AND SAW TWO VEHICLES, A WHITE CHEVY SILVERADO BEARING MINNESOTA PLATE NUMBER EVS554 AND A RED GMC SONOMA BEARING MINNESOTA PLATE NUMBER BUZ657. THE CHEVY HAD MINOR DAMAGE TO THE REAR CENTER OF IT AND THE GMC HAD MODERATE DAMAGE TO THE FRONT RIGHT. I SPOKE WITH GENE RICHARD MARX (11/06/1951), THE DRIVER OF THE GMC. MR. MARX STATED THAT HE WAS TRAVELING NORTHBOUND ON HIGHWAY 61 IN THE LEFT LANE BECAUSE HE WAS PREPARING TO TURN. MR. MARX STATED THAT THE CHEVY USED THE J TURN TO TURN FROM THE SOUTHBOUND LANE TO THE NORTHBOUND, PULLED IN FRONT OF HIM, AND HE WAS UNABLE TO STOP IN TIME. MR. MARX STATED THAT THE FRONT OF HIS VEHICLE MADE CONTACT WITH THE REAR

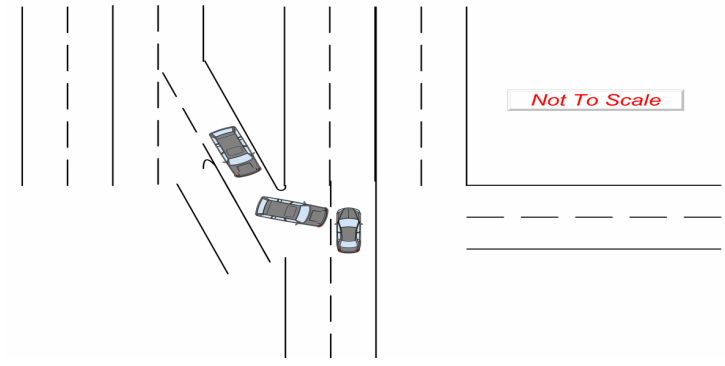
INCIDENT ID	ROUTE SYS	ROUTE NUM	MEASURE	ROUTE NAME	ROUTE ID	COUNTY	CITY
00809789	04-CSAH	0030	5.567	SHIELDS AVE	0400006595230030-I	79-Wabasha	Wabasha

INTERSECT WITH	# VEH	# KILL	DATE	TIME	DAY	LAT	LONG	UTM X	UTM Y	WORK ZONE TYPE
	2	0	05/10/20	15:35	Sun	44.377701	-92.048431	575806.2	4914264.1	NOT APPLICABLE

BASIC TYPE	CRASH SEVERITY	FIRST HARMFUL	LIGHT CONDITION	WEATHER PRIMARY
Angle	N - Prop Damage Only	Motor Vehicle In Transport	Daylight	Cloudy

	Unit 1	Unit 2	Unit 3	Unit 4
Unit Type	Motor Vehicle in Transport	Motor Vehicle in Transport		
Vehicle Type	Sport Utility Vehicle	Passenger Car		
Direction of Travel	Eastbound	Northbound		
Manuever	Turning Left	Moving Forward		
Age/Sex	21 F	21 F		
Physical Cond	Apparently Normal	Apparently Normal		
Contributing Factor 1	Failure to Yield Right-of-Way	No Clear Contributing Action		

OFFICER SKETCH



NARRATIVE

UNIT 1 WAS SOUTHBOUND AND TURNED INTO THE MEDIAN LANE TO EXIT HWY 61 AND ENTER THE CITY OF WABASHA ON SHIELDS AVE. UNIT 1 STOPPED AT THE YIELD SIGN AND PULLED OUT INTO THE NORTHBOUND LANE OF HWY 61 STRIKING UNIT 2 IN THE SIDE. UNIT 1 STATED SHE LOOKED AND DID NOT SEE ANY NORTHBOUND TRAFFIC. BOTH VEHICLES DISABLED. BOTH WERE TOWED BY WABASHA TOWING. UNIT 1 HAD NO INSURANCE AND FAILED TO YIELD THE RIGHT OF WAY. A CITATION WAS MAILED.

Crash Detail Report - Short Form

TH 61 and Shields Ave

Report Version 1.0
February 2020

Selection Filter:

WORK AREA: County('659523') - FILTER: Year('2019','2020','2021') - SPATIAL FILTER APPLIED

Analyst:

Kelsey Retherford

Notes:

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	19	17	10	142	2	25	161	1	377
Control Delay / Veh (s/v)	10	10	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.60	0.00	0.00	1.52	0.00	0.00	0.24
Stops (#)	19	17	16	0	0	38	0	0	90
Average Speed (mph)	24	31	43	55	55	42	55	55	49
Total Travel Time (hr)	0	0	0	1	0	0	1	0	3
Distance Traveled (mi)	3	12	4	60	1	10	64	0	155
Fuel Consumed (gal)	0	1	0	2	0	1	2	0	7
Fuel Economy (mpg)	NA	NA	NA	29.9	NA	9.2	29.9	NA	23.1
CO Emissions (kg)	0.02	0.04	0.03	0.14	0.00	0.08	0.15	0.00	0.47
NOx Emissions (kg)	0.00	0.01	0.01	0.03	0.00	0.01	0.03	0.00	0.09
VOC Emissions (kg)	0.01	0.01	0.01	0.03	0.00	0.02	0.03	0.00	0.11
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	31	140	11	84	63	67	109	75	580
Control Delay / Veh (s/v)	9	10	8	0	0	8	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	9	10	8	0	0	8	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.55	0.00	0.00	1.58	0.00	0.00	0.51
Stops (#)	31	140	17	0	0	106	0	0	294
Average Speed (mph)	18	28	32	55	55	31	55	55	37
Total Travel Time (hr)	0	1	0	0	0	0	0	0	3
Distance Traveled (mi)	4	33	2	14	11	10	17	12	103
Fuel Consumed (gal)	0	3	0	0	0	2	1	0	8
Fuel Economy (mpg)	NA	11.7	NA	NA	NA	4.3	NA	NA	13.1
CO Emissions (kg)	0.03	0.20	0.03	0.03	0.03	0.17	0.04	0.03	0.55
NOx Emissions (kg)	0.01	0.04	0.01	0.01	0.00	0.03	0.01	0.01	0.11
VOC Emissions (kg)	0.01	0.05	0.01	0.01	0.01	0.04	0.01	0.01	0.13
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

10:

Lane Group	EBT	WBT	All
Future Volume (vph)	30	17	47
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	33	40	34
Total Travel Time (hr)	1	0	1
Distance Traveled (mi)	21	5	26
Fuel Consumed (gal)	1	0	1
Fuel Economy (mpg)	NA	NA	25.9
CO Emissions (kg)	0.06	0.01	0.07
NOx Emissions (kg)	0.01	0.00	0.01
VOC Emissions (kg)	0.01	0.00	0.02
Unserved Vehicles (#)	0	0	0
Vehs dilemma zone (#)	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	72	152	10	179	413
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	0	0	0	1
Distance Traveled (mi)	11	24	1	24	61
Fuel Consumed (gal)	0	1	0	1	2
Fuel Economy (mpg)	NA	NA	NA	NA	29.9
CO Emissions (kg)	0.03	0.06	0.00	0.06	0.14
NOx Emissions (kg)	0.01	0.01	0.00	0.01	0.03
VOC Emissions (kg)	0.01	0.01	0.00	0.01	0.03
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	129	29	111	269
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	36	5	19	59
Fuel Consumed (gal)	1	0	1	2
Fuel Economy (mpg)	29.9	NA	NA	29.9
CO Emissions (kg)	0.08	0.01	0.04	0.14
NOx Emissions (kg)	0.02	0.00	0.01	0.03
VOC Emissions (kg)	0.02	0.00	0.01	0.03
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	13	2	1	14	10	142	2	25	161	1
Future Vol, veh/h	3	3	13	2	1	14	10	142	2	25	161	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	65	50	25	58	62	84	50	69	79	25
Heavy Vehicles, %	0	3	7	15	0	7	10	12	0	6	12	0
Mvmt Flow	4	4	20	4	4	24	16	169	4	36	204	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	395	481	102	377	481	85	208	0	0	173	0	0
Stage 1	276	276	-	201	201	-	-	-	-	-	-	-
Stage 2	119	205	-	176	280	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	7.8	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	3.65	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	544	481	918	524	487	941	1304	-	-	1372	-	-
Stage 1	712	678	-	746	739	-	-	-	-	-	-	-
Stage 2	879	728	-	772	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	511	463	918	494	468	941	1304	-	-	1372	-	-
Mov Cap-2 Maneuver	511	463	-	494	468	-	-	-	-	-	-	-
Stage 1	703	660	-	737	730	-	-	-	-	-	-	-
Stage 2	841	719	-	731	665	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.9	0.7	1.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1304	-	-	732	760	1372	-	-
HCM Lane V/C Ratio	0.012	-	-	0.038	0.042	0.026	-	-
HCM Control Delay (s)	7.8	-	-	10.1	9.9	7.7	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	31	0	0	140	11	84	63	67	109	75
Future Vol, veh/h	0	0	31	0	0	140	11	84	63	67	109	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	67	25	50	65	82	50	72	77	80	81	79
Heavy Vehicles, %	36	19	11	10	21	10	13	17	9	7	17	35
Mvmt Flow	0	0	124	0	0	171	22	117	82	84	135	95

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	68	-	-	59	230	0	0	199	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.41	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	953	0	0	969	1259	-	-	1335	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	953	-	-	969	1259	-	-	1335	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.5	0.8	2.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1259	-	-	953	969	1335	-	-
HCM Lane V/C Ratio	0.017	-	-	0.13	0.176	0.063	-	-
HCM Control Delay (s)	7.9	-	-	9.3	9.5	7.9	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	30	17	0	0	0
Future Vol, veh/h	0	30	17	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	71	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	24	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	24	0	-	0	64	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	40	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1591	-	-	-	942	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	982	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1591	-	-	-	942	1052
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1591	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	72	0	152	0	10	0	179	0	0	0	0	0	0	0
Future Vol, veh/h	72	0	152	0	10	0	179	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	78	0	165	0	11	0	195	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	195	-	0	-	165	-	-	0	-	-	98	-	-	83
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	1078	0	-	0	1126	0	-	0	0	0	939	0	0	960
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	1078	-	-	-	1126	-	-	-	-	-	939	-	-	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.8	0.4	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1078	-	1126	-	-
HCM Lane V/C Ratio	-	0.073	-	0.01	-	-
HCM Control Delay (s)	0	8.6	-	8.2	-	0
HCM Lane LOS	A	A	-	A	-	A
HCM 95th %tile Q(veh)	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	129	0	29	0	111	0	0
Future Vol, veh/h	129	0	29	0	111	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	140	0	32	0	121	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	140	-	-	-	70
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1167	0	-	0	978
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1167	-	-	-	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	1.7	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1167	-	-
HCM Lane V/C Ratio	-	0.027	-	-
HCM Control Delay (s)	-	8.2	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.1	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	19	27	10	142	12	25	161	1	397
Control Delay / Veh (s/v)	10	11	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	11	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.60	0.00	0.00	1.56	0.00	0.00	0.25
Stops (#)	19	27	16	0	0	39	0	0	101
Average Speed (mph)	24	31	43	55	55	42	55	55	48
Total Travel Time (hr)	0	1	0	1	0	0	1	0	3
Distance Traveled (mi)	3	19	4	60	5	10	64	0	166
Fuel Consumed (gal)	0	1	0	2	0	1	2	0	7
Fuel Economy (mpg)	NA	19.3	NA	29.9	NA	9.1	29.9	NA	23.0
CO Emissions (kg)	0.02	0.07	0.03	0.14	0.01	0.08	0.15	0.00	0.50
NOx Emissions (kg)	0.00	0.01	0.01	0.03	0.00	0.01	0.03	0.00	0.10
VOC Emissions (kg)	0.01	0.02	0.01	0.03	0.00	0.02	0.03	0.00	0.12
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	41	140	11	94	63	67	109	85	610
Control Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.55	0.00	0.00	1.58	0.00	0.00	0.50
Stops (#)	41	140	17	0	0	106	0	0	304
Average Speed (mph)	18	28	32	55	55	31	55	55	37
Total Travel Time (hr)	0	1	0	0	0	0	0	0	3
Distance Traveled (mi)	5	33	2	16	11	10	17	13	107
Fuel Consumed (gal)	1	3	0	1	0	2	1	0	8
Fuel Economy (mpg)	NA	11.7	NA	NA	NA	4.3	NA	NA	13.3
CO Emissions (kg)	0.04	0.20	0.03	0.04	0.03	0.17	0.04	0.03	0.56
NOx Emissions (kg)	0.01	0.04	0.01	0.01	0.00	0.03	0.01	0.01	0.11
VOC Emissions (kg)	0.01	0.05	0.01	0.01	0.01	0.04	0.01	0.01	0.13
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

10:

Lane Group	EBT	WBT	SBL	All
Future Volume (vph)	40	17	10	67
Control Delay / Veh (s/v)	1	0	8	2
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	1	0	8	2
Total Delay (hr)	0	0	0	0
Stops / Veh	0.30	0.00	1.00	0.33
Stops (#)	12	0	10	22
Average Speed (mph)	33	40	14	33
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	29	5	1	34
Fuel Consumed (gal)	1	0	0	1
Fuel Economy (mpg)	23.5	NA	NA	22.9
CO Emissions (kg)	0.08	0.01	0.01	0.10
NOx Emissions (kg)	0.02	0.00	0.00	0.02
VOC Emissions (kg)	0.02	0.00	0.00	0.02
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	72	162	10	189	433
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	0	0	0	1
Distance Traveled (mi)	11	25	1	26	63
Fuel Consumed (gal)	0	1	0	1	2
Fuel Economy (mpg)	NA	NA	NA	NA	29.9
CO Emissions (kg)	0.03	0.06	0.00	0.06	0.15
NOx Emissions (kg)	0.01	0.01	0.00	0.01	0.03
VOC Emissions (kg)	0.01	0.01	0.00	0.01	0.03
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	129	39	111	279
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	36	7	19	61
Fuel Consumed (gal)	1	0	1	2
Fuel Economy (mpg)	29.9	NA	NA	29.9
CO Emissions (kg)	0.08	0.02	0.04	0.14
NOx Emissions (kg)	0.02	0.00	0.01	0.03
VOC Emissions (kg)	0.02	0.00	0.01	0.03
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	13	12	1	14	10	142	12	25	161	1
Future Vol, veh/h	3	3	13	12	1	14	10	142	12	25	161	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	65	50	25	58	62	84	50	69	79	25
Heavy Vehicles, %	0	3	7	15	0	7	10	12	83	6	12	0
Mvmt Flow	4	4	20	24	4	24	16	169	24	36	204	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	395	501	102	377	481	85	208	0	0	193	0	0
Stage 1	276	276	-	201	201	-	-	-	-	-	-	-
Stage 2	119	225	-	176	280	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	7.8	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	3.65	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	544	468	918	524	487	941	1304	-	-	1349	-	-
Stage 1	712	678	-	746	739	-	-	-	-	-	-	-
Stage 2	879	714	-	772	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	511	450	918	494	468	941	1304	-	-	1349	-	-
Mov Cap-2 Maneuver	511	450	-	494	468	-	-	-	-	-	-	-
Stage 1	703	660	-	737	730	-	-	-	-	-	-	-
Stage 2	841	705	-	731	665	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	11.2	0.6	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1304	-	-	727	630	1349	-	-
HCM Lane V/C Ratio	0.012	-	-	0.039	0.083	0.027	-	-
HCM Control Delay (s)	7.8	-	-	10.2	11.2	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	41	0	0	140	11	94	63	67	109	85
Future Vol, veh/h	0	0	41	0	0	140	11	94	63	67	109	85
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	67	25	50	65	82	50	72	77	80	81	79
Heavy Vehicles, %	36	19	33	10	21	10	13	26	9	7	17	35
Mvmt Flow	0	0	164	0	0	171	22	131	82	84	135	108

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	68	-	-	66	243	0	0	213	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.56	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.63	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	890	0	0	959	1244	-	-	1319	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	890	-	-	959	1244	-	-	1319	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	9.6	0.7	2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1244	-	-	890	959	1319	-	-
HCM Lane V/C Ratio	0.018	-	-	0.184	0.178	0.063	-	-
HCM Control Delay (s)	7.9	-	-	10	9.6	7.9	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.6	0.2	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	30	17	0	0	10
Future Vol, veh/h	10	30	17	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	71	92	92	92
Heavy Vehicles, %	95	2	2	2	2	2
Mvmt Flow	11	40	24	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	24	0	-	0	86	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	62	-
Critical Hdwy	5.05	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3.055	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1151	-	-	-	915	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	961	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1151	-	-	-	906	1052
Mov Cap-2 Maneuver	-	-	-	-	906	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	961	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1151	-	-	-	1052
HCM Lane V/C Ratio	0.009	-	-	-	0.01
HCM Control Delay (s)	8.2	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.6

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	72	0	162	0	10	0	189	0	0	0	0	0	0	0
Future Vol, veh/h	72	0	162	0	10	0	189	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	78	0	176	0	11	0	205	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	205	-	0	-	176	-	-	0	-	-	103	-	-	88
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	1063	0	-	0	1108	0	-	0	0	0	932	0	0	953
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	1063	-	-	-	1108	-	-	-	-	-	932	-	-	953
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.7	0.4	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1063	-	1108	-	-
HCM Lane V/C Ratio	-	0.074	-	0.01	-	-
HCM Control Delay (s)	0	8.7	-	8.3	-	0
HCM Lane LOS	A	A	-	A	-	A
HCM 95th %tile Q(veh)	-	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	129	0	39	0	111	0	0
Future Vol, veh/h	129	0	39	0	111	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	140	0	42	0	121	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	140	-	-	-	70
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1167	0	-	0	978
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1167	-	-	-	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	2.1	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1167	-	-
HCM Lane V/C Ratio	-	0.036	-	-
HCM Control Delay (s)	-	8.2	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.1	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	28	29	23	232	1	12	245	1	571
Control Delay / Veh (s/v)	11	12	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	11	12	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.65	0.00	0.00	1.58	0.00	0.00	0.20
Stops (#)	28	29	38	0	0	19	0	0	114
Average Speed (mph)	23	30	42	55	55	42	55	55	49
Total Travel Time (hr)	0	1	0	2	0	0	2	0	5
Distance Traveled (mi)	5	21	10	98	0	5	97	0	236
Fuel Consumed (gal)	1	1	1	3	0	1	3	0	10
Fuel Economy (mpg)	NA	19.2	9.1	29.9	NA	NA	29.9	NA	24.2
CO Emissions (kg)	0.04	0.08	0.07	0.23	0.00	0.04	0.23	0.00	0.68
NOx Emissions (kg)	0.01	0.01	0.01	0.04	0.00	0.01	0.04	0.00	0.13
VOC Emissions (kg)	0.01	0.02	0.02	0.05	0.00	0.01	0.05	0.00	0.16
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	95	161	14	168	77	106	189	55	865
Control Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.64	0.00	0.00	1.70	0.00	0.00	0.53
Stops (#)	95	161	23	0	0	180	0	0	459
Average Speed (mph)	18	30	32	55	55	30	55	55	36
Total Travel Time (hr)	1	2	0	1	0	1	1	0	5
Distance Traveled (mi)	12	55	2	29	13	17	29	9	166
Fuel Consumed (gal)	1	4	1	1	0	4	1	0	12
Fuel Economy (mpg)	9.9	14.2	NA	NA	NA	4.1	NA	NA	13.4
CO Emissions (kg)	0.08	0.27	0.04	0.07	0.03	0.29	0.07	0.02	0.86
NOx Emissions (kg)	0.02	0.05	0.01	0.01	0.01	0.06	0.01	0.00	0.17
VOC Emissions (kg)	0.02	0.06	0.01	0.02	0.01	0.07	0.02	0.00	0.20
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	77	252	7	273	609
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	2
Distance Traveled (mi)	12	39	1	37	89
Fuel Consumed (gal)	0	1	0	1	3
Fuel Economy (mpg)	NA	29.9	NA	29.9	29.9
CO Emissions (kg)	0.03	0.09	0.00	0.09	0.21
NOx Emissions (kg)	0.01	0.02	0.00	0.02	0.04
VOC Emissions (kg)	0.01	0.02	0.00	0.02	0.05
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	185	74	210	469
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	1	2
Distance Traveled (mi)	51	13	36	99
Fuel Consumed (gal)	2	0	1	3
Fuel Economy (mpg)	29.9	NA	29.9	29.9
CO Emissions (kg)	0.12	0.03	0.08	0.23
NOx Emissions (kg)	0.02	0.01	0.02	0.05
VOC Emissions (kg)	0.03	0.01	0.02	0.05
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

28:

Lane Group	EBT	WBT	All
Future Volume (vph)	15	29	44
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	33	40	36
Total Travel Time (hr)	0	0	1
Distance Traveled (mi)	11	9	19
Fuel Consumed (gal)	0	0	1
Fuel Economy (mpg)	NA	NA	NA
CO Emissions (kg)	0.03	0.02	0.05
NOx Emissions (kg)	0.01	0.00	0.01
VOC Emissions (kg)	0.01	0.00	0.01
Unserved Vehicles (#)	0	0	0
Vehs dilemma zone (#)	0	0	0

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	24	3	5	21	23	232	1	12	245	1
Future Vol, veh/h	2	2	24	3	5	21	23	232	1	12	245	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	75	38	62	66	72	85	25	60	69	25
Heavy Vehicles, %	0	3	7	15	0	7	10	12	0	6	12	0
Mvmt Flow	4	4	32	8	8	32	32	273	4	20	355	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	600	736	178	557	736	137	359	0	0	277	0	0
Stage 1	395	395	-	337	337	-	-	-	-	-	-	-
Stage 2	205	341	-	220	399	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	7.8	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	3.65	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	389	343	819	386	349	871	1141	-	-	1254	-	-
Stage 1	607	601	-	616	645	-	-	-	-	-	-	-
Stage 2	784	635	-	726	606	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	328	819	355	334	871	1141	-	-	1254	-	-
Mov Cap-2 Maneuver	356	328	-	355	334	-	-	-	-	-	-	-
Stage 1	590	591	-	599	627	-	-	-	-	-	-	-
Stage 2	725	617	-	682	596	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	11.8	0.9	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1141	-	-	640	576	1254	-	-
HCM Lane V/C Ratio	0.028	-	-	0.063	0.083	0.016	-	-
HCM Control Delay (s)	8.2	-	-	11	11.8	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.3	0	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	95	0	0	161	14	168	77	106	189	55
Future Vol, veh/h	0	0	95	0	0	161	14	168	77	106	189	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	66	68	69	49	86	65	79	71	65	84	81
Heavy Vehicles, %	36	19	11	10	21	10	13	17	9	7	17	35
Mvmt Flow	0	0	140	0	0	187	22	213	108	163	225	68

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	113	-	-	107	293	0	0	321	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.41	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	890	0	0	901	1189	-	-	1200	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	890	-	-	901	1189	-	-	1200	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	10	0.5	3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1189	-	-	890	901	1200	-	-
HCM Lane V/C Ratio	0.018	-	-	0.157	0.208	0.136	-	-
HCM Control Delay (s)	8.1	-	-	9.8	10	8.5	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.8	0.5	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	77	0	252	0	7	0	273	0	0	0	0	0	0	0
Future Vol, veh/h	77	0	252	0	7	0	273	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	0	274	0	8	0	297	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	297	-	0	-	274	-	-	0	-	-	149	-	-	137
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	930	0	-	0	962	0	-	0	0	0	871	0	0	886
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	930	-	-	-	962	-	-	-	-	-	871	-	-	886
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.2	0.2	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBTSWLn1
Capacity (veh/h)	-	930	-	962	- -
HCM Lane V/C Ratio	-	0.09	-	0.008	- -
HCM Control Delay (s)	0	9.3	-	8.8	- 0
HCM Lane LOS	A	A	-	A	- A
HCM 95th %tile Q(veh)	-	0.3	-	0	- -

Intersection	
Int Delay, s/veh	1.4

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	185	0	74	0	210	0	0
Future Vol, veh/h	185	0	74	0	210	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	201	0	80	0	228	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	201	-	-	-	101
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1069	0	-	0	935
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1069	-	-	-	935
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	2.3	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1069	-	-
HCM Lane V/C Ratio	-	0.075	-	-
HCM Control Delay (s)	-	8.6	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	29	0	0	0
Future Vol, veh/h	0	15	29	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	72	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	20	40	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	40	0	-	0	60	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1570	-	-	-	947	1031
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1570	-	-	-	947	1031
Mov Cap-2 Maneuver	-	-	-	-	947	-
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	1003	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1570	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	28	39	23	232	11	12	245	1	591
Control Delay / Veh (s/v)	11	17	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	11	17	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.65	0.00	0.00	1.58	0.00	0.00	0.21
Stops (#)	28	39	38	0	0	19	0	0	124
Average Speed (mph)	23	28	42	55	55	42	55	55	48
Total Travel Time (hr)	0	1	0	2	0	0	2	0	5
Distance Traveled (mi)	5	28	10	98	5	5	97	0	247
Fuel Consumed (gal)	1	1	1	3	0	1	3	0	10
Fuel Economy (mpg)	NA	18.7	9.1	29.9	NA	NA	29.9	NA	24.0
CO Emissions (kg)	0.04	0.10	0.07	0.23	0.01	0.04	0.23	0.00	0.72
NOx Emissions (kg)	0.01	0.02	0.01	0.04	0.00	0.01	0.04	0.00	0.14
VOC Emissions (kg)	0.01	0.02	0.02	0.05	0.00	0.01	0.05	0.00	0.17
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	105	161	14	178	77	106	189	65	895
Control Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.64	0.00	0.00	1.70	0.00	0.00	0.52
Stops (#)	105	161	23	0	0	180	0	0	469
Average Speed (mph)	18	30	32	55	55	30	55	55	36
Total Travel Time (hr)	1	2	0	1	0	1	1	0	5
Distance Traveled (mi)	13	55	2	30	13	17	29	10	170
Fuel Consumed (gal)	1	4	1	1	0	4	1	0	13
Fuel Economy (mpg)	9.8	14.2	NA	29.9	NA	4.1	NA	NA	13.5
CO Emissions (kg)	0.09	0.27	0.04	0.07	0.03	0.29	0.07	0.02	0.88
NOx Emissions (kg)	0.02	0.05	0.01	0.01	0.01	0.06	0.01	0.00	0.17
VOC Emissions (kg)	0.02	0.06	0.01	0.02	0.01	0.07	0.02	0.01	0.20
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	77	262	7	283	629
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	2
Distance Traveled (mi)	12	41	1	38	92
Fuel Consumed (gal)	0	1	0	1	3
Fuel Economy (mpg)	NA	29.9	NA	29.9	29.9
CO Emissions (kg)	0.03	0.10	0.00	0.09	0.22
NOx Emissions (kg)	0.01	0.02	0.00	0.02	0.04
VOC Emissions (kg)	0.01	0.02	0.00	0.02	0.05
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	185	84	210	479
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	1	2
Distance Traveled (mi)	51	14	36	101
Fuel Consumed (gal)	2	0	1	3
Fuel Economy (mpg)	29.9	NA	29.9	29.9
CO Emissions (kg)	0.12	0.03	0.08	0.24
NOx Emissions (kg)	0.02	0.01	0.02	0.05
VOC Emissions (kg)	0.03	0.01	0.02	0.05
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

28:

Lane Group	EBT	WBT	SBL	All
Future Volume (vph)	25	29	10	64
Control Delay / Veh (s/v)	2	0	9	2
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	2	0	9	2
Total Delay (hr)	0	0	0	0
Stops / Veh	0.40	0.00	1.00	0.31
Stops (#)	10	0	10	20
Average Speed (mph)	32	40	13	33
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	18	9	1	27
Fuel Consumed (gal)	1	0	0	1
Fuel Economy (mpg)	NA	NA	NA	22.8
CO Emissions (kg)	0.05	0.02	0.01	0.08
NOx Emissions (kg)	0.01	0.00	0.00	0.02
VOC Emissions (kg)	0.01	0.00	0.00	0.02
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	2	24	13	5	21	23	232	11	12	245	1
Future Vol, veh/h	2	2	24	13	5	21	23	232	11	12	245	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	75	38	62	66	72	85	25	60	69	25
Heavy Vehicles, %	0	3	7	85	0	7	10	12	89	6	12	0
Mvmt Flow	4	4	32	34	8	32	32	273	44	20	355	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	600	776	178	557	736	137	359	0	0	317	0	0
Stage 1	395	395	-	337	337	-	-	-	-	-	-	-
Stage 2	205	381	-	220	399	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	9.2	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	4.35	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	389	325	819	274	349	871	1141	-	-	1211	-	-
Stage 1	607	601	-	468	645	-	-	-	-	-	-	-
Stage 2	784	609	-	571	606	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	356	310	819	252	333	871	1141	-	-	1211	-	-
Mov Cap-2 Maneuver	356	310	-	252	333	-	-	-	-	-	-	-
Stage 1	590	591	-	455	627	-	-	-	-	-	-	-
Stage 2	725	592	-	536	596	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.1	16.9	0.8	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1141	-	-	633	377	1211	-	-
HCM Lane V/C Ratio	0.028	-	-	0.063	0.197	0.017	-	-
HCM Control Delay (s)	8.2	-	-	11.1	16.9	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.7	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	105	0	0	161	14	178	77	106	189	65
Future Vol, veh/h	0	0	105	0	0	161	14	178	77	106	189	65
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	66	68	69	49	86	65	79	71	65	84	81
Heavy Vehicles, %	36	19	19	10	21	10	13	22	9	7	17	35
Mvmt Flow	0	0	154	0	0	187	22	225	108	163	225	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	113	-	-	113	305	0	0	333	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.28	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.49	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	867	0	0	893	1177	-	-	1188	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	867	-	-	893	1177	-	-	1188	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.1	0.5	3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1177	-	-	867	893	1188	-	-
HCM Lane V/C Ratio	0.018	-	-	0.178	0.21	0.137	-	-
HCM Control Delay (s)	8.1	-	-	10.1	10.1	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.8	0.5	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	77	0	262	0	7	0	283	0	0	0	0	0	0	0
Future Vol, veh/h	77	0	262	0	7	0	283	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	0	285	0	8	0	308	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	308	-	0	-	285	-	-	0	-	-	154	-	-	143
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	915	0	-	0	946	0	-	0	0	0	864	0	0	879
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	915	-	-	-	946	-	-	-	-	-	864	-	-	879
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.1	0.2	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBTSWLn1
Capacity (veh/h)	-	915	-	946	- -
HCM Lane V/C Ratio	-	0.091	-	0.008	- -
HCM Control Delay (s)	0	9.3	-	8.8	- 0
HCM Lane LOS	A	A	-	A	- A
HCM 95th %tile Q(veh)	-	0.3	-	0	- -

Intersection	
Int Delay, s/veh	1.6

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	185	0	84	0	210	0	0
Future Vol, veh/h	185	0	84	0	210	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	15	2	2	2	2
Mvmt Flow	201	0	91	0	228	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	201	-	-	-	101
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.7	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.65	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1005	0	-	0	935
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1005	-	-	-	935
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	2.6	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1005	-	-
HCM Lane V/C Ratio	-	0.091	-	-
HCM Control Delay (s)	-	8.9	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	15	29	0	0	10
Future Vol, veh/h	10	15	29	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	72	92	92	92
Heavy Vehicles, %	95	2	2	2	2	95
Mvmt Flow	11	20	40	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	40	0	-	0	82	40
Stage 1	-	-	-	-	40	-
Stage 2	-	-	-	-	42	-
Critical Hdwy	5.05	-	-	-	6.42	7.15
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3.055	-	-	-	3.518	4.155
Pot Cap-1 Maneuver	1133	-	-	-	920	819
Stage 1	-	-	-	-	982	-
Stage 2	-	-	-	-	980	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1133	-	-	-	911	819
Mov Cap-2 Maneuver	-	-	-	-	911	-
Stage 1	-	-	-	-	972	-
Stage 2	-	-	-	-	980	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1133	-	-	-	819
HCM Lane V/C Ratio	0.01	-	-	-	0.013
HCM Control Delay (s)	8.2	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	21	18	11	155	2	27	176	1	411
Control Delay / Veh (s/v)	10	10	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.55	0.00	0.00	1.56	0.00	0.00	0.24
Stops (#)	21	18	17	0	0	42	0	0	98
Average Speed (mph)	24	31	43	55	55	42	55	55	49
Total Travel Time (hr)	0	0	0	1	0	0	1	0	3
Distance Traveled (mi)	3	13	5	65	1	11	70	0	168
Fuel Consumed (gal)	0	1	0	2	0	1	2	0	7
Fuel Economy (mpg)	NA	NA	NA	29.9	NA	9.1	29.9	NA	23.1
CO Emissions (kg)	0.03	0.05	0.03	0.15	0.00	0.08	0.16	0.00	0.51
NOx Emissions (kg)	0.01	0.01	0.01	0.03	0.00	0.02	0.03	0.00	0.10
VOC Emissions (kg)	0.01	0.01	0.01	0.04	0.00	0.02	0.04	0.00	0.12
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	32	152	12	104	66	76	131	81	654
Control Delay / Veh (s/v)	9	10	8	0	0	8	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	9	10	8	0	0	8	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.58	0.00	0.00	1.59	0.00	0.00	0.50
Stops (#)	32	152	19	0	0	121	0	0	324
Average Speed (mph)	18	27	32	55	55	31	55	55	37
Total Travel Time (hr)	0	1	0	0	0	0	0	0	3
Distance Traveled (mi)	4	36	2	18	11	12	20	13	116
Fuel Consumed (gal)	0	3	0	1	0	3	1	0	9
Fuel Economy (mpg)	NA	11.7	NA	NA	NA	4.3	NA	NA	13.2
CO Emissions (kg)	0.03	0.22	0.03	0.04	0.03	0.19	0.05	0.03	0.61
NOx Emissions (kg)	0.01	0.04	0.01	0.01	0.01	0.04	0.01	0.01	0.12
VOC Emissions (kg)	0.01	0.05	0.01	0.01	0.01	0.04	0.01	0.01	0.14
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

10:

Lane Group	EBT	WBT	All
Future Volume (vph)	32	18	50
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	33	40	34
Total Travel Time (hr)	1	0	1
Distance Traveled (mi)	23	5	28
Fuel Consumed (gal)	1	0	1
Fuel Economy (mpg)	NA	NA	25.9
CO Emissions (kg)	0.06	0.01	0.08
NOx Emissions (kg)	0.01	0.00	0.01
VOC Emissions (kg)	0.01	0.00	0.02
Unserved Vehicles (#)	0	0	0
Vehs dilemma zone (#)	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	75	181	10	213	479
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	1
Distance Traveled (mi)	12	28	1	29	70
Fuel Consumed (gal)	0	1	0	1	2
Fuel Economy (mpg)	NA	NA	NA	NA	29.9
CO Emissions (kg)	0.03	0.07	0.00	0.07	0.16
NOx Emissions (kg)	0.01	0.01	0.00	0.01	0.03
VOC Emissions (kg)	0.01	0.02	0.00	0.02	0.04
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	152	30	133	315
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	42	5	23	70
Fuel Consumed (gal)	1	0	1	2
Fuel Economy (mpg)	29.9	NA	NA	29.9
CO Emissions (kg)	0.10	0.01	0.05	0.16
NOx Emissions (kg)	0.02	0.00	0.01	0.03
VOC Emissions (kg)	0.02	0.00	0.01	0.04
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	15	2	1	15	11	155	2	27	176	1
Future Vol, veh/h	3	3	15	2	1	15	11	155	2	27	176	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	65	50	25	58	62	84	50	69	79	25
Heavy Vehicles, %	0	3	7	15	0	7	10	12	0	6	12	0
Mvmt Flow	4	4	23	4	4	26	18	185	4	39	223	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	432	526	112	413	526	93	227	0	0	189	0	0
Stage 1	301	301	-	221	221	-	-	-	-	-	-	-
Stage 2	131	225	-	192	305	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	7.8	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	3.65	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	512	453	904	493	460	930	1282	-	-	1354	-	-
Stage 1	689	661	-	725	724	-	-	-	-	-	-	-
Stage 2	865	714	-	755	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	478	434	904	461	440	930	1282	-	-	1354	-	-
Mov Cap-2 Maneuver	478	434	-	461	440	-	-	-	-	-	-	-
Stage 1	679	642	-	715	714	-	-	-	-	-	-	-
Stage 2	824	704	-	710	647	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.1	0.7	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	721	743	1354	-	-
HCM Lane V/C Ratio	0.014	-	-	0.043	0.046	0.029	-	-
HCM Control Delay (s)	7.8	-	-	10.2	10.1	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	32	0	0	152	12	104	66	76	131	81
Future Vol, veh/h	0	0	32	0	0	152	12	104	66	76	131	81
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	67	25	50	65	82	50	72	77	80	81	79
Heavy Vehicles, %	36	19	11	10	21	10	13	17	9	7	17	35
Mvmt Flow	0	0	128	0	0	185	24	144	86	95	162	103

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	81	-	-	72	265	0	0	230	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.41	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	934	0	0	950	1220	-	-	1299	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	934	-	-	950	1220	-	-	1299	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.7	0.8	2.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1220	-	-	934	950	1299	-	-
HCM Lane V/C Ratio	0.02	-	-	0.137	0.195	0.073	-	-
HCM Control Delay (s)	8	-	-	9.5	9.7	8	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.7	0.2	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	32	18	0	0	0
Future Vol, veh/h	0	32	18	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	71	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	25	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	25	0	-	0	68	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1589	-	-	-	937	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1589	-	-	-	937	1051
Mov Cap-2 Maneuver	-	-	-	-	937	-
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1589	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	75	0	181	0	10	0	213	0	0	0	0	0	0	0
Future Vol, veh/h	75	0	181	0	10	0	213	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	0	197	0	11	0	232	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	232	-	0	-	197	-	-	0	-	-	116	-	-	99
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	1022	0	-	0	1075	0	-	0	0	0	914	0	0	937
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	1022	-	-	-	1075	-	-	-	-	-	914	-	-	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.6	0.4	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1022	-	1075	-	-
HCM Lane V/C Ratio	-	0.08	-	0.01	-	-
HCM Control Delay (s)	0	8.8	-	8.4	-	0
HCM Lane LOS	A	A	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	152	0	30	0	133	0	0
Future Vol, veh/h	152	0	30	0	133	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	165	0	33	0	145	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	165	-	-	-	83
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1126	0	-	0	960
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1126	-	-	-	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	1.5	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1126	-	-
HCM Lane V/C Ratio	-	0.029	-	-
HCM Control Delay (s)	-	8.3	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.1	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	21	28	11	155	12	27	176	1	431
Control Delay / Veh (s/v)	10	12	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	12	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.55	0.00	0.00	1.56	0.00	0.00	0.25
Stops (#)	21	28	17	0	0	42	0	0	108
Average Speed (mph)	24	31	43	55	55	42	55	55	48
Total Travel Time (hr)	0	1	0	1	0	0	1	0	4
Distance Traveled (mi)	3	20	5	65	5	11	70	0	180
Fuel Consumed (gal)	0	1	0	2	0	1	2	0	8
Fuel Economy (mpg)	NA	19.2	NA	29.9	NA	9.1	29.9	NA	23.0
CO Emissions (kg)	0.03	0.07	0.03	0.15	0.01	0.08	0.16	0.00	0.54
NOx Emissions (kg)	0.01	0.01	0.01	0.03	0.00	0.02	0.03	0.00	0.11
VOC Emissions (kg)	0.01	0.02	0.01	0.04	0.00	0.02	0.04	0.00	0.13
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	42	152	12	114	66	76	131	91	684
Control Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	8	0	0	4
Total Delay (hr)	0	0	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.58	0.00	0.00	1.61	0.00	0.00	0.49
Stops (#)	42	152	19	0	0	122	0	0	335
Average Speed (mph)	18	27	32	55	55	31	55	55	37
Total Travel Time (hr)	0	1	0	0	0	0	0	0	3
Distance Traveled (mi)	5	36	2	19	11	12	20	14	120
Fuel Consumed (gal)	1	3	0	1	0	3	1	0	9
Fuel Economy (mpg)	NA	11.6	NA	NA	NA	4.3	NA	NA	13.3
CO Emissions (kg)	0.04	0.22	0.03	0.05	0.03	0.19	0.05	0.03	0.63
NOx Emissions (kg)	0.01	0.04	0.01	0.01	0.01	0.04	0.01	0.01	0.12
VOC Emissions (kg)	0.01	0.05	0.01	0.01	0.01	0.05	0.01	0.01	0.15
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

10:

Lane Group	EBT	WBT	SBL	All
Future Volume (vph)	42	18	10	70
Control Delay / Veh (s/v)	1	0	8	2
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	1	0	8	2
Total Delay (hr)	0	0	0	0
Stops / Veh	0.24	0.00	1.00	0.29
Stops (#)	10	0	10	20
Average Speed (mph)	33	40	14	33
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	30	5	1	36
Fuel Consumed (gal)	1	0	0	2
Fuel Economy (mpg)	23.9	NA	NA	23.3
CO Emissions (kg)	0.09	0.01	0.01	0.11
NOx Emissions (kg)	0.02	0.00	0.00	0.02
VOC Emissions (kg)	0.02	0.00	0.00	0.03
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	75	191	10	223	499
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	1
Distance Traveled (mi)	12	30	1	30	73
Fuel Consumed (gal)	0	1	0	1	2
Fuel Economy (mpg)	NA	NA	NA	29.9	29.9
CO Emissions (kg)	0.03	0.07	0.00	0.07	0.17
NOx Emissions (kg)	0.01	0.01	0.00	0.01	0.03
VOC Emissions (kg)	0.01	0.02	0.00	0.02	0.04
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	152	40	133	325
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	42	7	23	71
Fuel Consumed (gal)	1	0	1	2
Fuel Economy (mpg)	29.9	NA	NA	29.9
CO Emissions (kg)	0.10	0.02	0.05	0.17
NOx Emissions (kg)	0.02	0.00	0.01	0.03
VOC Emissions (kg)	0.02	0.00	0.01	0.04
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	15	12	1	15	11	155	12	27	176	1
Future Vol, veh/h	3	3	15	12	1	15	11	155	12	27	176	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	65	50	25	58	62	84	50	69	79	25
Heavy Vehicles, %	0	3	7	15	0	7	10	12	0	6	12	0
Mvmt Flow	4	4	23	24	4	26	18	185	24	39	223	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	432	546	112	413	526	93	227	0	0	209	0	0
Stage 1	301	301	-	221	221	-	-	-	-	-	-	-
Stage 2	131	245	-	192	305	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	7.8	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	3.65	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	512	441	904	493	460	930	1282	-	-	1330	-	-
Stage 1	689	661	-	725	724	-	-	-	-	-	-	-
Stage 2	865	700	-	755	666	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	478	422	904	461	440	930	1282	-	-	1330	-	-
Mov Cap-2 Maneuver	478	422	-	461	440	-	-	-	-	-	-	-
Stage 1	679	642	-	715	714	-	-	-	-	-	-	-
Stage 2	824	690	-	710	647	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	11.5	0.6	1.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	716	605	1330	-	-
HCM Lane V/C Ratio	0.014	-	-	0.043	0.089	0.029	-	-
HCM Control Delay (s)	7.8	-	-	10.3	11.5	7.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	42	0	0	152	12	114	66	76	131	91
Future Vol, veh/h	0	0	42	0	0	152	12	114	66	76	131	91
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	67	25	50	65	82	50	72	77	80	81	79
Heavy Vehicles, %	36	19	30	10	21	10	13	24	9	7	17	35
Mvmt Flow	0	0	168	0	0	185	24	158	86	95	162	115

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	81	-	-	79	277	0	0	244	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.5	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.6	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	879	0	0	940	1207	-	-	1284	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	879	-	-	940	1207	-	-	1284	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.8	0.7	2.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1207	-	-	879	940	1284	-	-
HCM Lane V/C Ratio	0.02	-	-	0.191	0.197	0.074	-	-
HCM Control Delay (s)	8	-	-	10.1	9.8	8	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.7	0.2	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	32	18	0	0	10
Future Vol, veh/h	10	32	18	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	71	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	43	25	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	25	0	-	0	90	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	65	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1589	-	-	-	910	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	958	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1589	-	-	-	904	1051
Mov Cap-2 Maneuver	-	-	-	-	904	-
Stage 1	-	-	-	-	991	-
Stage 2	-	-	-	-	958	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1589	-	-	-	1051
HCM Lane V/C Ratio	0.007	-	-	-	0.01
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.5

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	75	0	191	0	10	0	223	0	0	0	0	0	0	0
Future Vol, veh/h	75	0	191	0	10	0	223	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	0	208	0	11	0	242	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	242	-	0	-	208	-	-	0	-	-	121	-	-	104
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	1007	0	-	0	1058	0	-	0	0	0	908	0	0	931
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	1007	-	-	-	1058	-	-	-	-	-	908	-	-	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.5	0.4	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1007	-	1058	-	-
HCM Lane V/C Ratio	-	0.081	-	0.01	-	-
HCM Control Delay (s)	0	8.9	-	8.4	-	0
HCM Lane LOS	A	A	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	0	-	-

Intersection	
Int Delay, s/veh	1

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations							
Traffic Vol, veh/h	152	0	40	0	133	0	0
Future Vol, veh/h	152	0	40	0	133	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	165	0	43	0	145	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	165	-	-	-	83
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.44	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.52	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	1126	0	-	0	960
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	1126	-	-	-	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	1.9	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	1126	-	-
HCM Lane V/C Ratio	-	0.039	-	-
HCM Control Delay (s)	-	8.3	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.1	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	30	32	27	254	1	13	267	1	625
Control Delay / Veh (s/v)	12	14	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	12	14	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.67	0.00	0.00	1.62	0.00	0.00	0.20
Stops (#)	30	32	45	0	0	21	0	0	128
Average Speed (mph)	22	30	42	55	55	42	55	55	49
Total Travel Time (hr)	0	1	0	2	0	0	2	0	5
Distance Traveled (mi)	5	23	11	107	0	5	106	0	259
Fuel Consumed (gal)	1	1	1	4	0	1	4	0	11
Fuel Economy (mpg)	NA	19.1	9.0	29.9	NA	NA	29.9	NA	24.0
CO Emissions (kg)	0.04	0.08	0.09	0.25	0.00	0.04	0.25	0.00	0.75
NOx Emissions (kg)	0.01	0.02	0.02	0.05	0.00	0.01	0.05	0.00	0.15
VOC Emissions (kg)	0.01	0.02	0.02	0.06	0.00	0.01	0.06	0.00	0.17
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	104	176	15	206	80	120	227	60	988
Control Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Total Delay (hr)	0	1	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.67	0.00	0.00	1.75	0.00	0.00	0.52
Stops (#)	104	176	25	0	0	210	0	0	515
Average Speed (mph)	18	30	32	55	55	30	55	55	37
Total Travel Time (hr)	1	2	0	1	0	1	1	0	5
Distance Traveled (mi)	13	60	3	35	14	19	35	9	188
Fuel Consumed (gal)	1	4	1	1	0	5	1	0	14
Fuel Economy (mpg)	9.8	14.1	NA	29.9	NA	3.9	29.9	NA	13.4
CO Emissions (kg)	0.09	0.30	0.04	0.08	0.03	0.33	0.08	0.02	0.98
NOx Emissions (kg)	0.02	0.06	0.01	0.02	0.01	0.06	0.02	0.00	0.19
VOC Emissions (kg)	0.02	0.07	0.01	0.02	0.01	0.08	0.02	0.01	0.23
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	81	301	7	326	715
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	2
Distance Traveled (mi)	13	47	1	44	105
Fuel Consumed (gal)	0	2	0	1	4
Fuel Economy (mpg)	NA	29.9	NA	29.9	29.9
CO Emissions (kg)	0.03	0.11	0.00	0.10	0.24
NOx Emissions (kg)	0.01	0.02	0.00	0.02	0.05
VOC Emissions (kg)	0.01	0.03	0.00	0.02	0.06
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	221	80	251	552
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	1	2
Distance Traveled (mi)	61	14	43	117
Fuel Consumed (gal)	2	0	1	4
Fuel Economy (mpg)	29.9	NA	29.9	29.9
CO Emissions (kg)	0.14	0.03	0.10	0.27
NOx Emissions (kg)	0.03	0.01	0.02	0.05
VOC Emissions (kg)	0.03	0.01	0.02	0.06
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

28:

Lane Group	EBT	WBT	All
Future Volume (vph)	17	32	49
Control Delay / Veh (s/v)	0	0	0
Queue Delay / Veh (s/v)	0	0	0
Total Delay / Veh (s/v)	0	0	0
Total Delay (hr)	0	0	0
Stops / Veh	0.00	0.00	0.00
Stops (#)	0	0	0
Average Speed (mph)	33	40	36
Total Travel Time (hr)	0	0	1
Distance Traveled (mi)	12	9	22
Fuel Consumed (gal)	0	0	1
Fuel Economy (mpg)	NA	NA	NA
CO Emissions (kg)	0.03	0.02	0.06
NOx Emissions (kg)	0.01	0.00	0.01
VOC Emissions (kg)	0.01	0.01	0.01
Unserved Vehicles (#)	0	0	0
Vehs dilemma zone (#)	0	0	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	24	3	6	23	27	254	1	13	267	1
Future Vol, veh/h	3	3	24	3	6	23	27	254	1	13	267	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	75	38	62	66	72	85	25	60	69	25
Heavy Vehicles, %	0	3	7	85	0	7	10	12	89	6	12	0
Mvmt Flow	6	6	32	8	10	35	38	299	4	22	387	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	662	810	194	616	810	150	391	0	0	303	0	0
Stage 1	431	431	-	375	375	-	-	-	-	-	-	-
Stage 2	231	379	-	241	435	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	9.2	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	4.35	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	351	311	799	243	316	854	1109	-	-	1226	-	-
Stage 1	578	579	-	438	621	-	-	-	-	-	-	-
Stage 2	757	610	-	551	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	316	295	799	221	300	854	1109	-	-	1226	-	-
Mov Cap-2 Maneuver	316	295	-	221	300	-	-	-	-	-	-	-
Stage 1	558	569	-	423	600	-	-	-	-	-	-	-
Stage 2	690	589	-	514	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	13.4	0.9	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1109	-	-	554	482	1226	-	-
HCM Lane V/C Ratio	0.034	-	-	0.079	0.109	0.018	-	-
HCM Control Delay (s)	8.4	-	-	12.1	13.4	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	104	0	0	176	15	206	80	120	227	60
Future Vol, veh/h	0	0	104	0	0	176	15	206	80	120	227	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	66	68	69	49	86	65	79	71	65	84	81
Heavy Vehicles, %	36	19	11	10	21	10	13	17	9	7	17	35
Mvmt Flow	0	0	153	0	0	205	23	261	113	185	270	74

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	135	-	-	131	344	0	0	374	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.41	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	861	0	0	869	1136	-	-	1146	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	861	-	-	869	1136	-	-	1146	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.4	0.5	3.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1136	-	-	861	869	1146	-	-
HCM Lane V/C Ratio	0.02	-	-	0.178	0.236	0.161	-	-
HCM Control Delay (s)	8.2	-	-	10.1	10.4	8.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.9	0.6	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	81	0	301	0	7	0	326	0	0	0	0	0	0	0
Future Vol, veh/h	81	0	301	0	7	0	326	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	0	327	0	8	0	354	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	354	-	0	-	327	-	-	0	-	-	177	-	-	164
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	856	0	-	0	890	0	-	0	0	0	835	0	0	852
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	856	-	-	-	890	-	-	-	-	-	835	-	-	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2.1	0.2	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBTSWLn1
Capacity (veh/h)	-	856	-	890	- -
HCM Lane V/C Ratio	-	0.103	-	0.009	- -
HCM Control Delay (s)	0	9.7	-	9.1	- 0
HCM Lane LOS	A	A	-	A	- A
HCM 95th %tile Q(veh)	-	0.3	-	0	- -

Intersection	
Int Delay, s/veh	1.3

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	221	0	80	0	251	0	0
Future Vol, veh/h	221	0	80	0	251	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	15	2	2	2	2
Mvmt Flow	240	0	87	0	273	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	240	-	-	-	120
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.7	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.65	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	948	0	-	0	909
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	948	-	-	-	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	2.2	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	948	-	-
HCM Lane V/C Ratio	-	0.092	-	-
HCM Control Delay (s)	-	9.2	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	32	0	0	0
Future Vol, veh/h	0	17	32	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	72	92	92	92
Heavy Vehicles, %	95	2	2	2	2	95
Mvmt Flow	0	23	44	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	44	0	-	0	67	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	23	-
Critical Hdwy	5.05	-	-	-	6.42	7.15
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3.055	-	-	-	3.518	4.155
Pot Cap-1 Maneuver	1129	-	-	-	938	814
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1000	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1129	-	-	-	938	814
Mov Cap-2 Maneuver	-	-	-	-	938	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	1000	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1129	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

2: TH 61 & CR 10/5th Grant Blvd

Lane Group	EBT	WBT	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	30	42	27	254	11	13	267	1	645
Control Delay / Veh (s/v)	12	19	8	0	0	8	0	0	2
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	12	19	8	0	0	8	0	0	2
Total Delay (hr)	0	0	0	0	0	0	0	0	0
Stops / Veh	1.00	1.00	1.67	0.00	0.00	1.62	0.00	0.00	0.21
Stops (#)	30	42	45	0	0	21	0	0	138
Average Speed (mph)	22	28	42	55	55	42	55	55	48
Total Travel Time (hr)	0	1	0	2	0	0	2	0	6
Distance Traveled (mi)	5	30	11	107	5	5	106	0	270
Fuel Consumed (gal)	1	2	1	4	0	1	4	0	11
Fuel Economy (mpg)	NA	18.5	9.0	29.9	NA	NA	29.9	NA	23.8
CO Emissions (kg)	0.04	0.11	0.09	0.25	0.01	0.04	0.25	0.00	0.79
NOx Emissions (kg)	0.01	0.02	0.02	0.05	0.00	0.01	0.05	0.00	0.15
VOC Emissions (kg)	0.01	0.03	0.02	0.06	0.00	0.01	0.06	0.00	0.18
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

4: Shields Ave & TH 61

Lane Group	EBR	WBR	NBL	NBT	NBR	SBL	SBT	SBR	All
Future Volume (vph)	114	176	15	216	80	120	227	70	1018
Control Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Queue Delay / Veh (s/v)	0	0	0	0	0	0	0	0	0
Total Delay / Veh (s/v)	10	10	8	0	0	9	0	0	4
Total Delay (hr)	0	1	0	0	0	0	0	0	1
Stops / Veh	1.00	1.00	1.67	0.00	0.00	1.76	0.00	0.00	0.52
Stops (#)	114	176	25	0	0	211	0	0	526
Average Speed (mph)	18	30	32	55	55	30	55	55	36
Total Travel Time (hr)	1	2	0	1	0	1	1	0	5
Distance Traveled (mi)	14	60	3	37	14	19	35	11	192
Fuel Consumed (gal)	1	4	1	1	0	5	1	0	14
Fuel Economy (mpg)	9.8	14.1	NA	29.9	NA	3.9	29.9	NA	13.5
CO Emissions (kg)	0.10	0.30	0.04	0.09	0.03	0.33	0.08	0.03	1.00
NOx Emissions (kg)	0.02	0.06	0.01	0.02	0.01	0.06	0.02	0.00	0.19
VOC Emissions (kg)	0.02	0.07	0.01	0.02	0.01	0.08	0.02	0.01	0.23
Unserved Vehicles (#)	0	0	0	0	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0	0	0	0	0

22: TH 61

Lane Group	NBU	NBT	SBU	SBT	All
Future Volume (vph)	81	311	7	336	735
Control Delay / Veh (s/v)	0	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0	0
Total Delay (hr)	0	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0	0
Average Speed (mph)	55	55	55	55	55
Total Travel Time (hr)	0	1	0	1	2
Distance Traveled (mi)	13	49	1	46	108
Fuel Consumed (gal)	0	2	0	2	4
Fuel Economy (mpg)	NA	29.9	NA	29.9	29.9
CO Emissions (kg)	0.03	0.11	0.00	0.11	0.25
NOx Emissions (kg)	0.01	0.02	0.00	0.02	0.05
VOC Emissions (kg)	0.01	0.03	0.00	0.02	0.06
Unserved Vehicles (#)	0	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0	0

23: TH 61

Lane Group	NBT	SBU	SBT	All
Future Volume (vph)	221	90	251	562
Control Delay / Veh (s/v)	0	0	0	0
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	0	0	0	0
Total Delay (hr)	0	0	0	0
Stops / Veh	0.00	0.00	0.00	0.00
Stops (#)	0	0	0	0
Average Speed (mph)	55	55	55	55
Total Travel Time (hr)	1	0	1	2
Distance Traveled (mi)	61	15	43	119
Fuel Consumed (gal)	2	1	1	4
Fuel Economy (mpg)	29.9	NA	29.9	29.9
CO Emissions (kg)	0.14	0.04	0.10	0.28
NOx Emissions (kg)	0.03	0.01	0.02	0.05
VOC Emissions (kg)	0.03	0.01	0.02	0.06
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

28:

Lane Group	EBT	WBT	SBL	All
Future Volume (vph)	27	32	10	69
Control Delay / Veh (s/v)	2	0	9	2
Queue Delay / Veh (s/v)	0	0	0	0
Total Delay / Veh (s/v)	2	0	9	2
Total Delay (hr)	0	0	0	0
Stops / Veh	0.37	0.00	1.00	0.29
Stops (#)	10	0	10	20
Average Speed (mph)	33	40	13	34
Total Travel Time (hr)	1	0	0	1
Distance Traveled (mi)	19	9	1	29
Fuel Consumed (gal)	1	0	0	1
Fuel Economy (mpg)	NA	NA	NA	23.1
CO Emissions (kg)	0.06	0.02	0.01	0.09
NOx Emissions (kg)	0.01	0.00	0.00	0.02
VOC Emissions (kg)	0.01	0.01	0.00	0.02
Unserved Vehicles (#)	0	0	0	0
Vehs dilemma zone (#)	0	0	0	0

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	3	24	13	6	23	27	254	11	13	267	1
Future Vol, veh/h	3	3	24	13	6	23	27	254	11	13	267	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	280	-	265	300	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	75	38	62	66	72	85	25	60	69	25
Heavy Vehicles, %	0	3	7	85	0	7	10	12	89	6	12	0
Mvmt Flow	6	6	32	34	10	35	38	299	44	22	387	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	662	850	194	616	810	150	391	0	0	343	0	0
Stage 1	431	431	-	375	375	-	-	-	-	-	-	-
Stage 2	231	419	-	241	435	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	7.04	9.2	6.5	7.04	4.3	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	8.2	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.37	4.35	4	3.37	2.3	-	-	2.26	-	-
Pot Cap-1 Maneuver	351	294	799	243	316	854	1109	-	-	1184	-	-
Stage 1	578	579	-	438	621	-	-	-	-	-	-	-
Stage 2	757	586	-	551	584	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	315	279	799	220	300	854	1109	-	-	1184	-	-
Mov Cap-2 Maneuver	315	279	-	220	300	-	-	-	-	-	-	-
Stage 1	558	568	-	423	600	-	-	-	-	-	-	-
Stage 2	690	566	-	514	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.2	18.5	0.8	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1109	-	-	546	344	1184	-	-
HCM Lane V/C Ratio	0.034	-	-	0.081	0.229	0.018	-	-
HCM Control Delay (s)	8.4	-	-	12.2	18.5	8.1	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.9	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	114	0	0	176	15	216	80	120	227	70
Future Vol, veh/h	0	0	114	0	0	176	15	216	80	120	227	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	265	-	250	250	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	66	68	69	49	86	65	79	71	65	84	81
Heavy Vehicles, %	36	19	22	10	21	10	13	22	9	7	17	35
Mvmt Flow	0	0	168	0	0	205	23	273	113	185	270	86

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	135	-	-	137	356	0	0	386	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.34	-	-	7.1	4.36	-	-	4.24	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.52	-	-	3.4	2.33	-	-	2.27	-	-
Pot Cap-1 Maneuver	0	0	829	0	0	862	1124	-	-	1134	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	829	-	-	862	1124	-	-	1134	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	10.5	0.5	3
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1124	-	-	829	862	1134	-	-
HCM Lane V/C Ratio	0.021	-	-	0.202	0.237	0.163	-	-
HCM Control Delay (s)	8.3	-	-	10.4	10.5	8.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.9	0.6	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations														
Traffic Vol, veh/h	81	0	311	0	7	0	336	0	0	0	0	0	0	0
Future Vol, veh/h	81	0	311	0	7	0	336	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	0	-	-	-	0	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	88	0	338	0	8	0	365	0	0	0	0	0	0	0

Major/Minor	Major1				Major2				Minor2			Minor1		
Conflicting Flow All	365	-	0	-	338	-	-	0	-	-	183	-	-	169
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	6.44	-	-	-	6.44	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.52	-	-	-	2.52	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	843	0	-	0	876	0	-	0	0	0	828	0	0	845
Stage 1	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Stage 2	-	0	-	0	-	0	-	0	0	0	-	0	0	-
Platoon blocked, %			-				-							
Mov Cap-1 Maneuver	843	-	-	-	876	-	-	-	-	-	828	-	-	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Approach	NB	SB	NE	SW
HCM Control Delay, s	2	0.2	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NELn1	NBU	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	843	-	876	-	-
HCM Lane V/C Ratio	-	0.104	-	0.009	-	-
HCM Control Delay (s)	0	9.8	-	9.1	-	0
HCM Lane LOS	A	A	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	NBT	NBR	SBU	SBL	SBT	SWL	SWR
Lane Configurations	↑↑		↓		↑↑		↱
Traffic Vol, veh/h	221	0	90	0	251	0	0
Future Vol, veh/h	221	0	90	0	251	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	0	-	-	0
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	15	2	2	2	2
Mvmt Flow	240	0	98	0	273	0	0

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	-	240	-	-	-	120
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.7	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.65	-	-	-	3.32
Pot Cap-1 Maneuver	-	0	948	0	-	0	909
Stage 1	-	0	-	0	-	0	-
Stage 2	-	0	-	0	-	0	-
Platoon blocked, %	-				-		
Mov Cap-1 Maneuver	-	-	948	-	-	-	909
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	NB	SB	SW
HCM Control Delay, s	0	2.4	0
HCM LOS			A

Minor Lane/Major Mvmt	NBT	SBU	SBT	SWLn1
Capacity (veh/h)	-	948	-	-
HCM Lane V/C Ratio	-	0.103	-	-
HCM Control Delay (s)	-	9.2	-	0
HCM Lane LOS	-	A	-	A
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	17	32	0	0	10
Future Vol, veh/h	10	17	32	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	75	72	92	92	92
Heavy Vehicles, %	95	2	2	2	2	95
Mvmt Flow	11	23	44	0	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	44	0	-	0	89	44
Stage 1	-	-	-	-	44	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	5.05	-	-	-	6.42	7.15
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3.055	-	-	-	3.518	4.155
Pot Cap-1 Maneuver	1129	-	-	-	912	814
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1129	-	-	-	903	814
Mov Cap-2 Maneuver	-	-	-	-	903	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	977	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1129	-	-	-	814
HCM Lane V/C Ratio	0.01	-	-	-	0.013
HCM Control Delay (s)	8.2	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

LEAST SQUARES WORKSHEET **SEGMENT A1**

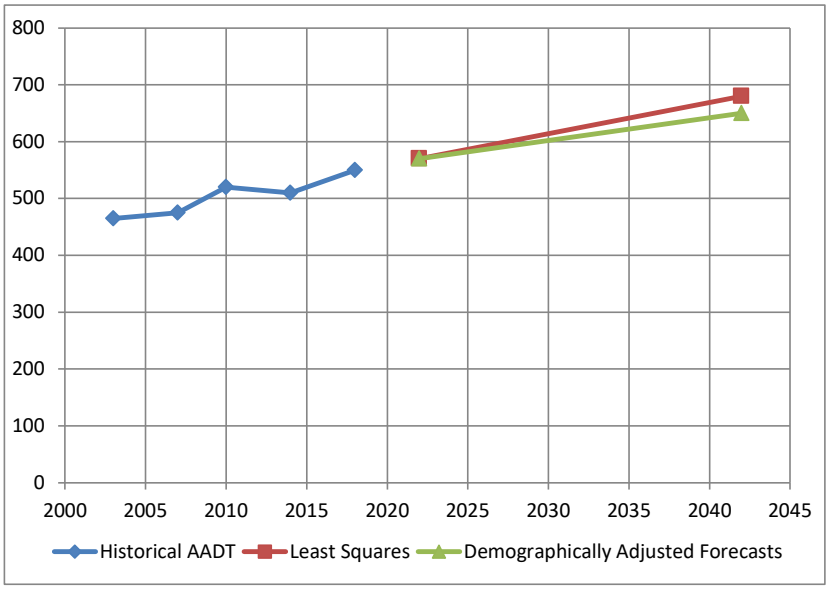
ROUTE: **SP#:** **DATE** 11/28/22

LOCATION: CR 10 at Hwy 61 **Miles :**

BASE YEAR: 2022 **FORECAST YEAR:** 2042 **Seq #**

# of lanes 1

YEAR	FLOW MAP AADT (SEG A)
2003	465
2007	475
2010	520
2014	510
2018	550



LEAST SQUARES BASED FORECASTS:

Year	AADT	Calc	ADT Calc
2018	546	4	550
2022	568		572
2042	677		682

Statistics	AADT
R 2	0.86
SLOPE	5.48
INTERCEPT	-10515
N	5

Raw Least Squares Forecasts	
YEAR	AADT
2018	550
2022	570
2042	680
Slope Over Base Year 0.96%	

Demographically Adjusted Forecasts	
YEAR	AADT
2018	550
2022	570
2042	650
Slope Over Base Year 0.70%	

NOTE:
County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
WABASHA	0.82	LOW GROWTH AREA

LEAST SQUARES WORKSHEET **SEGMENT A1**

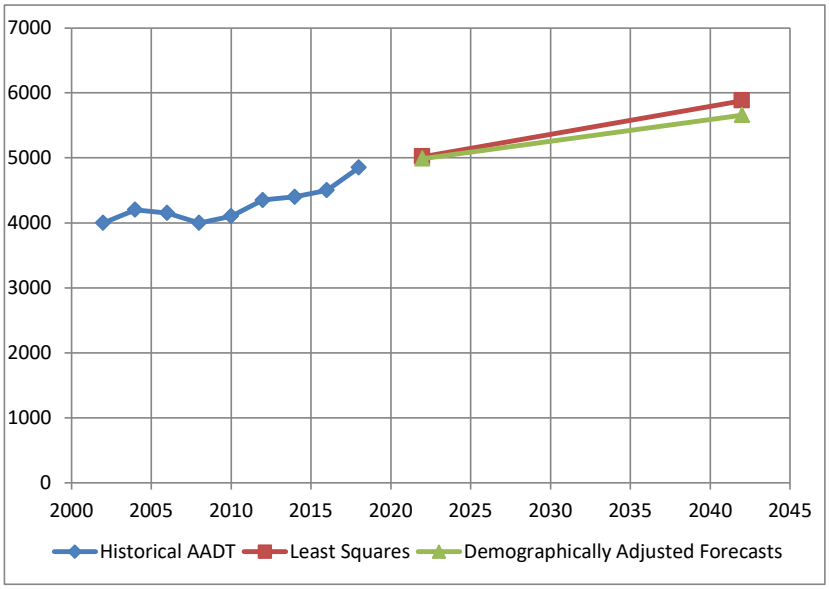
ROUTE: **SP#:** **DATE** 11/28/22

LOCATION: Hwy 61 At Shields Ave **Miles :**

BASE YEAR: 2022 **FORECAST YEAR:** 2042 **Seq #**

# of lanes 2

YEAR	FLOW MAP AADT (SEG A)
2002	4000
2004	4200
2006	4150
2008	4000
2010	4100
2012	4350
2014	4400
2016	4500
2018	4850



LEAST SQUARES BASED FORECASTS:

Year	AADT	Calc	ADT Calc
2018	4627	223	4850
2022	4798		5022
2042	5657		5880

Statistics	AADT
R 2	0.73
SLOPE	42.92
INTERCEPT	-81979
N	9

Raw Least Squares Forecasts	
YEAR	AADT
2018	4850
2022	5020
2042	5880
Slope Over Base Year 0.85%	

Demographically Adjusted Forecasts	
YEAR	AADT
2018	4850
2022	4990
2042	5660
Slope Over Base Year 0.67%	

NOTE:

County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
WABASHA	0.82	LOW GROWTH AREA

LEAST SQUARES WORKSHEET **SEGMENT A1**

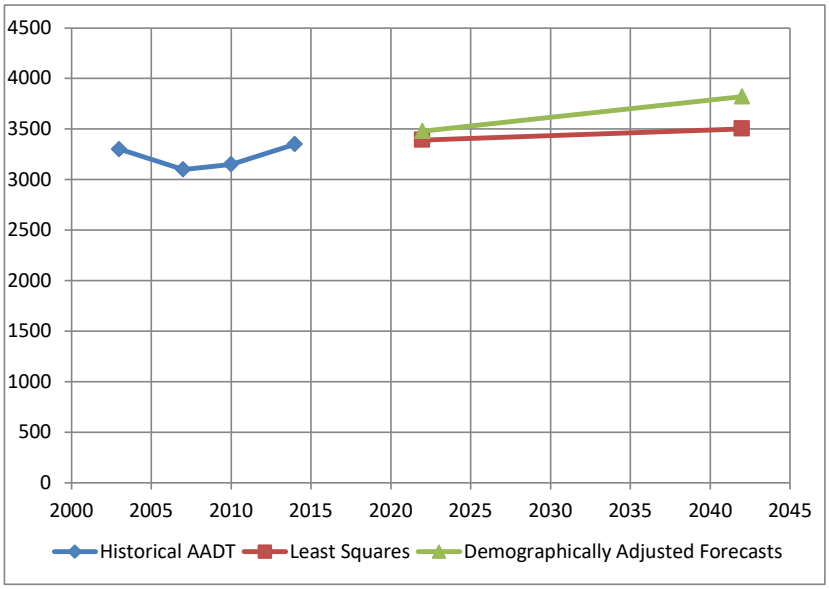
ROUTE: **SP#:** **DATE** 11/28/22

LOCATION: Shields Ave at Hwy 61 **Miles :**

BASE YEAR: 2022 **FORECAST YEAR:** 2042 **Seq #**

# of lanes 1

YEAR	FLOW MAP AADT (SEG A)
2003	3300
2007	3100
2010	3150
2014	3350



LEAST SQUARES BASED FORECASTS:

Year	AADT	Calc	ADT Calc
2014	3255	95	3350
2022	3298		3393
2042	3405		3501

Statistics	AADT
R 2	0.04
SLOPE	5.38
INTERCEPT	-7590
N	4

Raw Least Squares Forecasts	
YEAR	AADT
2014	3350
2022	3390
2042	3500
Slope Over Base Year	
0.16%	

Demographically Adjusted Forecasts	
YEAR	AADT
2014	3350
2022	3480
2042	3820
Slope Over Base Year	
0.49%	

NOTE:
County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
WABASHA	0.82	LOW GROWTH AREA

LEAST SQUARES WORKSHEET **SEGMENT A1**

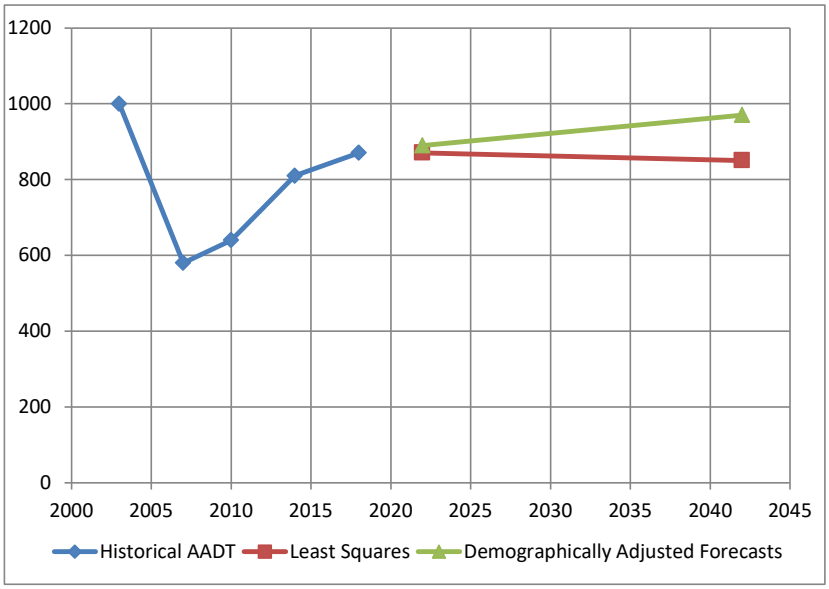
ROUTE: **SP#:** **DATE** 11/28/22

LOCATION: 5th Grant Blvd at Barge Site **Miles :**

BASE YEAR: 2022 **FORECAST YEAR:** 2042 **Seq #**

# of lanes 1

YEAR	FLOW MAP AADT (SEG A)
2003	1000
2007	580
2010	640
2014	810
2018	870



LEAST SQUARES BASED FORECASTS:

Year	AADT	Calc	ADT Calc
2018	774	96	870
2022	772		867
2042	757		853

Statistics	AADT
R 2	0.00
SLOPE	-0.73
INTERCEPT	2245
N	5

Raw Least Squares Forecasts	
YEAR	AADT
2018	870
2022	870
2042	850
Slope Over Base Year	
-0.08%	

Demographically Adjusted Forecasts	
YEAR	AADT
2018	870
2022	890
2042	970
Slope Over Base Year	
0.45%	

NOTE:

County Adjustment Factors were developed to Apply to Projected AADT. They are based on 1992-2007 VMT, Population, Labor Force, Household, and Employment Data.

COUNTY	COUNTY FACTOR	GROWTH PROFILE
WABASHA	0.82	LOW GROWTH AREA

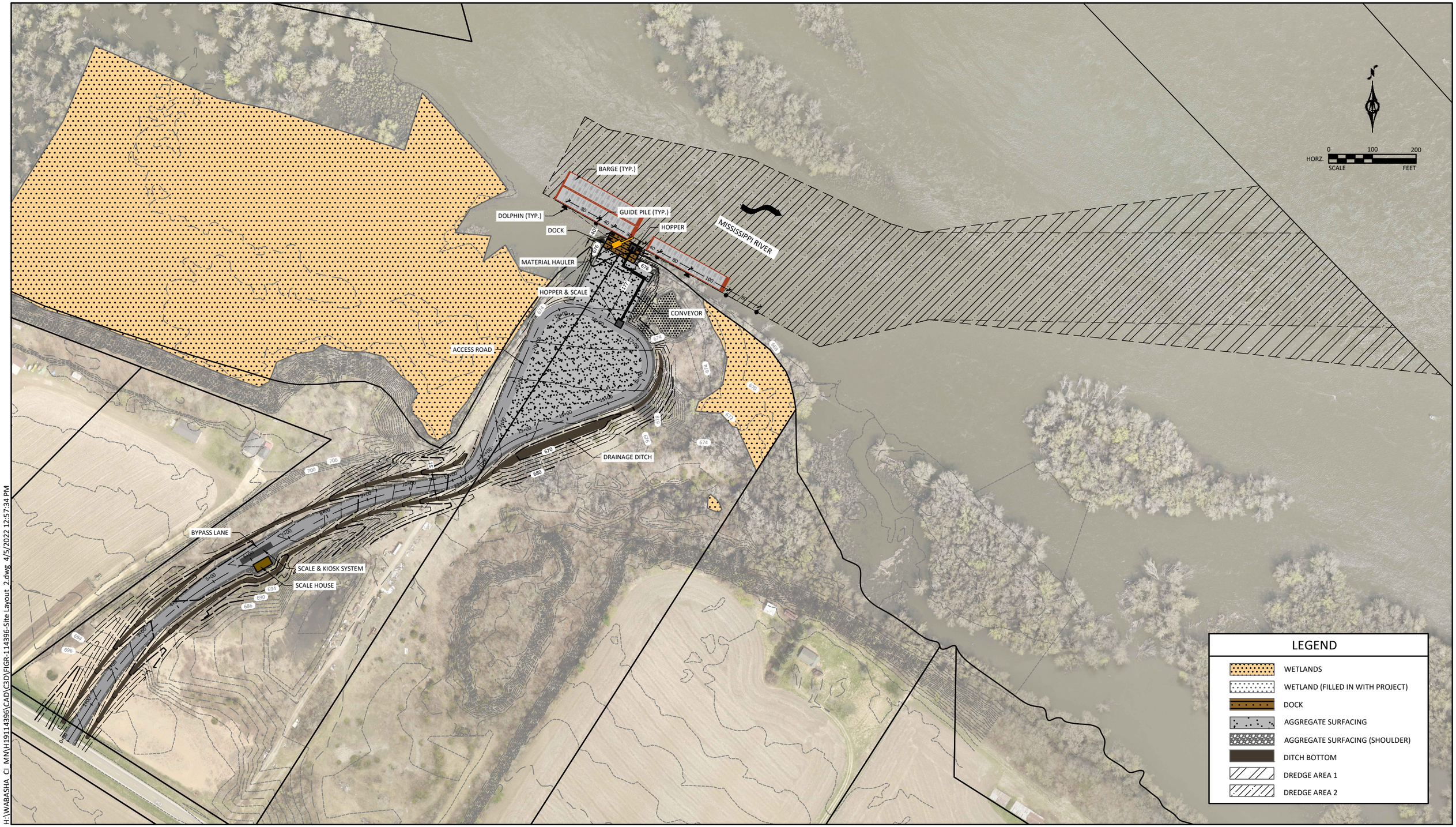
USACE Dredge Material Management Plan

City of Wabasha, MN

Concept Site Layout

April 2022

BOLTON & MENK



H:\WABASHA_CI_MN\H19114396\CAD\C3D\FIGR-114396-Site Layout_2.dwg 4/5/2022 12:57:34 PM

APPENDIX I

Scoping EAW

SCOPING DOCUMENT
WABASHA BARGE FACILITY

Wabasha County

Barge facility on the Mississippi River to facilitate dredged material storage and transportation of agricultural products and shipping containers.

June 2022

Prepared by: Bolton & Menk, Inc.
Prepared for: Wabasha Port Authority

WABASHA BARGE FACILITY SCOPING DOCUMENT

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Appendices

Appendix A: Figures

List of Acronyms and Abbreviations

AADT	Average Annual Daily Traffic
BMP	Best Management Practices
BWSR	Minnesota Board of Water and Soil Resources
CWA	Clean Water Act
DWSMA	Drinking Water Supply Management Area
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQB	Environmental Quality Board
FEMA	Federal Emergency Management Agency
LGU	Local Government Unit
MARAD	Maritime Administration
MDH	Minnesota Department of Health
MGS	Minnesota Geologic Survey
MnDNR	Minnesota Department of Natural Resources
MN	State of Minnesota
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MPCA WIMN	Minnesota Pollution Control Agencies What's in My Neighborhood website
NHIS	Natural Heritage Information System
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PWI	Public Waters Inventory
RGU	Responsible Governmental Unit
SHPO	State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
SWPPP	Storm Water Pollution Prevention Plan
TH	Trunk Highway
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WCA	Wetland Conservation Act
WIDNR	Wisconsin Department of Natural Resources

Scoping EAW Document

This EAW form is being used to identify issues or potential concerns for the Wabasha Barge Facility Environmental Impact Statement (EIS). Comments submitted to the Responsible Government Unit (RGU) during the 30-day public comment period will be reviewed and addressed in the Draft and Final EIS.

1 Project Title

Wabasha Barge Facility

2 Proposer

Organization:	Wabasha Port Authority
Contact person:	Caroline Gregerson
Title:	City Administrator
Address:	900 Hiawatha Drive E
City, State, ZIP:	Wabasha, MN 55981
Phone:	651-565-4568
Email:	cityadmin@wabasha.org

3 RGU

Organization:	Same as Proposer
Contact person:	
Title:	
Address:	
City, State, ZIP:	
Phone:	
Email:	

4 Reason for EAW Preparation

Required:

☒ EIS Scoping

4410.4400 Subp. 17, Barge Fleeting Facility

☐ Mandatory EAW

Discretionary:

☐ Citizen petition

☐ RGU discretion

☐ Proposer initiated

5 Project Location

County	Wabasha County
City/Township	Wabasha

County	Wabasha County		
PLS Location (¼, ¼, Section, Township, Range):	**Section**	**Township**	**Range**
Sect-30 Twp-111 Range-010 13.60 AC EX HWY ESMT, OUT LOTS 4 & 5	30	111N	010W
Sect-30 Twp-111 Range-010 13.15 AC EX SWLY 12.85 AC, OUT LOT 6	30	111N	010W

Watershed (82 major watershed scale):

GPS Coordinates (UTM): 44.3913760, -92.0536705

Tax Parcel Number: R27.00004.00 and R27.00005.03

See **Appendix A** for a series of figures depicting the project location and existing/proposed site conditions.

6 Project Description

a. EQB Monitor Description

Provide the brief project summary to be published in the EQB Monitor, (approximately 50 words).

This Scoping Document addresses a proposed barge facility in Wabasha, MN that will serve to transport sand from Mississippi River navigation channel dredging operations from the river to offsite locations for beneficial re-use. The project area encompasses 54.0 acres and will include infrastructure construction, including access channel dredging, a sheet pile dock wall, barge mooring and maneuvering facilities, conveyors and hoppers for material management, temporary storage area for transported dredge material, sewer and water utilities, internal access road, a weighing station, and a small operations structure (see **Appendix A** for a series of location maps and existing/proposed site condition maps). Facility operations will involve the transfer of sand from river barges to trucks for transport to off-site facilities for use as reclamation material for existing sand and gravel mines or other potential beneficial reuse.

b. Complete Description

Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

Project Description (Including Context/Need)

The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a barge terminal on the Mississippi River in Wabasha, MN (UMR Mile 760). The site will be used to to facilitate the transfer of approximately 270,000 CY of sand that is annually dredged from the Mississippi River within a roughly 6-mile reach of the river centered on Wabasha. This material is dredged by the US Army Corps of Engineers (USACE) to maintain a 9-foot navigable channel along this stretch of the

Mississippi River. The Wabasha barge terminal site will facilitate the transfer of sand from river barges to trucks for transport to off-site facilities for use as reclamation material for existing sand and gravel mines or other potential beneficial reuse.

Upon environmental clearance and acquisition of all required permits, the work elements to be completed as part of the project include:

- Dredging the existing access channel on the Mississippi River to the proposed dock area
- Dredging an area to accommodate barge maneuvering and docking
- The dredged material will be used as fill material on the barge terminal site to raise the storage area above the 100-year flood elevation
- Construct the barge terminal pad and access road
- Construct a sheet pile dock face and upstream/downstream steel pipe pile clusters for barge mooring and maneuvering system
- Construct footings for conveyors and hoppers for material handling and loadout
- Install a loading truck scale and construct a scale house/field office building
- Install sewer and water utilities for field office building
- Install electrical utilities for the site

Timing and Duration of Construction Activities

Detailed construction plans have not been completed. Site design documents are anticipated to be completed in Fall/Winter 2022. The proposed letting date for construction is Summer 2023. Construction is proposed to be complete with site operations commencing in Spring 2024.

Proposed Treatment of Topic in EIS

The EIS will include a complete project description.

c. Project Magnitude

Table 1: Project Magnitude

Total Project Acreage	54.0 acres
Linear project length	NA
Aggregate mining acreage	NA
Number and type of residential units	NA
Commercial building area (square feet)	NA
Industrial building area (square feet)	<1,000 sq/ft (scale house)
Institutional building area (square feet)	NA
Other uses – specify (acres)	3,200 sq/ft dock area 3.35 ac. aggregate surface (storage pad and access roads)
Structure height(s)	<20’

d. Project Purpose

Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The proposed barge terminal site is planned to facilitate the transfer of dredged material from the river to land as an alternative to previously proposed transfer facility locations that would have been in close proximity to and would have routed relatively high volumes of truck traffic through, residential neighborhoods in the City of Wabasha. The proposed Wabasha barge terminal is a cost-effective strategy to allow dredged material to be moved from the river to land while minimizing impacts to residential neighborhoods in the community.

Proposed Treatment of Topic in EIS

The EIS will include a complete project purpose and need statement.

e. Future Development

Are future phases of this development including development on any other property planned or likely to happen?

☐ *Yes* ☒ *No*

If yes, briefly describe future phases, relationship to present project, timeline and plans for environmental review.

f. Previous Development

Is this project a subsequent stage of an earlier project? ☐ *Yes* ☒ *No*

If yes, briefly describe the past development, timeline and any past environmental review. N/A

7 Cover Types

Estimate the acreage of the site with each of the following cover types before and after development:

The conceptual site plan, including project construction and disturbance limits, was used to define the area footprint in **Table 2** below.

Table 2: Cover Types

	Before*	After*		Before*	After*
Wetlands	16.1	15.7	Lawn/landscaping	0	0
Deep water/streams	12.5	12.5	Impervious surface	4.5**	7.8**
Wooded/forest	9.0	6.3	Stormwater Pond/Ditch	0	0.6
Brush/Grassland	7.5	6.6	Other (barge docking area)		0.1
Cropland	4.4	4.4			
			TOTAL	**54.0**	**54.0**

*Existing and proposed cover type acreage estimates are based on the National Land Cover Database (NLCD), aerial photo interpretation, wetland delineations, and the conceptual site layout. Acreages are estimates and subject to change based on further site planning and project development.

** The existing gravel driveway, which is classified as "Developed" in the NLCD, was considered an impervious surface. The proposed condition assumed the aggregate surfaces associated shown on the proposed site plan along with the remaining portions of the existing gravel driveway are consider impervious for the "After" condition.

Proposed Treatment of Topic in EIS

The EIS will provide analysis of cover type impacts within respective sections of the EIS. For example, changes in the acres of cropland or forested areas on the site will be discussed in the Farmland section and Vegetation section, respectively. Cover types that do not exist within the study area, and will not result from the proposed project, will not be discussed in the EIS (e.g., urban/suburban land). The proposed barge terminal facility site plan will be utilized to determine areas for cover type conversions, areas that may remain unaltered, stormwater treatment sites, and potential impervious surfaces.

8 Permits & Approvals Required

List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. All these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.

Permits and Approvals

All known permits at state, federal, and local levels necessitated by the project are listed in **Table 3**, below. Public financial assistance is anticipated from the State of Minnesota through its PDAP and from the federal Department of Transportation Maritime Administration (MARAD) PIDP grant.

Table 3. Required Permits & Approvals

Government Agency	Type of Application/Permit	Status
Federal Agencies		
U.S. Army Corps of Engineers	Clean Water Act (CWA) Notification	To be updated*
	Section 10 Rivers & Harbors Appropriation Act	To be updated*
State Agencies		
Minnesota Department of Natural Resources	Public Waters Work Permit	To be updated*
Minnesota Board of Water and Soil Resources (BWSR)	Minnesota Wetland Conservation Act (WCA) Notification	To be updated*
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System (NPDES) Construction General Storm Water Permit	To be updated
Local Agencies		
City of Wabasha	Stormwater Permit	To be updated*
	Conditional Use Permit	To be updated*

**To be updated*: permit requirement is anticipated and will be applied for prior to project or specific phase commencing.

Proposed Treatment of Topic in EIS

The EIS will include a list of all potential agency approvals and permits potentially required for the project.

9 Land Use

a. Existing Land Use

Description

Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

Located on the northwestern outskirts of the City of Wabasha, the City's 2016-2035 Comprehensive Plan lists the 54.0-acre project site's existing land use as Vacant. The project site is primarily comprised of vacant woodland and appears to have been used for the dumping or storage of scrap metal, construction material, and various vehicle parts.

According to historic aerial imagery—which is available for limited years from 1939 to the present—gravel mining occurred on the project site, beginning in earnest in 1949 and continuing into the early 1970s. By 2010, gravel mining had ended, and trees have reclaimed the filled gravel pits.

As shown on **Appendix A, Figure 3, "Existing Conditions,"** the project site is bounded by the Mississippi River to the north and agricultural land to the east and west. 5th Grant Boulevard West (Wabasha County Road 59), which borders the project site to the south, provides connection to downtown Wabasha and Highway 61.

Additional agricultural land is located south of the project site, across 5th Grant Boulevard West. Some of the agricultural lots adjacent to the project site contain houses, however the nearest lots to the project site that are primarily of residential use are located approximately 0.25 miles southeast of the project site.

The Riverview Cemetery is located beyond the agricultural land west of the project site, approximately 250 feet from the proposed project. An active freight railroad line operated by Canadian Pacific Railway is approximately 300 feet southwest of the project site. A small rail yard is located approximately 400 feet southeast of the project site. The Gunderson St. Elizabeth's Hospital is located approximately 0.40 miles southeast of the project site.

As shown on **Appendix A, Figure 10, "Outdoor Recreation,"** there are no identified parks, trails, or recreational resources located within the project site. The closest outdoor recreational resources are the State of Wisconsin's Nelson-Trevino Bottoms State Natural Area, located across the Mississippi River approximately 0.25 miles northeast of the project site, and the City of Wabasha's Beach Park, located approximately 0.60 miles southeast of the project site.

In July 2020, Bolton & Menk, Inc., conducted a wetland delineation that identified 16.1 acres of Type 1 Seasonally Flooded Wetlands located within the northernmost portions of the project site.

A Phase I Environmental Site Assessment was completed in January 2020 and determined that there is no potential risk for contamination due to recognized environmental conditions, current land uses, and previous land uses on the project site.

Local Plans

Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

The current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021, lists the future land use of the project site as "Industrial." Furthermore, Section 7.0 (Economic Development & Historic Preservation) discusses Wabasha's unique location and opportunity for development of a commercial river port facility that would be used in the ongoing efforts by the Corps of Engineers in maintaining the 9-foot navigable river channel.

Zoning

Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The two parcels that comprise the project site are both zoned R-1, "Low-Density Residential." R-1 zoning districts are intended to allow for the use and development of residential structures, yards, and directly related complimentary uses at a lower density than traditionally developed in the originally platted cities. The parcels bordering the project site to the east and west are also zoned R-1. The parcels located across 5th Grant Boulevard West, south of the project site, are zoned I, "Industrial."

The project site is also located in a S1 Shoreland Overlay Zone. Shoreland Overlay Zoning Ordinances typically contain a variety of provisions that guide land development and activity in shorelands with the goal of protecting surface water quality, near-shore habitat, and shoreland aesthetics. S1 Shoreland Overlay Zones are intended to provide standards for shoreland areas within the city that are primarily undeveloped.

The project site is located within FEMA 100-Year Floodplain. The project site is not located within a Drinking Water Management Supply Area (DWSMA)—however, the lots directly south of the project site, across 5th Grant Boulevard West, are located within a DWSMA.

b. Project Compatibility

Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

As discussed in Item 9a, the proposed project is compatible with the nearby industrial land uses and zoning and is aligned with the industrial development goals outlined in the City of Wabasha's 2016-2035 Comprehensive Plan.

c. Project Incompatibility

Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

No incompatibility issues exist for the project, as discussed in Item 9a.

Proposed Treatment of Topic in EIS

The EIS will verify and summarize the existing land uses identified within the Wabasha Barge Terminal study area. The EIS will also address existing land uses adjacent to the site within a half-mile buffer area of the site. This half-mile buffer will serve as a guideline to evaluate land use compatibility and identifying environmental impacts within an area of potential impact resulting from the proposed barge terminal operations. No additional analysis is planned for the EIS regarding the description of land uses within the project area. A series of mitigation strategies will be explored to avoid and minimize impacts from the proposed operations on land uses within the area of impact.

10 Geology, Soils, & Topography/Landforms

a. Geology

Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Bedrock Geology

According to the Geologic Atlas of Wabasha County, C-14, Plate 2, bedrock geology beneath the project site consists of the Eau Claire Formation which consists of sandstone, siltstone, and shale interbedded in thin to medium beds. The sandstone is very fine grained to fine grained. The sandstone and siltstone are light to yellowish gray, variably glauconitic, and commonly contain gray to black brachiopod shell fragments. The shale is greenish gray. Unit coarsens upward, with siltstone and shale replaced in abundance by sandstone. Uppermost 10–20 feet is mostly very fine grained sandstone and minor amounts of siltstone. The unit is 125–150 feet thick. A tongue in the uppermost part of the Eau Claire Formation crops out near Wabasha. [1]

Surficial Geology

The Geologic Atlas of Wabasha County, C-14, Plate 3, shows the surficial geology consists of floodplain alluvium, West Campus Formation, and Grey Cloud terrace. Floodplain alluvium is mainly fine sand and silt on floodplains; includes sand and gravel that infills modern river channels. Some depressions have been filled with thick silty to clayey sediment. Includes minor lakeshore sediment along Lake Pepin. Contacts with other map units are commonly scarps. The West Campus formation is comprised of Sand

[1] Mossler, John H. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 2-Bedrock Geology. Retrieved from University of Minnesota Digital Conservancy. Available at: https://conservancy.umn.edu/handle/11299/58557.

and gravelly sand; coarsens to cobbly gravel in places. The sediment is largely reworked from the Mississippi valley train; deposited during early, high stages of the Mississippi River and preserved in terraces above the modern floodplain. The West Campus formation is mapped at three major terrace levels in Wabasha County. The Grey Cloud terrace is 40–50 feet (12–15 m) above Lake Pepin and the present floodplain level. The terrace elevation is 700–710 feet (214–216 m) in Lake City and Wabasha. Most contacts with other map units are scarps.[2]

The pollution sensitivity of near surface materials has a high rating across the majority of the project site. The sensitivity to pollution of near-surface materials is an estimate of the time it takes for water to infiltrate the land surface to a depth of 10 feet. Generally, areas of course-grained material have a higher sensitivity to pollution compared to areas of fine-grained material, except where special conditions (karst, bedrock at or near the surface, mining, and peatlands) occur. No special conditions are mapped within the project site.[3]

While Wabasha County is located in a karst region, the project area consists of non-karsted bedrock, with Cambrian sandstones and shales as the uppermost bedrock layers. Karsted bedrock can be found in close proximity to the project area, both south and west.[4]

Aquifers

Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The aquifers within these provinces occur in two general geologic settings: bedrock, and unconsolidated sediments deposited by glaciers, streams, and lakes. The project site is located in the East-Central Province. The East-Central Province has surficial and buried sand and gravel aquifers that are common. The East-Central Province's aquifers are underlain by thick and extensive sandstone and carbonate (Paleozoic) and (Precambrian) sandstone aquifers.[5]

Geologic conditions and groundwater information can be seen in **Appendix A, Figure 6, "Geologic Conditions/Groundwater."**

Proposed Treatment of Topic in EIS

The EIS will include an evaluation of the geologic conditions at the Wabasha Barge study area, including an assessment of potential impacts to bedrock geology, surficial geology and underlying aquifers. The EIS will also include a detailed floodplain assessment.

[2] Hobbs, Howard C. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 3-Surficial Geology. Retrieved from University of Minnesota Digital Conservancy. https://conservancy.umn.edu/handle/11299/58557.

[3] Adams, Roberta. 2016. Pollution sensitivity of near-surface materials: St. Paul, Minnesota Department of Natural Resources, Minnesota Hydrogeology Atlas Series HG-02, report and plate. Available at: https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/mha_ps-ns.html.

[4] Tipping, R., Green, J., & Alexander, E. 2001. C-14 Geological Atlas of Wabasha County, Minnesota. Plate 5 – Karst Features. https://conservancy.umn.edu/bitstream/handle/11299/58557/plate5%5b1%5d.pdf?sequence=5&isAllowed=y

[5] MNDNR. 2021. Groundwater Provinces of Minnesota. Available at: https://files.dnr.state.mn.us/waters/groundwater_section/provinces/2021-provinces.pdf

b. Soils & Topography

Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Maps were reviewed within and around the proposed project footprint. A soils map of the proposed site can be seen in **Appendix A, Figure 5, "Soils."**

The predominant soil types and soil component names within the proposed development area are listed in the table below. Additional information regarding the soil hydrologic classification provides insights regarding potential runoff and erosion control measures that may be needed during construction.

Table 4: Soil Types within the Project Area[6]

Map Unit Symbol	Map Unit Key	Component Name	Soils Label	Hydric Rating	Estimated Percentage of Study Area
N646A	1946882	Ceresco	N646A, Ceresco	No	18.8
N648A	1946885	Kalmarville	N648A, Kalmarville	Yes	13.9
MdA	2216395	Meridian	MdA, Meridian	No	2.4
DmA	2216322	Mt. Carroll	DmA, Mt. Carroll	No	3.8
ThA	2216437	Tell	ThA, Tell	No	1.9
Ts	2216441	Terrace escarpments, sandy	Terrace escarpments, sandy	No	3.9
GP	2216134	Udipsamments	GP, Udipsamments	No	49.7
W	2216215	Water	W, Water		5.6

Soils in Wabasha County are generally characterized in the soil survey as silty loam developed on alluvium and sedimentary bedrock. The river terrace and floodplain alluvium is composed of sand and gravel and is about 180 feet thick. This body of sand and gravel is underlain by lower permeability sedimentary bedrock.[7]

The Soil Survey Geographic Database (SSURGO) lists almost half of the project area soil as gravel pit and udipsamments. The udipsamments complex has a 0-25 percent slope, is excessively drained, and has sandy and gravelly outwash parent material. The next largest soil types within the project area are Ceresco and Kalmarville, respectively, which are somewhat poorly drained and poorly drained. The majority of the project area has minimal slopes, except for the portion listed as Ts – terrace escarpments, sandy. This soil type is listed as having steep slopes, with a slope range of 15-60 percent.

[6] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available online at https://sdmdataaccess.sc.egov.usda.gov.

[7] City of Wabasha. 2018. Hydrogeologic Assessment of the Drinking Water Source and Wells for the City of Wabasha, Part I.

The NRCS classifies soils into hydrologic soil groups, A – D:

- Group A – Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands.
- Group B – Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately course texture.
- Group C – Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture.
- Group D – Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays with high swelling potential, soils with a permanent high-water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.
- Group "/D" – Soils with a high-water table, but if drained conform to the first letter listed before "/D" (for example, A/D, B/D).

See *Item 11.b.ii*. for a discussion of erosion/sedimentation control measures related to stormwater runoff.

Project activities during the construction phase that will impact soils include the dredging of river bottom sediment to create a navigable passage and construction of roads, weighing station, small operations structure, and barge fleeting area. Dredged sediment will be brought to an upland area of the site.

Operational activities of the proposed project will not further impact the soils and topography of the site beyond the temporary placement of transported goods on the site prior to being hauled off-site.

Topography/Land Forms

Elevations on the site range between 668 to 708 feet above mean sea level.[8] Two-foot contour mapping shows the lowest elevations along the Mississippi River, with a steep bluff along the edge of the floodplain. A USGS topographic map of the proposed site can be seen in **Appendix A, Figure 2.**

Proposed Treatment of Topic in EIS

The EIS will include a discussion of site geology, soils, and topography, as well as a more complete assessment of potential impacts of the site layout and operations of the barge terminal facilities.

[8] Elevations taken from MnTOPO. http://arcgis.dnr.state.mn.us/maps/mntopo/.

11 Water Resources

a. Surface Water & Groundwater Features

Describe surface water and groundwater features on or near the site.

Surface Water

Describe lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

Public Waters – One Mile Search Area

The project site is within the Buffalo-Whitewater watershed (HUC8: 07040003).

Table 5. Impaired and Public Waters Within One Mile of Wabasha Barge Facility

AUID	Name	Impaired Use**	Additional Impairments	Distance to Project Area
07-0400-03-627	Mississippi River - U.S. Lock & Dam #4 Pool	-	Mercury in fish tissue PCB in fish tissue	adjacent
NA	Brewery Creek	NA	NA	~0.25 mile

Appendix A, Figure 7 "Surface Waters" illustrates the surface waters within close proximity of the study area.

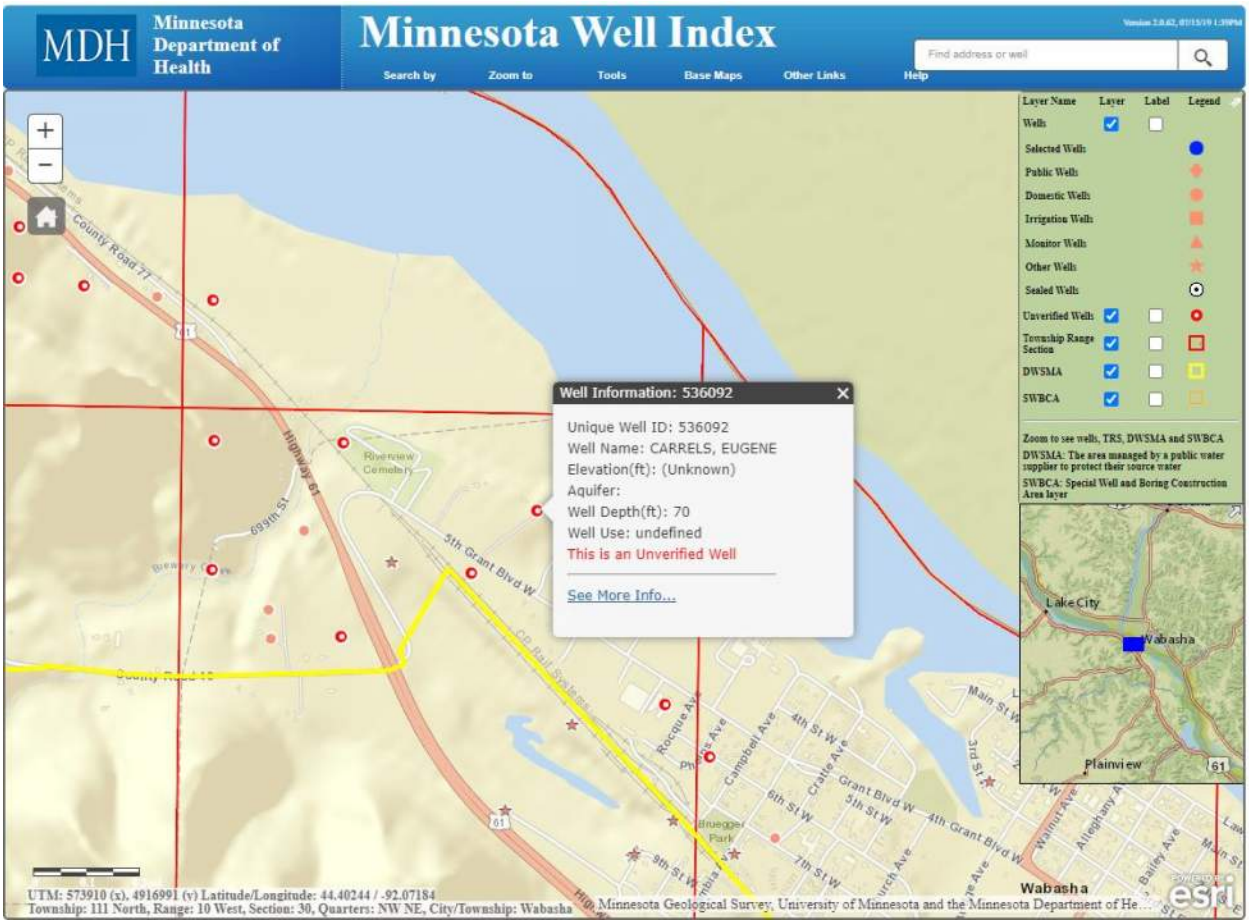
Wetlands

Wetland delineations were completed in June 2020. The field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the project area. The field investigation found four wetland basins within the study area. In addition to the field investigation, an off-site hydrology assessment was performed to identify locations within agricultural field that may possess wetland signatures. Eight years of aerial imagery was reviewed, only one site was identified and reviewed. According to the off-site hydrology decision matrix, the site was not considered wetland.

Ground Water

Describe aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

Groundwater data for the project area was obtained from the MNDNR. The site is located within the East-Central (1) Minnesota Groundwater Province and within the Quaternary water-table and buried unconfined aquiver. No springs are currently identified onsite by the MNDNR Spring Inventory. Depth to groundwater within the site is generally 0-20 ft[9]. The project site is not within an existing DWSMA or a wellhead protection area (see **Appendix A, Figure 6, "Geologic Conditions/Groundwater"**) but there are DWSMA and Wellhead protection areas located nearby. There is an existing unverified well onsite, Well ID: 536092 (see ***Minnesota Well Index*** image below).



b. Project Effects & Mitigations

Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

Any wells encountered on site will be sealed in accordance with Minnesota Department of Health's (MDH) requirements.

[9] Peterson, Todd A. 2005. C-14 Geologic Atlas of Wabasha County, Minnesota. Part B, Plate 8 – Hydrogeology of the Unconsolidated and Bedrock Aquifers. Retrieved from MNDNR. https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wabacga.html.

i. Wastewater

For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

Sanitary (domestic) wastewater generated by employees at the barge terminal facility will collected and conveyed to the City of Wabasha wastewater treatment facility (WWTF) where it will be treated. No pretreatment measures are necessary for domestic wastewater and the City's WWTF has adequate capacity to handle the minor amount of additional flow from the proposed facility.

If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

N/A

If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

N/A

ii. Stormwater

Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Stormwater Quantity

The project site and surrounding surface waters are not located within a defined watershed district or watershed management organization area. The project is located within the Buffalo-Whitewater watershed (HUC 07040003), which is part of the larger Mississippi River Watershed.

Stormwater runoff flows within the project limits north towards the Mississippi River. Ditches will be constructed around the perimeter of the active operations area to collect, store, and treat runoff prior to discharging to the Mississippi River. Areas not part of the facility operations will remain in natural habitat. Runoff from these areas should have no change from current water quantity and quality conditions, thereby causing negligible impact to receiving waters.

Stormwater Quality

During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the MPCA NPDES Permit. The EPA-approved impairments for the Mississippi

River are considered non-construction related and do not require any additional best management practices or plan review for compliance with the NPDES construction stormwater permit.

The project is not located within a defined Watershed District or watershed management area, therefore NPDES guidelines for permanent stormwater treatment will be followed. The project will generate more than one acre of new impervious surfaces. Per the NPDES construction stormwater permit, a water quality volume equal to one-inch time the net increase of impervious surfaces needs to be treated by permanent stormwater treatment systems constructed as a part of the project.

iii. Water Appropriation

Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

A DNR water appropriations permit is not anticipated for operations of the proposed barge terminal facility. An extension of City watermain to serve the facility and a water service connection to the watermain system will be constructed as a part of the project.

iv. Surface Waters

Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed and identify those probable locations.

Wetlands

Figure 8, located in Appendix A, "Wetlands", illustrates the NWI areas and approved delineated wetland boundaries within and surrounding the project area. On June 18 and 25, of 2020, a field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the Wabasha Barge Terminal project area. The field investigation found a total of four wetlands within the study area. In addition to the field investigation, an off-site hydrology assessment was performed to identify locations within agricultural field that may possess wetland signatures. Eight years of aerial imagery was reviewed, only one site was identified and reviewed. According to the off-site hydrology decision matrix, the site was not considered wetland.

Permitting and Sequencing Information

Impacts to the delineated wetlands are proposed as part of the proposed barge facility. Approximately 0.4 acres of impacts will occur and are considered to be permanent. These impacts result from fill being placed in the area adjacent to the barge/dock and off-loading area, which contains the material hauler, hopper, scale, and conveyor system. These impacts will be permitted.

Impact Avoidance

Early in the planning process, several scenarios to avoid wetland impacts were identified. A no-build alternative would not impact wetlands but would not address the need for this facility.

Other site plans alternatives included additional impacts as a result of the access road and placement of other ancillary uses (e.g., scale house and kiosk system). Due to these additional impacts, the preferred site plan was redesigned to avoid wetland impacts to the extent practicable.

Minimization

Minimization will be achieved by limiting disturbance limits within wetlands to the greatest extent allowable and ensuring appropriate erosion control measures are in place to prevent sedimentation of non-impacted wetlands and any receiving waters. Impacts were further minimized by avoiding impacts to the approximately 14 acre wetland found on the western portion of the project area.

Mitigation

The proposed project will impact a total of up to 0.4 acres of wetland within Bank Service Area (BSA) 7 and the Mississippi River Watershed. It is anticipated mitigation for these impacts at a minimum of a 2:1 ratio (i.e., 0.8 acres of wetland replacement for every acre of wetland impact) through a purchase of wetland credits within BSA 7. All mitigation efforts will be completed in accordance with local, state and federal regulations. The proposer will work closely with agency staff to identify requirements and ensure all potential concerns are addressed. Permits and all required plans will be submitted for review to appropriate state and federal agencies prior to proposed wetland impacts.

Other Surface Waters

Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

Proposed Treatment of Topic in EIS

The EIS will include a discussion and further assessment of both surface and groundwater resources. An impact analysis of the proposed site layout will include an assessment of floodplain impacts and a discussion of existing jurisdictional wetlands on the site, avoidance alternatives, minimization measures considered, wetland impacts and proposed mitigation. Impacts of the barge terminal facility on the water table, and impacts associated with other surface waters (e.g., dredging in Mississippi River) will also be conducted and discussed in the EIS.

12 Contamination/Hazardous Materials/Wastes

a. Pre-project Site Conditions

Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

According to the MPCA's "What's in My Neighborhood" interactive mapping database, there are six existing potential environmental hazards within ½-mile of the project area. Table 6 and **Figure 11, located in Appendix A, "Potentially Contaminated Sites"** identifies those uses within a half-mile radius from the proposed site.

Table 6: MPCA "What's In My Neighborhood" Sites within 1/2-mile

Site Number	Site Name	Distance of Proposed Site
No Number Available	J & S Storage	0.4 miles
SP 079-070-010	No Information Available	0.3 miles
No Number Available	Wabasha 2019 New Storage Building	0.3 miles
No Number Available	KP RUS Cardinal Health	0.35 miles
No Number Available	Timm Lawn Care	0.45 miles
No Number Available	Gunderson St. Elizabeth Medical Center	0.35 miles

A Phase I Environmental Site Assessment was completed in January 2020 and determined that there is no potential risk for contamination due to recognized environmental conditions and previous land uses on the project site. The potential for impacts to the proposed site are considered as a low potential for encountering contaminated materials during project operations. Any potentially contaminated materials encountered during construction and operations will be handled and treated in accordance with applicable federal, state and local regulations. A Phase II Environmental Site Assessment was not recommended for the project site.

b. Project Related Generation/Storage of Solid Wastes

Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

Debris from clearing land prior to operating the Wabasha Barge Facility will be disposed of in compliance with local and state regulations.

No solid wastes will be generated or stored at the site during construction and/or operations of the facility.

c. Project Related Use/Storage of Hazardous Materials

Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

The site operator's equipment will require fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). If it is determined that these products will be stored onsite, a Spill Prevention and Response Plan will be prepared to address accidental spills or the release of any hazardous material or petroleum products. The plan would be required to include the following measures to avoid and/or minimize spills:

- Fueling and equipment maintenance would not be allowed within 100 feet of the river's edge without deploying spill capture methods.
- The site operator shall maintain fuel spill containment kits and trained spill response personnel on the site at all times.
- Any spill or release of a hazardous material or petroleum products would be reported to the site supervisor who would take immediate action to minimize the potential for groundwater or surface water pollution.
- In the event of a spill or release of a hazardous material or a petroleum product, the project site supervisor would immediately deploy on-site supplies and equipment to contain the spill and contact the DNR, MPCA and the Minnesota Duty Officer, according to emergency procedures identified in Minnesota Rules, 7045.0574.
- Temporary, above ground, on-site fuel storage would not be allowed within the 100-year floodplain.
- Below ground storage tanks would not be allowed.

d. Project Related Generation/Storage of Hazardous Wastes

Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage, and

disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

Please see Items 12b and 12c.

Proposed Treatment of Topic in EIS

The EIS will verify and summarize known contaminated/hazardous sites in the study area. The EIS will evaluate the extent of hazardous materials being used and/or stored onsite and will include a discussion of mitigation measures that may be employed to address potential impacts should remedial action be necessary.

13 Fish, Wildlife, Plant Communities, & Sensitive Ecological Resources (Rare Features)

a. Resources/Habitats/Vegetation

Describe fish and wildlife resources as well as habitats and vegetation on or near the site.

The proposed project area is located at (URM Mile 760) within the Lower Pool 4 of the Mississippi River. This stretch of the river, which is 44 miles long, extends from Lock and Dam 3 at Red Wing, MN to Lock and Dam 4 at Alma, WI, and includes Lake Pepin. Pool 4 features a wide variety of aquatic habitats including fast flowing main channels, variable width and depth side channels, and backwater areas. In 2007, the Upper Mississippi River Restoration Program conducted a long-term fish collection effort from Pool 4. Over 15,342 fish were sampled, representing 59 species and two hybrids. Commonly sampled sport fish included walleye, sauger, yellow perch, white bass, bluegill, black crappie, smallmouth bass, largemouth bass, northern pike, channel catfish, and freshwater drum.[10]

Lower Pool 4 of the Mississippi River also hosts large assemblages of aquatic invertebrates and mussels. Invertebrate diversity can be attributed to the variety of habitats found in the area. Specialized invertebrates that rely on running water can be found in a range of water velocities near the project area. Several mussel surveys have been completed within Lower Pool 4, many of which were associated with channel maintenance and dredging activities. In 2002, 2015, and 2021, the Corps of Engineers completed mussel skimmer dredge transects along the stretch of the river located immediately adjacent to the Barge Terminal Facility. According to the Corps mussel survey data, only two live mussels of two common species (Threehorn Wartyback and Threeridge) were found in 2002. No live mussels were found in this stretch of the Mississippi River during the 2015 or 2021 surveys.

The Wisconsin Department of Natural Resources (WIDNR) conducted a survey of unionid mussels throughout the Upper Mississippi River. Findings concluded that 115 specimens were collected in the

[10] https://www.umesc.usgs.gov/reports_publications/ltrmp/fish/2007/pool_4/summary_p4.html

Lower Pool 4, of which 15 species were documented, the most abundant being Threeridge, Pigtoe, and Pimpleback[11].

In addition to the construction of dock and barge facilities within and along the river, access roads, stock piling facilities, and a terminal pad are proposed at the site. Much of the terrestrial portion of the project area has been substantially disturbed by historic mining activities. Site observations indicate that reclamation of the site never took place and remains largely disturbed, to this day large stockpiles, abandoned equipment, and debris litter the upland portion of the site. A large portion of the site, northwest area, is a seasonally flooded wetland, and is dominated by silver maple, black willow, and green ash. These seasonally flooded backwaters provide habitat for a variety of species including racoon, muskrat, beaver, mink, river otter, white -tailed deer, reptile species, amphibian species, and numerous waterfowl/migratory bird species.

b. Rare Features

*Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within proximity to the site. Provide the license agreement number (**LA-1069**) and/or correspondence number (ERDB XXXX) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.*

A query of the Natural Heritage Information System (NHIS) database was completed to assess the potential presence of state-listed threatened, endangered, and species of special concern within a one-mile radius of the project area. The review identified several occurrences of invertebrate animals, vascular plants, and vertebrate animals, including the following:

State Listed Species

- Black Sandshell Mussel *(Ligumia recta*) – Special Concern
- Butterfly Mussel *(Ellipsaria lineolate*) – Threatened
- Monkeyface Mussel *(Theliderma metanevra*) – Threatened
- Mucket Mussel *(Actinonaias ligamentina*) – Threatened
- Purple Wartyback Mussel *(Cyclonaias tuberculate*) – Endangered
- Round Pigtoe Mussel *(Pleurobema sintoxia*) – Special Concern
- Sheepnose Mussel *(Plethobasus cyphyus*) – Endangered
- Spectaclecase Mussel *(Cumberlandia mondonta*) – Endangered
- Spike Mussel *(Euryna dilatate*) – Threatened
- Wartyback Mussel *(Quadrula nodulata*) – Threatened
- Cattail Sedge *(Carex typhina*) – Special Concern
- Gray's Sedge *(Carex grayi*) – Special Concern
- Green Dragon *(Arisaema dracontium*) – Special Concern
- Muskingum Sedge *(Carex muskingumensis*) – Special Concern

[11] Thiel, P. A. (1981). *A Survey of Unionid Mussels in the Upper Mississippi River (Pools 3 through 11).* Madison: Wisconsin Department of Natural Resources .

- American Eel *(Anguilla rostrata*) – Special Concern
- Blue Sucker *(Cycleptus elongatus*) – Special Concern
- Mississippi Silvery Minnow *(Hybognathus nuchalis*) – Special Concern
- Paddlefish *(Polyodon spathula*) – Threatened
- Peregrine Falcon *(Falco peregrinus*) – Special Concern
- Pirate Perch *(Aphredoderus sayanus*) – Special Concern
- Timber Rattlesnake *(Crotalus horridus*) - Threatened

In addition to the NHIS query, a regulatory review for federally-listed species surrounding the project area was conducted using the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) tool. The following species and migratory birds were identified during the review:

USFWS - Federally Listed Species

- Northern Long-eared Bat *(Myotis septentrionalis) – Th*reatened
- Higgins Eye Mussel *(Lampsilis higginsii*) - Endangered
- Spectaclecase Mussel *(Cumberlandia monodonta*) - Endangered

Migratory Birds

- Bald Eagle *(Haliaeetus leucocephalus*) - Protected
- Black-billed Cuckoo *(Coccyzus erythropthalmus*)
- Golden Eagle *(Aqulla chrysaetos*) - Protected
- Lesser Yellowlegs *(Tringa flaviper*)
- Red-headed Woodpecker *Melanerpes erythrocephalus*)
- Rusty Blackbird *(Euphagus carolinus*)
- Short-billed Dowitcher *(Limnodromus griseus*)

c. Project Effects

Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

The project is expected to impact existing habitat areas on site and within the Mississippi River. Based on the information provided by the Corps of Engineers, live mussel species in the area appear to be limited based on the 2015 and 2021 surveys.

Any existing mussel species may experience direct mortality and short-term impacts because of the proposed project (dredging activities). Ongoing coordination with Corps of Engineers and MnDNR staff will determine if further mussel surveys are needed as part of the EIS. Other rare feature impact assessments will further describe details of potential direct impacts (e.g., vegetation loss and direct mortality) and indirect impacts (e.g., noise, dust) on rare species. As needed, mitigation measures will be proposed in the Draft EIS.

Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Preventing the spread of invasive species during construction and

operation of the barge terminal facility will occur as part of BMPs measures that will be put in place to control and appropriately manage vegetation and any invasive species. Disturbed areas on the site will primarily be replaced with gravel surfaces (access road, loading and stockpile areas). Reseeding and landscaping materials will predominantly be native seed mixes and free of invasive plants or plant parts.

d. Control Measures

Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

While no substantial impacts are anticipated, the project site plan may be modified to reduce potential impacts identified during the EIS process. Minimizing areas of disturbance, including natural vegetation and tree removals, will be limited to the extent possible.

Erosion control BMPs will be used on newly exposed soils. These may include the use of wildlife friendly natural fiber, erosion control blankets, silt fencing, synthetic fiber-free hydro-mulch, and rock checks; specifications for BMPs and allowed materials would be included in construction contracts and specifications. Exposed areas of sediment would be stabilized as soon as possible and seeded with an approved seed mix to establish vegetative cover. Invasive plant species would be monitored and managed to ensure success of native species establishment.

Additional coordination with MnDNR will occur in order to determine the potential for impacts and/or takings of state-protected mussel species in the Mississippi River dredge areas. If impacts are identified, a qualified surveyor would conduct a mussel survey and or/relocation in any potential mussel habitat prior to disturbance within these habitats. No work in the riverbed would occur until potential impacts to mussels have been resolved. In addition, if mussels are found, they would be relocated to an area of the river that is not impacted by the construction and activities associated with the barge terminal facility.

Proposed Treatment of Topic in EIS

The EIS will address impacts of the project on state and/or federal threatened and endangered species, rare plant communities and other sensitive ecological resources. The EIS will use species range and distribution maps, scientific literature, and site survey information to determine whether these resources are present in the Wabasha Barge Terminal Facility study area, and if present, the extent of and potential impact to the resource.

14 Historic Properties

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

A Phase 1A Archaeological Literature Review has been completed for the study area. The Phase 1A reviewed existing literature, historic imagery, and historic maps available through July 2021. The findings of the report include a recommendation for a Phase I archaeological reconnaissance survey for areas of the site with the potential to contain intact Holocene spoils, namely in areas not previously disturbed from the mining operation that previously occupied the site.

Early notification information was submitted to the State Historic Preservation Office (SHPO) in July 2021 and a response was received on September 20, 2021, recommending a Phase 1 archaeological survey be completed (SHPO No. 2021-2509) for areas identified in the Phase 1A literature review.

Proposed Treatment of Topic in EIS

A review of the site layout and recommended limits of the Phase 1 survey will be conducted during the development of the Draft EIS. If the site plan encroaches on previously undisturbed areas, the EIS will include the results of the Phase 1 survey and any additional findings and recommendations.

15 Visual

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The existing visual aesthetic of the project site is primarily woodlands with an assortment of left behind construction equipment and materials (scrap metal and various vehicle parts) that were abandoned following the mining operation that previously occupied this site.

The northern and northwestern portions of the project site contain wetlands and provide views of the Mississippi River. The eastern, western, and southern borders of the project site provide views of the surrounding agricultural land and the forested hillside located west of US Highway 61.

The proposed project would alter the existing visual aesthetic of the project site with the introduction of trucks, barges, other industrial equipment, storage facilities, and the temporary introduction of construction vehicles and equipment. This altered visual aesthetic would be visible from neighboring parcels, roadways, the Mississippi River, and from the surrounding hillside.

Proposed Treatment of Topic in EIS

The EIS will evaluate and summarize the extent of visual impacts associated with the proposed project on adjacent land uses and lines of sight. Mitigation measures will address site design and landscaping measures to reduce visual impacts over the course of the project's lifespan.

16 Air

a. Stationary Source Emissions

Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Construction and facility operations have the potential to create air emissions, particularly fugitive dust sources, as described in Item 16c below. Stationary processing equipment and associated activities will be primarily located along the northern boundary of the site and will be in conjunction with the barge/dock unloading area. The initiation of site activities will result in a slight increase of emissions from dredge material transport equipment/operations (dredge material haulers/hoppers, and conveyors and vehicle hauling, but is not anticipated to be excessive or at level of concern.

Site owners will assess the air emissions relative to proposed operations and apply for an MPCA Air Emissions Permit, if needed and as required by state regulations. Pending current or future requirements, this permit would regulate operating parameters and require routine performance tests, record keeping, and monitoring to ensure compliance with State and Federal ambient air standards.

b. Vehicle Emissions

Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g., traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

There are no vehicle-related emissions generated on the existing project site. The proposed project would include no more than ten parking spaces for employee and operator parking. The site would generate less than 500 daily trips, and the construction and operation of the site is not anticipated to adversely impact traffic conditions at intersections within or near the study area.

Construction-related vehicle emissions from the proposed project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal dock, storage pad, access road, dock/mooring piles, truck loading area, and scale house/field office building.

Vehicle-related emissions during the operation of the proposed project would be generated from trucks and barges used to transport dredged material to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site.

All construction vehicles and equipment, trucks, and barges would meet MPCA and EPA emission standards. Construction-related emissions would meet the conformity requirements under Section 176 (c) of the Clean Air Act and 40 CFR 93.153.

c. Dust & Odors

Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

As described in *Item 9* above**,** the project site is currently of vacant land use. There are no activities currently occurring on the project site that contribute existing dust- or odor-related effects.

The proposed project may generate minor dust-related impacts during construction and operation because of vehicles operating within the site along internal roads. Dust may also be generated from the offloading of materials, transportation, and processing operations. All dust-related impacts are anticipated to be minor and typical of an industrial facility located in a rural setting.

The proposed project is not anticipated to generate any nauseous odors during construction or operation.

Proposed Treatment of Topic in EIS

The EIS will review the proposed project's detailed construction plans to confirm the project's effect on air quality and anticipated vehicle-related emissions. As appropriate, mitigation measures will be utilized during the construction and operation of the proposed project.

The EIS will include an assessment and discussion of dust-related impacts based on the detailed construction plans and introduce mitigation measures, including a potential Wet Dust Suppression Plan, to be utilized during the construction or operation of the project. Odors will not be further addressed in the EIS.

17 Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

a. Existing Noise

Existing sources of noise in the vicinity of the proposed project include vehicle traffic on 5th Grant Boulevard West (County Road 59), noise from farming located on parcels adjacent to the project site, and an active freight railroad line located approximately 300 feet south of the project site.

The project site is bounded by the Mississippi River to the north and active agricultural land to the south, east, and west. Some of the agricultural lots adjacent to the project site contain houses, however the nearest lots to the project site that are primarily of residential use are located approximately 0.25 miles southeast of the project site. Additional noise receptors in the vicinity of the proposed project include: the Riverview Cemetery, approximately 250 feet west of the project site; the Gunderson St.

Elizabeth Hospital, approximately 2,000 feet east of the project site; and a couple rural residents south of 5th Grant Blvd (County Road 59), approximately 1,600 and 1,750 feet south.

b. Operational Noise

Construction-related noise effects from the proposed project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal pad, access road, dock/mooring piles, barge staging winch system, loading truck scale, and scale house/field office building. See ***Table 7, "Typical Construction Equipment Noise Levels at 50 Feet,"*** for typical noise levels of construction equipment measured at 50 feet.

Table 7: Typical Construction Equipment Noise Levels at 50 Feet

Equipment	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA*)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

* Units of "A-weighted decibels"

Source: United States Environmental Protection Agency and Federal Highway Administration

Noise resulting from the proposed project's operational activities would be generated by the loading and unloading of barges and trucks, from trucks and barges used to transport dredged material to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site, and internal site operations equipment (e.g., material haulers: hoppers, conveyors, etc.).

The State of Minnesota rules (MN Statute 7030.0020) define daytime hours as 7am to 10pm, and nighttime hours as 10pm to 7am. All construction and operational activities associated with the proposed project would conform with the State of Minnesota noise standards listed in ***Table 8, "Noise Standards (MN Statute 7030.0040)."***

Table 8: Noise Standards (MN Statute 7030.0040)

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1 (Residential)	60	65	50	55
2 (Commercial)	65	70	65	70
3 (Industrial)	75	80	75	80

*L_{10} is the sound level, expressed in dBA, which is exceeded 10% of the time for one hour

*L_{50} is the sound level, expressed in dBA, which is exceeded 50% of the time for one hour

c. Traffic Noise

The proposed project would generate traffic-related noise from trucks hauling construction materials during the construction of the proposed project, trucks hauling dredged materials during the operation of the proposed project, and from employees using personal vehicles to travel to and from the project site. However, because the proposed project would include no more than ten parking spaces for employee and operator parking and would generate less than 250 vehicle trips during peak hour operations and less than 2,500 daily trips, traffic congestion and traffic-related noise are not anticipated to adversely affect surrounding areas or sensitive receptors.

Proposed Treatment of Topic in EIS

A detailed noise analysis will not be completed as part of the Draft EIS. However, the EIS will assess potential noise-related impacts of the proposed project and discuss any associated mitigation measures that could be utilized during the construction or operation of the project.

18 Transportation

a. Project-Related Traffic

Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Existing and Proposed Parking Spaces

The project site does not presently include any parking spaces. It is anticipated the proposed project location will incorporate no more than ten parking spaces for employee and operator parking.

Existing Traffic

Transport roads to and from the proposed project location include Wabasha County Road 59 (Grant Blvd), State Trunk Highway (TH) 61, and County Road 10. Existing (2018) annual average daily traffic (AADT) for these roadways are as follows:

- 5th Grant Blvd (County Road 59): AADT ranges from 870 trips near the site entrance to 2,050 trips to the south near the Gundersen St. Elizabeth Hospital
- TH 61: this segment of state highway has approximately 4,850 daily trips
- County Road 10: near the intersection with TH 61 has 550 trips

The facility operations will cause traffic to increase in each direction on these roads, including an increase in heavy commercial truck traffic. Traffic will be generated by employees; haul trucks, and miscellaneous supply trucks/vehicles. A traffic study will be completed as part of the Draft EIS that will further analyze the impact of the proposed project on the local and regional transportation network.

b. Potential Congestion

Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system. If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 (available at: http://www.dot.state.mn.us/accessmanagement/resources.html) or a similar local guidance,

A detailed traffic impact study has not been prepared as the proposed operations are not anticipated to exceed 250 vehicles during peak hour operations or exceed 2,500 trips per day during peak hauling operations. The number of daily trips, during summer operating peaks, is anticipated to be less than 500 per day. Winter hauling to/from the site is anticipated to be minimal as river barge operations would halt during winter months. A traffic analysis is planned to be completed as part of the Draft EIS, however due to the rural nature of the study area and proximity to 5th Grant Blvd (County Road 59) and Highway 61, traffic congestion on the local and regional transportation system is not anticipated to be a concern for the project as proposed.

Proposed Treatment of Topic in EIS

The EIS will include a discussion of the traffic analysis and results of the traffic study. Intersection and roadway operations and safety conditions will be addressed in the Draft EIS along with any identified mitigation measures (e.g., geometric improvements, cautionary signage, etc.) that may be needed.

Ongoing coordination with the Wabasha County Highway Department and MnDOT will occur through the preparation of the Draft and Final EIS.

19 Cumulative Potential Effects

a. Geographic Scales & Timeframes

Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

It is currently estimated that the barge facility operations will operate for at least 20 years and continue to facilitate the transfer of dredged material from USACE channel maintenance activities on the Mississippi River within a stretch of the river near the City of Wabasha. Throughout the life of the site, it is expected that dredged material will be transported offsite for use as reclamation material for existing sand and gravel mines and other beneficial reuse, outside the geographic boundary of this cumulative potential effects analysis.

b. Future Projects

Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Cumulative potential effects may include private land use developments in portions of the city planned for future development and redevelopment. Transportation projects are likely to be planned and programmed for construction may involve safety, capacity, pavement preservation, and active transportation modes (ped/bike). These projects will be carried out by MnDOT, Wabasha County, or the city.

c. Discussion/Summary of Cumulative Potential Effects

Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

Impacts may include changes in land cover type (e.g., increased impervious and vegetation/habitat loss), impacts to wetlands and other water resources, increases in traffic volumes and changes in demand for non-motorized transportation options. While not anticipated to involve significant social, economic, or environmental effects, all future projects would be subject to applicable local, state, and federal environmental reviews and permitting.

Proposed Treatment of Topic in EIS

The EIS will include a discussion of cumulative potential effects. Additional research and coordination with local and state agencies will occur to identify specific projects, including timing, magnitude and estimated impacts.

20 Other Potential Environmental Effects

If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

None

RGU CERTIFICATION

*The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature Caroline Gregerson Date 6/7/2022

Title Caroline Gregerson

Appendix A: Figures

Figure 1: Regional Location

Lake Pepin
Mississippi River
Wabasha
Robinson Lake
Peterson Lake
Kellogg
Wabasha County
Plainview
Minneiska
Elba
61
60
42
247
74

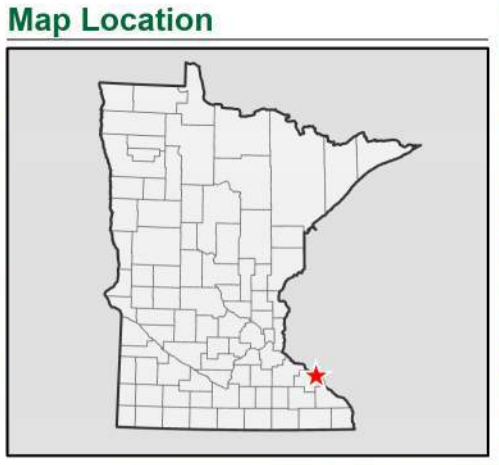
Legend

Project Location

0 2 Miles

Source: MnDNR, MnDOT, NLCD, Wabasha County

Map Location



Map Document: \\arcserver1\GIS\WABASHA_CI_MNH191144396\ESRI\Pro\EAW.aprx | Username: rachel.koch | Date Saved: 10/11/2021 4:07 PM

Legend

Study Area

0 2,000 Feet

Source: MnDNR, MnDOT, Wabasha County

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Figure 3: Existing Conditions

October 2021

Pepin Twp.
Wabasha

Mississippi River

61

5th Grant Boulevard West

Highway 61

59

County Road 10

10

Highway 61

Rocque Avenue

Phelps Avenue

Campbell Avenue

Gambia Avenue

Cratte Avenue

3rd Street West

4th Street West

Grant Boulevard West

6th Street West

64

7th Street West

Shields Avenue

30

Campbell Avenue

9th Street West

Bruegger Valley Road

Hiawatha Drive West

Legend

Study Area

Municipal Boundary

Parcels

0 500 Feet

Source: MnDNR, MnDOT, Wabasha County

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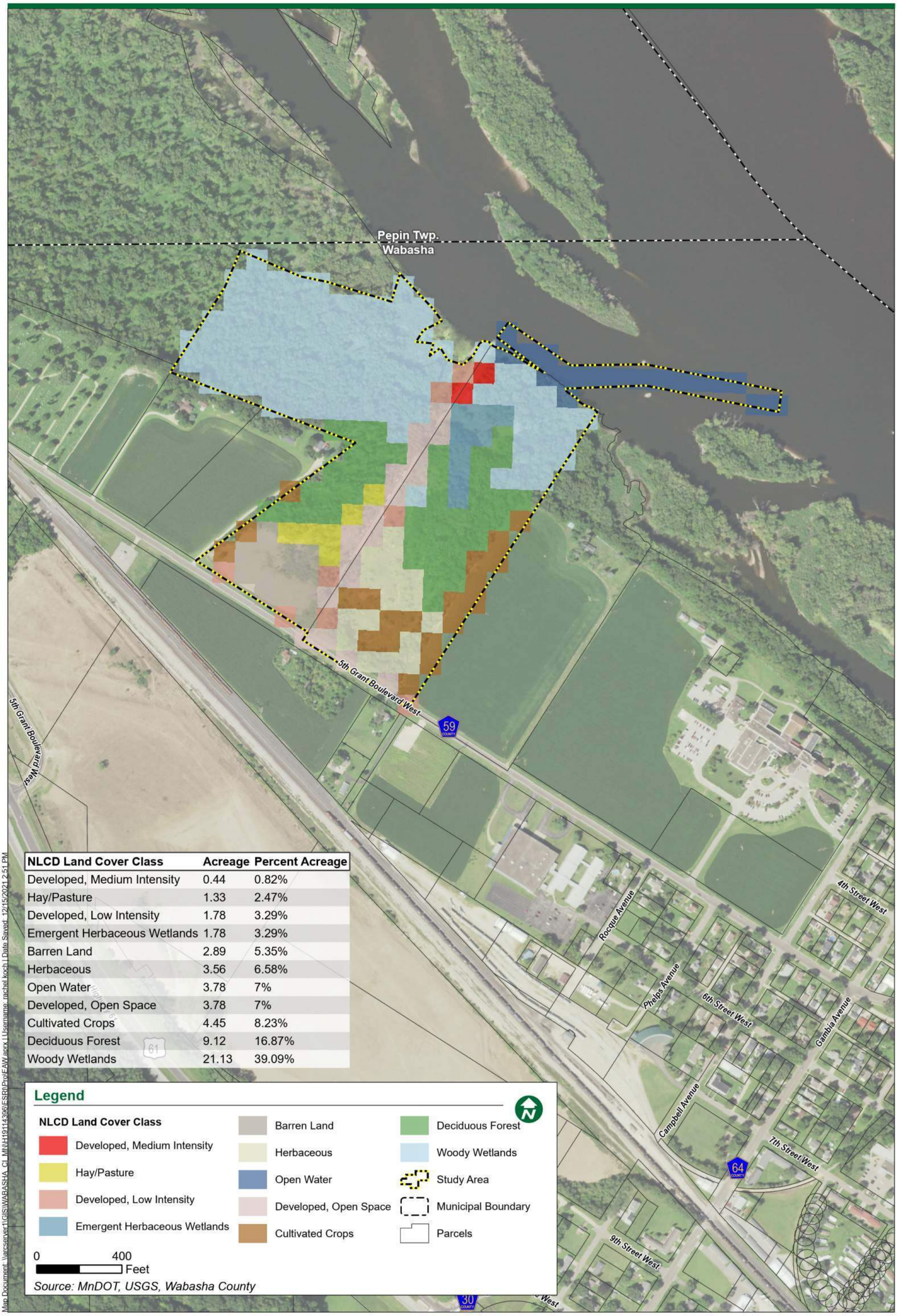
Figure 4: Land Cover Classification



NLCD Land Cover Class	Acreage	Percent Acreage
Developed, Medium Intensity	0.44	0.82%
Hay/Pasture	1.33	2.47%
Developed, Low Intensity	1.78	3.29%
Emergent Herbaceous Wetlands	1.78	3.29%
Barren Land	2.89	5.35%
Herbaceous	3.56	6.58%
Open Water	3.78	7%
Developed, Open Space	3.78	7%
Cultivated Crops	4.45	8.23%
Deciduous Forest	9.12	16.87%
Woody Wetlands	21.13	39.09%

Legend

NLCD Land Cover Class

- Developed, Medium Intensity
- Hay/Pasture
- Developed, Low Intensity
- Emergent Herbaceous Wetlands
- Barren Land
- Herbaceous
- Open Water
- Developed, Open Space
- Cultivated Crops
- Deciduous Forest
- Woody Wetlands
- Study Area
- Municipal Boundary
- Parcels

0 400 Feet

Source: MnDOT, USGS, Wabasha County

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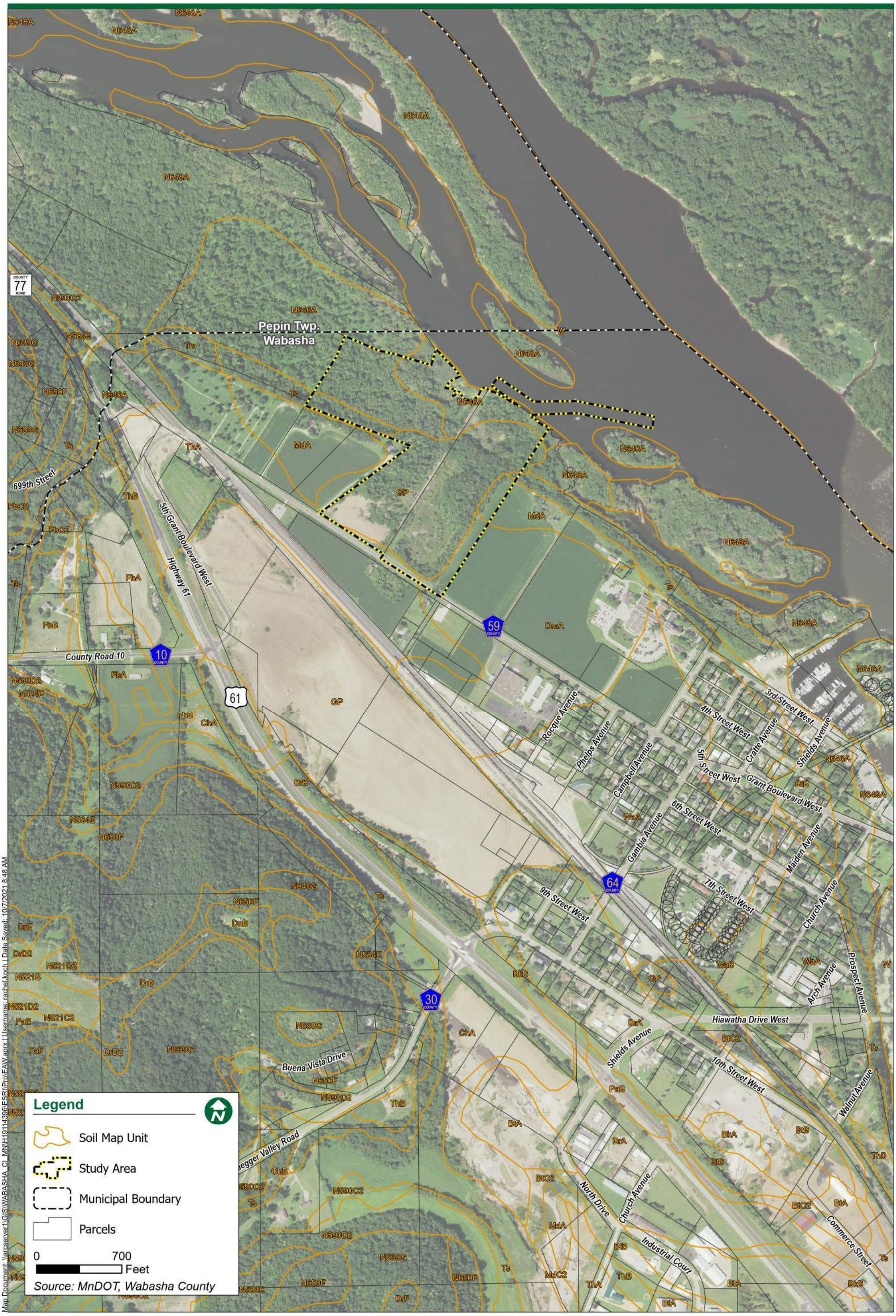

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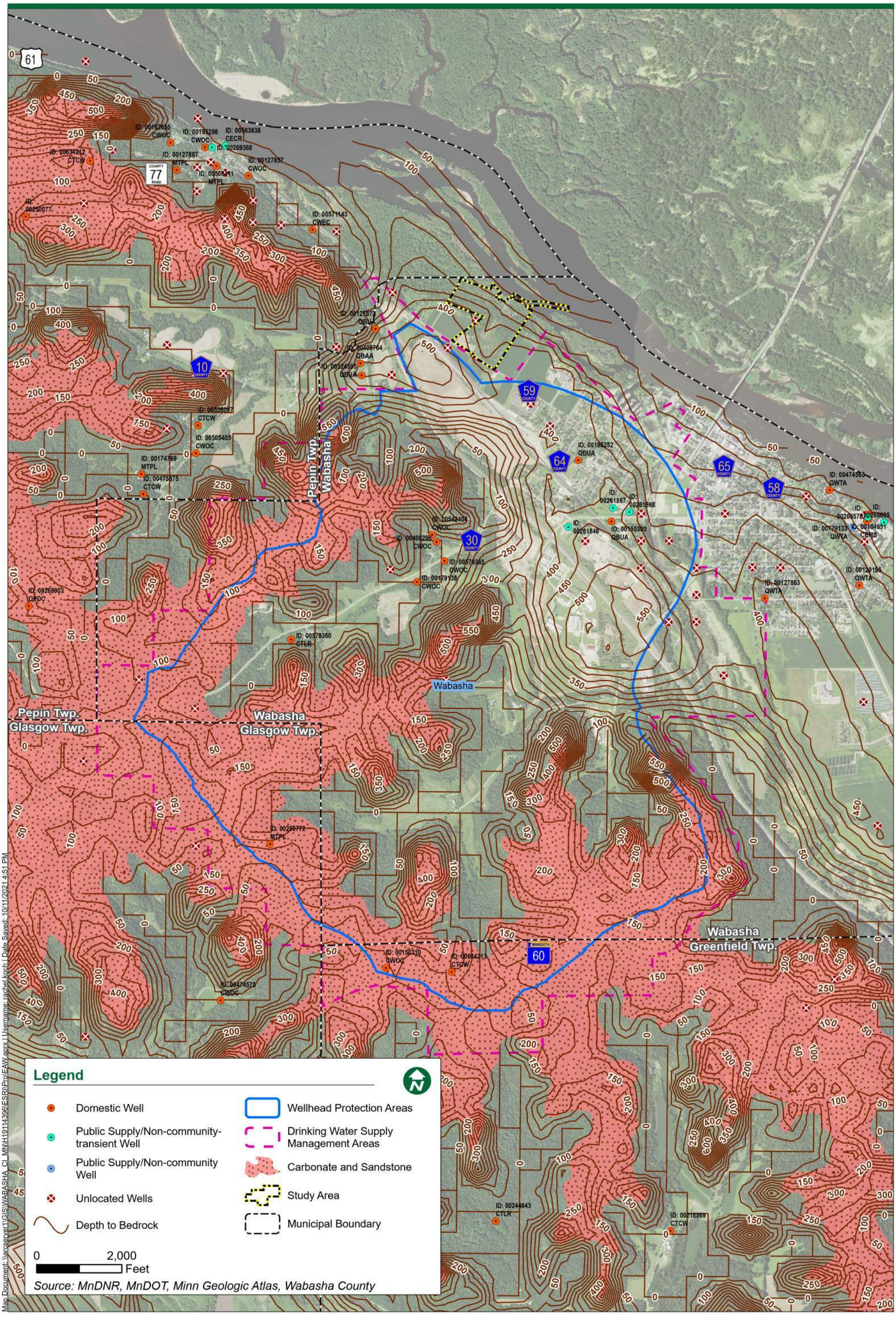
Figure 6: Geologic Conditions/Groundwater



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Pepin Twp.
Brewery Creek
Mississippi River - U.S. Lock & Dam #4 Pool
Mississippi River
Mississippi River - U.S. Lock & Dam #4 Pool (WI)
Wabasha
Mississippi River - Winona
Robinson
Greenfield Twp.

Legend

- Stream (Perennial)
- Stream (Intermittent)
- Impaired Streams
- Lakes and Rivers
- Major Watersheds
- 100 Year Floodplain
- Study Area
- Municipal Boundary

0 2,000 Feet

Source: FEMA, MnDNR, MnDOT, MnGeo, Wabasha County

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Mississippi River - U.S. Lock & Dam #4 Pool (WI)

Pepin Twp.
Wabasha

Mississippi River - U.S. Lock & Dam #4 Pool

5th Grant Boulevard West

5th Grant Boulevard West

59 COUNTY

Rocque Avenue

4th Street West

Phelps Avenue

6th Street West

Gambia Avenue

Campbell Avenue

7th Street West

64 COUNTY

Highway 61

61

Phelps Avenue

9th Street West

Hiawatha Drive West

30 COUNTY

Legend

- Delineated Wetland
- NWI Wetland
- Study Area
- Municipal Boundary

0 400 Feet

Source: MnDNR, MnDOT, Wabasha County

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Figure 9: Biotic Resources

Pepin Twp.
Wabasha

Wabasha
Glasgow Twp.

Wabasha
Greenfield Twp.

Legend

Rusty Patched Bumble Bee High Potential Zone

Rusty Patched Bumble Bee Low Potential Zone

MBS Sites of Biodiversity Significance

High

Moderate

Below

DNR Native Plant Communities

Floodplain Forest System

Mesic Hardwood Forest System

Upland Prairie System

Study Area

Municipal Boundary

0 2,000 Feet

Source: MnDNR, MnDOT, Wabasha County

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Figure 10: Outdoor Recreation

October 2021

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Figure 11: Potentially Contaminated Sites

Pepin Twp.
Wabasha
61
699th Street
5th Grant Boulevard West
Highway 61
County Road 10
10
59
64
30
Rocque Avenue
Phelps Avenue
Campbell Avenue
3rd Street West
4th Street West
5th Street West
6th Street West
7th Street West
Crarte Avenue
Shields Avenue
Grant Boulevard West
Maiden Avenue
Church Avenue
9th Street West
Gambia Avenue
Arch Avenue
Prospect Avenue
Bridge Avenue
Hiawatha Drive West
10th Street West
Walnut Avenue
Buena Vista Drive
North Drive
Industrial Court
Commerce Street
Pembroke Avenue
MINNESOTA
60

Legend

- Aboveground Tanks
- Underground Tanks
- Hazardous Waste
- Hazardous Waste, Minimal quantity generator
- Multiple Activities
- Site Assessment
- Solid Waste, Permitted Solid Waste Facility
- Parcels
- Study Area
- Municipal Boundary

0 700 Feet

Source: MnDOT, MPCA, Wabasha County

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APPENDIX J

Comments Received on Scoping EAW

DEPARTMENT OF NATURAL RESOURCES

Division of Ecological and Water Resources
Region 3 Headquarters
1200 Warner Road
Saint Paul, MN 55106

July 21, 2022

Caroline Gregerson, City Administrator
Wabasha Port Authority
900 Hiawatha Drive E
Wabasha, Minnesota 55981

Dear Ms. Gregerson:

Thank you for the opportunity to review the Wabasha Barge Facility Scoping Environmental Assessment Worksheet (SEAW) and Wabasha Barge Terminal Draft Scoping Decision Document (DSDD). The Minnesota Department of Natural Resources (DNR) recognizes the challenges inherent to dredged material management and the importance of maintaining a safe and reliable 9-foot navigation channel on the Upper Mississippi River. It is in this context that we offer these comments and express DNR's commitment to continuing to work with the Wabasha Port Authority as the Responsible Governmental Unit (RGU) on this important environmental review.

Purpose, Need and Alternatives Analysis

The purpose and need for this project appears to be limited to the need to transport dredged material generated by the U.S. Army Corps of Engineers (USACE). It is important to both the environmental review process as well as for DNR's subsequent consideration of a Public Waters Work permit application that the purpose and need be clearly articulated and not be so narrow as to preclude the analysis of meaningful alternatives. More specifically, the Minnesota Environmental Policy Act (Minn. Stat. § 116D.04, subd. 6) precludes "state actions significantly affecting the quality of the environment" if there is a "feasible and prudent alternative consistent with the reasonable requirement of the public health, safety, and welfare of the state's paramount concern for the protection of its air, water, land, and other natural resources from pollution, impairment, or destruction." Courts have consistently ruled that the statement of need and purpose cannot be so narrow and vague as to undermine any meaningful review of alternatives, particularly where the project is a government project. Courts have also noted that the statement of need and purpose should not sanction a specific project plan but rather should focus on the general goal of the project, which here seems to be delivering dredged

material to the storage site. If there is an additional purpose and need for this project, that is unclear from the DSDD.

If the primary or exclusive purpose and need for the project is to transfer dredged material to the storage site, there appear to be other alternatives that should be considered. These alternatives might include the use of hydraulic dredging with a pipeline to the storage site (such as that proposed at Read's Landing), that could minimize environmental impacts.

The DNR also observes that, if a barge facility is the selected alternative, that alternative will require a Public Waters Work Permit from the DNR. For the reasons outlined below, that unless the Environmental Impact Statement (EIS) evaluates project alternatives, the document will likely be of limited use in the permit review process. Therefore, the importance of a clearly articulated purpose and need statement that then informs the identification and evaluation of project alternatives extends beyond the environmental review process to the consideration of permit applications.

Scoping EAW Comments

1. Page 2, Project Description. The impetus for the project seems to be entirely for the purpose of aiding the USACE in the storage of dredged material. No other purpose or use for the barge facility is provided. It is, therefore, our understanding that the sole purpose of this project is for the storage of dredged material generated by USACE and that, after that work is completed, this facility will be closed and restored. If this understanding is correct, a restoration plan will be required, consistent with the requirements for other USACE dredged material placement sites, and should be described or referenced within the EIS. Alternatively, if there is an intent by the City to use this facility after dredging has ceased, the environmental review document should so state and articulate the general need of the City for the facility.
2. Page 3, Project Description. This section states that dredging will occur in an "existing access channel." Anecdotally available information indicates there might not be an existing access channel, despite previous dredging in this area in 1982, some 40 years ago. This might be better worded as "Dredging an access channel within the footprint of the 1982 dredged access channel impact area," or similar.
3. Page 3, Project Description and Alternatives Analysis. This section states that the proposer will "dredge an area to accommodate barge maneuvering and docking." We realize that final plans are not yet available, but final plans are not a prerequisite to crafting a statement of a project need and purpose that meets MEPA standards. The need should reflect the project's general goals, objective and needs (i.e., addresses why this project is needed) to allow identification and analysis of the full range of alternatives. Additionally, please include as much information as possible to facilitate a comprehensive evaluation of potential alternatives. Examples of useful additional information would include: a description of how many barges would be needed to transport the dredged material, a description of how many barges would need to dock at the facility at any one time, whether the project purpose requires that there be fleeting or mooring areas, and whether there are less impactful solutions than construction of a barge facility to transport dredge material to the dredge storage site.

4. Page 4, Previous Development. This site is identified as one of several sites within the USACE's Lower Pool 4 Dredged Material Management Plan (DMMP), which is a federal Environmental Assessment document, and should be mentioned as previous environmental review.

5. Page 5, Permits and Approvals. Under Local Agencies, City of Wabasha on Table 3, "Floodplain Permit" should be added as a Type of Application/Permit.

6. Page 5, Permits and Approvals. The City is currently working through the rare species survey process for its proposed project with DNR. This analysis will need to be undertaken for all of the proposed alternatives analyzed during environmental review. For any alternative analyzed, a DNR Permit to Take may be needed for any state-listed threatened and endangered species that cannot be avoided. Thus, a DNR Permit to Take should be listed on Table 3.

7. Page 5, Permits and Approvals. If during the construction of the proposed facility, or any project alternative, it is necessary to appropriate water, including for construction site dewatering during the installation of utilities, and the volume of water taken exceeds 10,000 gallons per day, or one million gallons per year, then a DNR Water Appropriation Permit would be required. Thus, a DNR Water Appropriation Permit should also be listed on Table 3.

8. Page 5, Permits and Approvals. Part of the proposed storage site is currently included under the USACE's approved Channel Maintenance Management Plan and Dredged Material Management Plan. Based on these plans, the DNR has authorized the USACE to deposit dredge material at part of this site under DNR's General Permit 1994-5082. The EIS should clearly identify dredge spoil authorizations between City and USACE jurisdictions.

9. Page 6, Land Use. This section states that for the City's preferred alternative "there are no identified parks, trails or recreational resources within the project site." This area of the Upper Mississippi River has a substantial amount of fishing and boating activities. Small boats frequently use this area to access the side channel to the west of Drury Island and there are also primitive camping sites on the interior of the island complex.

   There is no mention in the Land Use section of the U.S. Fish and Wildlife Service (USFWS) property associated with the Upper Mississippi River National Wildlife Refuge (NWR) that is located immediately adjacent to the preferred alternative project parcel. The Paragraph referencing "Appendix A, Figure 3 "Existing Conditions"" and the figure itself would lead the reader to believe that USFWS refuge lands bordering the property are agricultural in nature instead of federal refuge lands. Similarly, the paragraph referencing "Appendix A, Figure 10, "Outdoor Recreation"" and the figure itself would lead the reader to believe that the USFWS lands are not publicly accessible recreational resources.

   In general, the scoping document appears to downplay the amount of recreational use that occurs in the vicinity. The proposed facility will have an effect on recreational opportunities and these impacts should be addressed in greater detail. As part of the required MEPA analysis of project alternatives, the EIS should identify each alternative's potential impacts on recreation and consider differences among them.

10. Page 15, Stormwater. If more than one acre of new impervious surfaces will be installed, will a Stormwater Pollution Prevention Plan (SWPPP) be developed for the various alternatives for the project?

11. Page 16, Wetlands. The proposed project is within a site identified by the Minnesota Biological Survey (MBS) as a Site of Moderate Biodiversity Significance. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as Moderate contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. Green dragon (*Arisaema dracontium*), Gary's sedge (*Carex grayi*), and cattail sedge (*Carex typhina*), all state-listed plant species of special concern, have been documented within the site and may be adversely affected by this project. As part of the required MEPA analysis of project alternatives, the EIS should identify each alternative's potential impacts on these wetland resources and consider differences among the alternatives in terms of their potential to avoid or minimize wetland impacts. This analysis should consider the quality of the wetland plant community being impacted, as well as the potential to degrade plant communities within close proximity to the facility that could be effected by sedimentation, barge traffic, and the introduction of invasive species.

12. Page 19, Rare Features. Please see the enclosed DNR Natural Heritage Review (NHIS) letter dated, July 8, 2022, which contains an assessment of rare features and species that may be adversely affected by the proposed project. Please note that this letter contains required avoidance measures for state-listed species known to occur within the project area, including in-water work restriction dates, as well as instructions regarding a required mussel survey. A robust alternative analysis of locations, technology and site design is needed to document consideration of avoidance measures. Minnesota's Endangered Species Statute (*Minnesota Statutes*, section 84.0895) and associated Rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and chapter 6134) prohibit the take of threatened or endangered species without a permit. Therefore, no project work may proceed until potential impacts to state-listed rare species have been addressed, either via approved avoidance measures or a DNR Permit to Take.

13. Page 19, Rare Species. The fish community description appears incomplete and outdated. Notably, it cites Long Term Resource Monitoring (LTRM) data from 2007. The LTRM Upper Mississippi River Restoration Program has done annual sampling from 1993 to present. The EAW states that 59 fish species are present in Pool 4; however, over the history of this program, 87 species have been collected in Pool 4. Furthermore, Pitlo 1995 indicates that there are 99 species present in Pool 4, and there is new information from the Upper Mississippi River Conservation Committee (UMRCC) Fisheries Compendium 4th edition by Schlesser 2020 that shows status and distribution of fishes. The EIS should use the most complete and current information available to assess potential impacts to the fish population within Lower Pool 4 from the proposed project and all project alternatives evaluated. This assessment should include all fish Species of Greatest Conservation Need (SGCN).

14. Page 21, Rare Features. The river corridor is one of the most significant migratory routes in North America. The project directly borders the Audubon Society's Upper Mississippi River National Wildlife Refuge Important Bird Area (IBA). Please reference the Audubon Society's site report for a full list of migratory birds that utilize the project area. A robust alternatives analysis is needed to avoid and minimize impacts to this important area.

15. Page 21 Rare Features. This section should also describe rare plant communities and ecological features including Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, Lakes of

Outstanding Biological Significance, and DNR Native Plant Communities. The proposed project's proximity to the Upper Mississippi River National Wildlife Refuge and all of the species that depend upon it should be discussed comprehensively within the EIS, including identifications of alternatives to avoid or minimize impacts. Please see the list of recommendations in the enclosed July 8, 2022 DNR NHIS letter regarding work within an MBS Site.

16. Page 21, Project Effects. This section should thoroughly consider the potential impacts of all of the project alternatives, including the impact of all alternatives to each state-listed and federally-listed species. Section 13.d. Control Measures, should address what measures will be taken for each alternative to avoid impacting these species. Please see the enclosed NHIS letter for requirements and avoidance measures pertaining to the Timber rattlesnake, mussels, and rare fish species. The EIS should also include a detailed discussion of avoidance and mitigation measures for each alternative.
17. Page 23, Visual. Given the proximity to the Upper Mississippi River National Wildlife Refuge and the Audubon Society's IBA, any proposed lighting associated with any of the alternatives analyzed could impact migratory birds and other wildlife present in the area. Lighting for each alternative should be described in greater detail within the EIS.
18. Page 27, Traffic. This section focuses solely on land-based transportation impacts of one alternative (the City's preferred alternative). Each of the alternatives should be analyzed for impacts on both land-based and water-based transportation.
19. Page 28, Cumulative Potential Effects. For each alternative, the SEAW and future EIS process should address the potential loss of fish spawning habitat, disruption of fish movement to the side channel, the resuspension of sediments as barges are maneuvered, and possible entrainment of fish in barge propellers. It is likely that the proposed project and any other project alternatives involving dredging will also require future dredging to maintain functionality of the site. As a result, the impacts of sedimentation and future site disturbance should be described for each alternative involving dredging.

    The narrative of what appears to be the City's preferred alternative would be enhanced by including a description of the previous wetland violation and restoration that occurred at this site.

DNR Work in Public Waters Permitting Needs

One of the fundamental purposes of the EIS is to inform entities that will ultimately need to make permitting decisions of the environmental impacts of the proposed project and its alternatives. Under Minnesota law, the bar for obtaining a DNR Public Waters Work Permit for a new barge facility within such a sensitive and valuable natural resource is high, making the alternatives analysis a particularly important part of this EIS and any subsequent permitting process.

As proposed, this project would require a DNR Public Waters Work Permit to dredge a channel, create a barging facility, and deposit spoils below the Ordinary High Water Level (OHWL) of the Mississippi River. Any project alternatives identified and evaluated may also have elements requiring a DNR Public Waters Work Permit. The DNR is required to evaluate an application for a Public Waters Work Permit for consistency with *Minnesota Statutes* 103G and *Minnesota Rules* 6115.0150 through 6115.0280. Therefore, the EIS should address:

1. For any proposed filling, the EIS should address the criteria in Minn. Rules 6115.0190 and 6115.0191.
2. For any proposed excavation, the EIS should address the criteria in Minn. Rules 6115.0200 and 6115.0201.
3. For any proposed barge facility, the EIS should address the requirements in Minn. Rules 6115.0210 and 6115.0211.
4. The permit application, when submitted, must be consistent with Minn. Rule 6115.0240. To inform permit decision-making, the EIS should discuss project alternatives and address how the proposed project is the minimum impact solution with respect to all other alternatives.
5. The City must meet the 'who may apply' requirements of Minn. Rule 6115.0240 Subp.2, requiring that the City obtain any necessary property rights.
6. The DNR permit decision must be consistent with Minn. Rule 6115.0250. If the project is consistent with all public waters requirements and a permit is issued, it must include requirements for mitigation. Therefore, to inform permit decision-making, the EIS should address mitigation strategies.

Thank you again for the opportunity to review these documents. We look forward to further coordination with the City of Wabasha and the US Army Corps of Engineers. Please let me know if you have any questions.

Sincerely,

Katie Smith

Digitally signed by Katie Smith
Date: 2022.07.21 16:09:58 -05'00'

Enclosure: July, 8 2022 DNR Natural Heritage Letter

Equal Opportunity Employer

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

July 8, 2022
Correspondence # MCE 2022-00127

Robert Rogers
Bolton & Menk, Inc.

RE: Natural Heritage Review of the proposed Wabasha Barge Terminal Project,
T111N R10W Section 30; Wabasha County

Dear Robert Rogers,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The proposed project is within a site identified by the Minnesota Biological Survey (MBS) as a Site of *Moderate* Biodiversity Significance. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. Green dragon (*Arisaema dracontium*), Gary's sedge (*Carex grayi*), and cattail sedge (*Carex typhina*), all state-listed plant species of special concern, have been documented within this Site and may be impacted by this project.

  We encourage you to consider project alternatives that would avoid or minimize disturbance to this ecologically significant area. Actions to minimize disturbance may include, but are not limited to, the following recommendations:
  - Minimize vehicular disturbance in the MBS Site (allow only vehicles/equipment necessary for construction activities);
  - Do not park equipment or stockpile supplies in the MBS Site;
  - Do not place spoil within MBS Site or other sensitive areas;

- Retain a buffer between proposed activities and the MBS Site;
- If possible, conduct the work under frozen ground conditions;
- Use effective erosion prevention and sediment control measures;
- Inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species;
- As much as possible, operate within already-disturbed areas;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (Lotus corniculatus) and crown vetch (Coronilla varia), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities community can be viewed using the Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact me if you do not have access to the appropriate mapping services. For information on interpreting the data, reference the MBS Site Biodiversity Significance and Native Plant Community websites.

- Pool 4 of the Mississippi River has been identified as a Lake of *Outstanding* Biological Significance. Lakes of Biological Significance were ranked as *Outstanding, High, or Moderate* based on unique plant and animal presence. It is important that effective erosion prevention and sediment control practices be implemented and maintained near lakes throughout the project. Indirect impacts, such as the introduction or spread of invasive species, should also be considered and minimized.

State-listed Species

- Several state-listed fish including paddlefish (*Polyodon spathula*), a state-listed threatened fish species have been documented in the Mississippi River near the proposed project. In Minnesota, paddlefish spawn in the spring in temporarily flooded tributaries to the large rivers. Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the take of threatened or endangered species without a permit. To protect this species, **work within the water needs to be avoided from April to mid-June.** Contact the DNR Endangered Species Environmental Review Coordinator, Lisa Joyal (Lisa.Joyal@state.mn.us or 651-259-5109) if this is not feasible as additional action may be needed.

- Timber rattlesnakes (*Crotalus horridus)*, a state-listed threatened species, have been reported from the vicinity of the proposed project and may be encountered on site. In Minnesota, the ideal habitat for this species is forested bluffs, south-facing rock outcrops, and bluff prairies, particularly in the Mississippi River Valley. Nearby forests, prairies, and agricultural lands are used as summer feeding grounds. Two necessary habitat components are open areas for thermoregulation, and dens for overwintering. The dens are often located on steep, south or

west-facing hillsides with rock outcroppings and ledges. Timber rattlesnakes emerge from their dens in late April to early May and return to them in late September to early October. In the spring and fall, timber rattlesnakes are active during the day; while during the hottest months of summer, they are mostly active at night.

Timber rattlesnake mortality in Minnesota is most commonly caused by poaching, vehicle collisions, and habitat destruction. The loss of a single adult, especially a female, can impact the population significantly. As such, crews working in the area should be advised that if they encounter any snakes, the snakes should not be disturbed. The use of erosion control blanket shall be limited to 'bio-netting' or 'naturalnetting' types, and specifically not products containing plastic mesh netting or other plastic components. Also, be aware that hydro-mulch products may contain small synthetic (plastic) fibers to aid in their matrix strength. These loose fibers could potentially re-suspend and make their way into Public Waters. As such, please review mulch products and not allow any materials with synthetic (plastic) fiber additives in areas that drain into Public Waters. Be aware, that there are also other species of snakes in the area that will mimic rattlesnakes. Contact the DNR Regional Nongame Wildlife Specialist, Bridgette Timm (952-207-9769 or bridgette.timm@state.mn.us) if timber rattlesnakes are encountered on-site or if you have any questions regarding this species.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts. For further assistance with these species, please contact the appropriate DNR Regional Nongame Specialist or Regional Ecologist.

Federally Protected Species

- Several federally and state-listed mussels, including the sheepnose (*Plethobasus cyphyus*), a federally and state-listed endangered species, have been documented in the Mississippi River in the vicinity of the proposed project, some as recently as 2021. As mussels are particularly vulnerable to deterioration in water quality, especially increased siltation, it is important that effective erosion prevention and sediment control practices be implemented and maintained near the river.

  Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and chapter 6134) prohibit the take of threatened or endangered species without a permit. In order to determine the potential for a take of state-protected mussels, **a qualified surveyor (see attached list) will need to conduct a mussel survey and/or relocation in any potential mussel habitat prior to construction within these habitats**.

  The surveyor will need to obtain a permit from the DNR Endangered Species Coordinator, Bridget Henning-Randa (Bridget.Henning-Randa@state.mn.us or 651-259-5073) before conducting any mussel surveys and will need to follow the mussel survey and relocation protocol. The extent of

the mussel survey should include all areas of the riverbed that will be directly impacted by excavation, pile driving, placing of fill or riprap, driving of equipment, or dewatering; as well as any areas downstream that will receive sediment from project activities. Please send the results of all survey work to the DNR Endangered Species Environmental Review Coordinator, Lisa Joyal. **No work in the riverbed shall occur until potential impacts to mussels have been resolved** to the satisfaction of the DNR's Endangered Species Coordinator, Bridget Henning-Randa.

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Hertiage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

Samantha Bump

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

James Drake

James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Cc: Melissa Collins, Bridgette Timm, and Bridget Henning-Randa

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

July 20, 2022

Caroline Gregerson
City Administrator
Wabasha Port Authority
900 Hiawatha Drive East
Wabasha, MN 55981

Re: Wabasha Barge Facility Environmental Assessment Worksheet

Dear Caroline Gregerson:

Thank you for the opportunity to review and comment on the Scoping Environmental Assessment Worksheet (EAW) for the Wabasha Barge Facility project (Project) located in Wabasha, Wabasha County, Minnesota. The Project consists of a new barge facility for the transfer of sand from Mississippi River channel dredging activities. Regarding matters for which the Minnesota Pollution Control Agency (MPCA) has regulatory responsibility and other interests, the MPCA staff has the following comments for your consideration.

Permits and Approvals (Item 8)

- This section indicates that a Clean Water Act (CWA) Section 404 Permit from the U.S. Army Corps of Engineers (USACE) for project related wetland impacts may be necessary. The EIS (Environmental Impact Statement) should clarify that if a USACE Section 404 Individual Permit is required for any Project activity, then an MPCA CWA Section 401 Water Quality Certification or waiver must also be obtained as part of the permitting process. You can find additional information about the MPCA's 401 Certification process at: https://www.pca.state.mn.us/water/clean-water-act-section-401-water-quality-certifications. For further information about the 401 Water Quality Certification process, please contact Bill Wilde at 651-757-2825 or William.wilde@state.mn.us.
- Please note that the project may require a State Disposal System Permit for the use/disposal of dredged material in upland areas depending on how this is completed and who is doing the work. More information regarding a permit can be found at: http://www.pca.state.mn.us/water/dredgedmaterials.html. Questions regarding disposal of dredged material should be directed to Emily Schnick at 651-757-2699.

Soils and Topography (Item 10)

- As stated above, the access dredging for the barge facility may need a permit depending on how that is completed and who is doing the work. It is not clear if this dredging will be conducted by the USACE as part of their permit or another entity. This should be clarified in the EIS.
- Additional information should be provided in the EIS regarding the access dredging volume and how will it be reused or disposed.
- The Scoping EAW states that the dredged material will be brought to an upland area of the site but is not clear if this is for dewatering or reuse and if there is any sampling data on this material. Since this is not part of the navigational channel, it is assumed that the material is silty and would require sampling. This should be discussed in the EIS.

- It is not clear if this new site will have dredge storage and dewatering activities and if so, what is planned. This may require the Wabasha Port Authority to obtain a permit for the management of dredged material separate from the USACE permit. Please clarify in the EIS.

Water Resources (Item 11)

Surface Water

- The EIS should clarify that if the USACE Section 404 permit or the Section 10 permit is required and in accordance with Minnesota Statutes, the Project should include the MPCA as a regulator of all surface waters as defined by Minn. Stat. § 115.01, subd. 22 Waters of the state. Even though there may be surface waters that are determined to be USACE non-jurisdictional or exempt from the Wetland Conservation Act, all surface waters are regulated by the MPCA, and any surface water impact needs to be described in the application and may require mitigation.
- In addition, if any of the USACE permitting vehicles are required, the 401 Water Quality Certification must also be included and becomes an enforceable component of the associated federal license or permit, issued under either Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act. The scope of a Clean Water Act Section 401 certification is limited to assuring that a discharge from a federally licensed or permitted activity will comply with water quality requirements. In addition, the Project proposer must also submit to the MPCA the Antidegradation Assessment in accordance with water quality standards Minn R. 7050.0265 and should review the Antidegradation requirements in 7050.0285.

Stormwater

- It appears the Project location is on a reach of the Mississippi River that does not have a construction-related impairment, therefore additional best management practices (BMPs) are not required. However, since the Project borders the river and several wetlands are also located within the project area, the MPCA National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit (CSW Permit) requires redundant down gradient sediment controls if soil disturbance will encroach within the existing 50 feet of natural buffer to any of the waterbodies.
- The planned permanent stormwater management for new impervious surface will consist of ditches constructed around the perimeter of the site. Please note that the CSW Permit requires use of a volume reduction method, such as infiltration, to treat the first 1 inch of stormwater volume that is not discharged to the receiving water. If infiltration is not feasible due to prohibitions at the site, the Project proposer can also consider stormwater reuse or other method to limit stormwater discharges from the site. Questions regarding Construction Stormwater Permit requirements should be directed to Roberta Getman at 507-206-2629 or Roberta.Getman@state.mn.us.

We appreciate the opportunity to review this Project. Please provide your specific responses to our comments and notice of decision on the need for an Environmental Impact Statement. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit action(s) by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning our review of this EAW, please contact me by email at Karen.kromar@state.mn.us or by telephone at 651-757-2508.

Sincerely,

Karen Kromar

This document has been electronically signed.

Karen Kromar
Planner Principal
Environmental Review Unit
Resource Management and Assistance Division

KK:rs

cc: Dan Card, MPCA, St. Paul
Bill Wilde, MPCA, St. Paul
Emily Schnick, MPCA, St. Paul
Roberta Getman, MPCA, Rochester
Wayne Cords, MPCA, Mankato

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Upper Mississippi River National Wildlife and Fish Refuge
102 Walnut Street, Suite 204
Winona, Minnesota 55987

July 20, 2022

Caroline Gregerson
Wabasha Port Authority
900 Hiawatha Drive East
Wabasha, MN 55981

RE: Scoping Document, Wabasha Barge Facility, Wabasha County; and
Wabasha Barge Terminal, Draft Scoping Decision Document

Dear Ms. Gregerson,

This letter serves as transmittal for comments regarding the two referenced documents related to the Wabasha Port Authority's Barge Terminal proposal. Comments are listed below and reference enclosures attached to this letter.

The Draft Scoping Decision Document "Modified Designs or Layouts" section includes a statement that "modified design or layout alternatives were evaluated… along with the location, size, and orientation of the dredge material storage areas were considered." Neither referenced document nor the Site Plan map address dredge material storage by location or quantity. Material storage has the potential to significantly impact the site and must be addressed. Additionally, the cover page of the Scoping Document lists "transportation of agricultural products and shipping containers" neither of which are discussed.

The following comments reference only the Scoping Document.

On Page 2, the Scoping Document states this is a City of Wabasha Port Authority project though the tax parcel numbers identified within the Project Area are owned by the Kohner Sand and Gravel Company and account for 26.75 acres of the 54.0 acre Study Area. The remaining 27.25 acres are assumed to be the areas outlined within the backwaters of the Mississippi River, however, the Site Plan appears to encompass a much smaller acreage. There needs to be clarity regarding what features and uses are being evaluated and ownership of the parcels included in the evaluation (private, City, State, Federal). Documentation as to the ownership of the river shoreline and river bottom in the areas planned for dredging will be required.

On Page 6 - Outdoor Recreation, the discussion and corresponding maps have completely overlooked the U.S. Fish and Wildlife Service's (FWS) Upper Mississippi River National Wildlife and Fish Refuge (Refuge) which is the adjacent land owner to this project (Attachments 1 and 2) and manages nearly 14,000 acres in Lower Pool 4. The Nelson-Trevino Bottoms is also owned in fee-title by the FWS not the Wisconsin Department of Natural Resources as stated in the document.

On Page 7 – Zoning, the project is located within an area zoned for Low-Density Residential as well as a S1 Shoreland Overlay Zone which has, among others, the goal of protecting surface water quality which is in direct contradiction to this project. However, 9b Project Compatibility, states that the proposed project is compatible with the zoning. An explanation of this compatibility declaration will be needed.

On Page 12 – Wetlands, in addition to the four wetland basins delineated on the upland, the entire area to be dredged for access is a wetland and impacts to this area need to be accounted for in the document.

On Page 14 – Stormwater, the description of stormwater quantity states that the water will be treated prior to release to the Mississippi River. A description of how and where that treatment will occur is needed.

On Pages 19-21 – Fish, Wildlife, Plant Communities, & Sensitive Ecological Resources, this section provides no discussion regarding aquatic plant communities, eagle nests, or the nearby great blue heron nesting colony. Although not all are active, there are approximately 60 bald eagle nests in Lower Pool 4 with three in the general vicinity of this project. Additional surveys will be required prior to beginning this project to determine nesting activity in the immediate area. In the "Rare Features" section there is reference to conducting a regulatory review through the FWS Ecological Services (ES) office utilizing the Information for Planning and Consultation (IPaC) system. While this consultation is adequate for a determination on properties located outside of the Refuge boundary, the findings are not sufficient for determinations or for obtaining a Special Use Permit (SUP) for activities within the Refuge boundary.

Finally, as was addressed in comments to USACE regarding the Pool 4 Dredge Material Management Plan (DMMP) the use of this property was identified and evaluated as the "Carrels Site" which has led to confusion on this project. The DMMP noted that 18 acres of this Project Area are approved in the Channel Maintenance Management Plan (CMMP) (Attachment 3). A discussion regarding how this pre-determined use will impact the development of a barge terminal needs to be addressed. As was expressed to USACE, the Refuge has concern over the development of a barge terminal at this location. As indicated on your Site Plan there is limited area for barges to maneuver and an expectation that they will enter the terminal at an angle. It is likely that the island directly in-front (riverward) of the proposed terminal, which is FWS fee-title, will become a point for barges to nose-in which leads to damaged or downed trees and erosion which will be exaggerated by propwash from barges turning and passing.

We look forward to future involvement with the team preparing the Wabasha Barge Facility Environmental Impact Statement (EIS) for this project. Please do not hesitate to contact Winona District Manager Mary Stefanski at mary_stefanski@fws.gov or 507-494-6229 if there are questions.

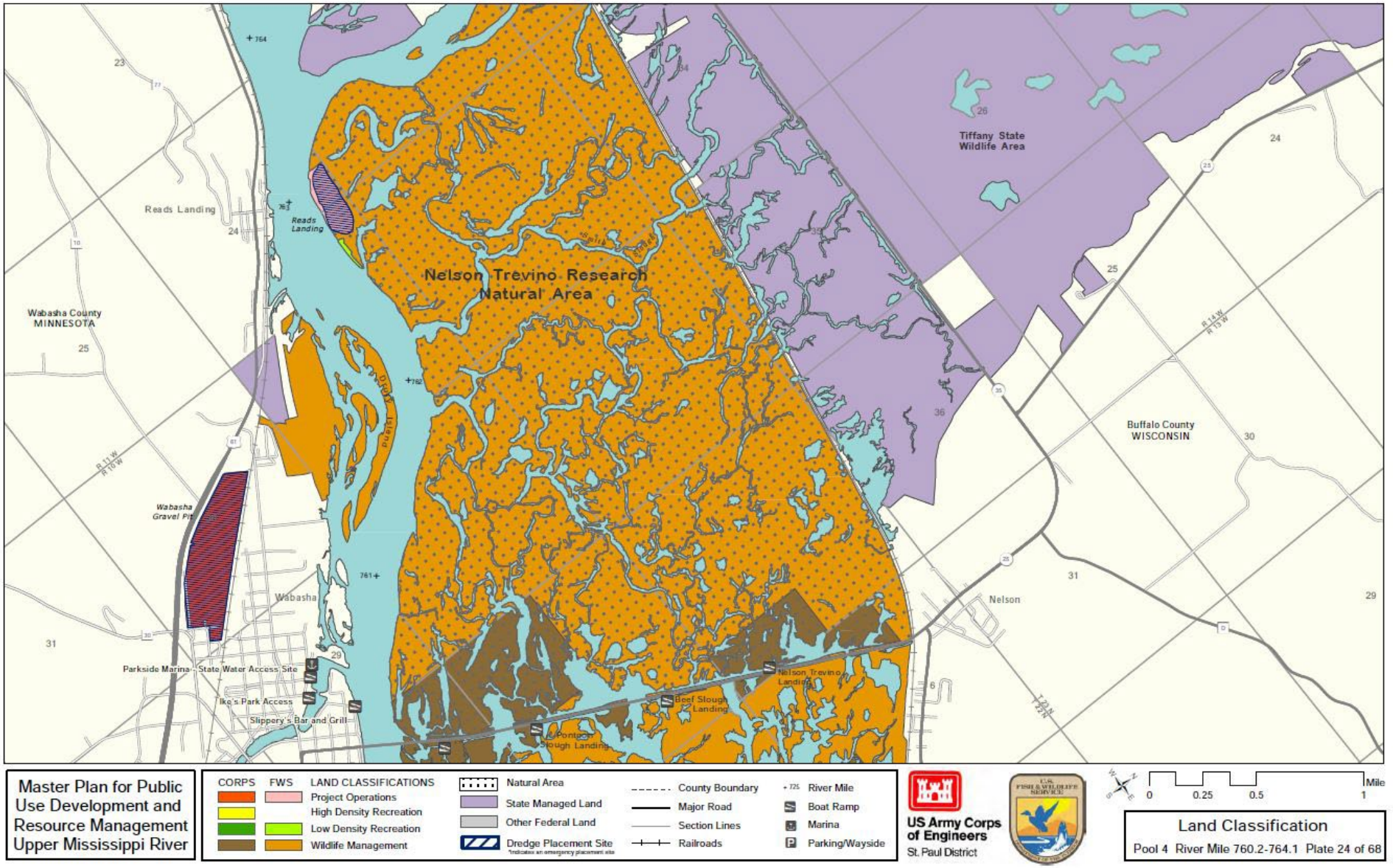
Sincerely,



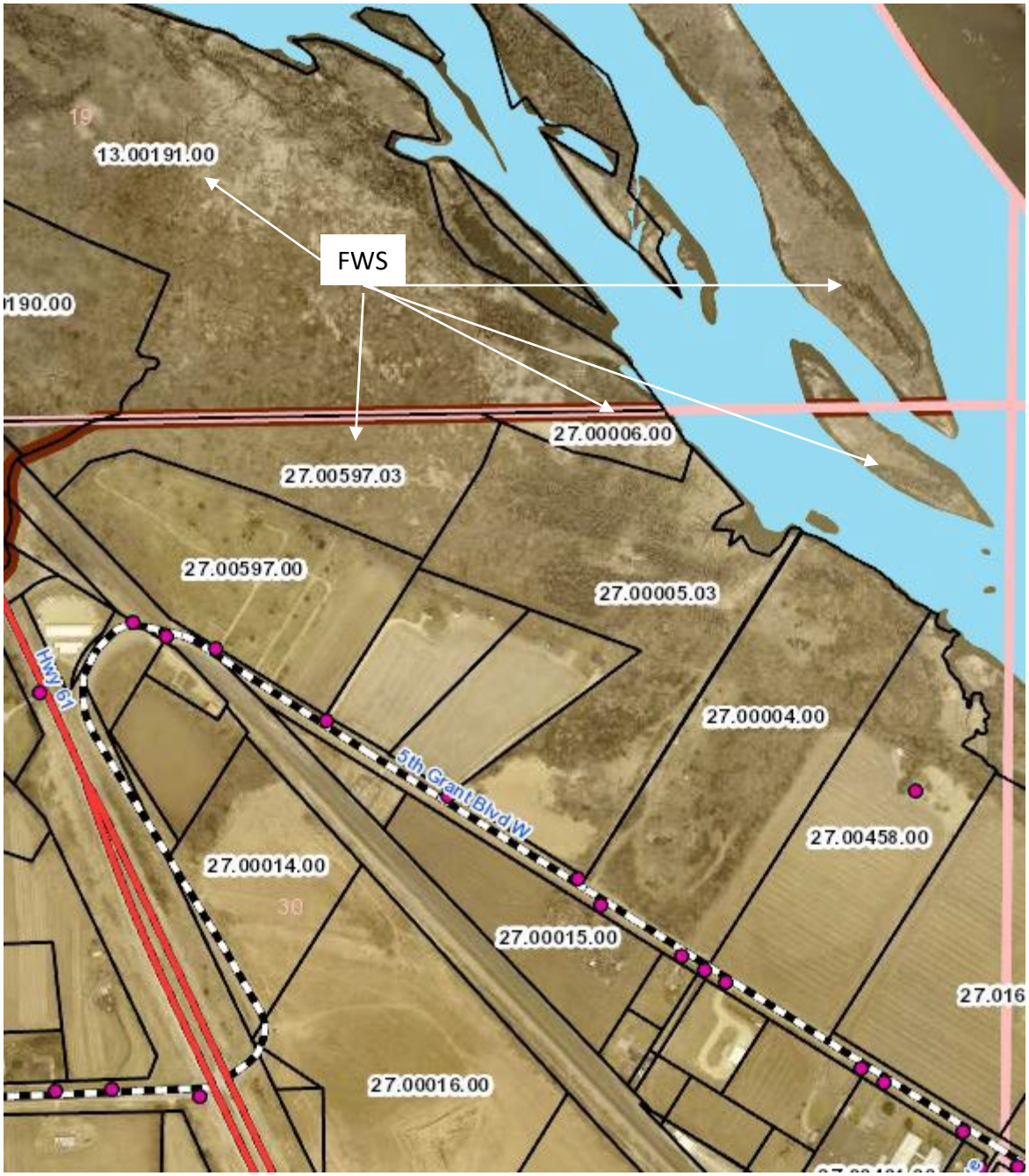
Sabrina Chandler
Refuge Manager

Enclosures

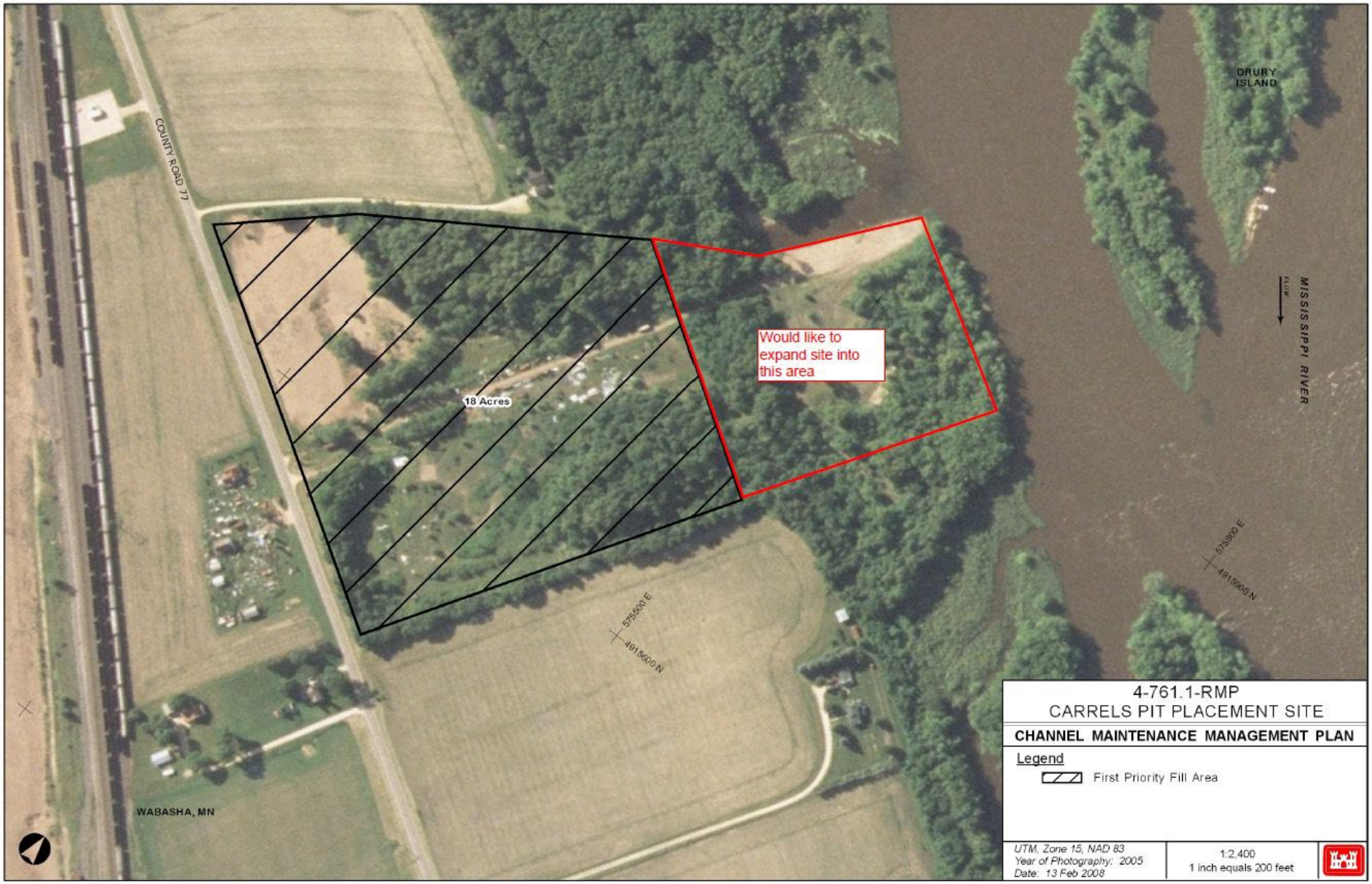
Attachment 1. Land ownership and classification.



Attachment 2.
FWS ownership.



Attachment 3. Drawing from the 2008 CMMP showing location for dredged material placement.



From: BJRaney <brianjraney@gmail.com>
Sent: Thursday, July 21, 2022 6:09 PM
To: Caroline Gregerson <cityadmin@wabasha.org>
Subject: Comments on Proposed Wabasha Terminal Facility

To Whom It May Concern,
I have two concerns with the proposed Wabasha Barge Facility.
The first concern, though somewhat addressed in the reduction of traffic and congestion in other Wabasha neighborhoods, has to do with cost/benefit: how much will this cost, who pays for it, and what's the return on this investment? Particularly, if the Army Corps of Engineers chooses not to use it. Their recent dredging plan did not lock them into using the facility, it only mentions it as a potential option.
My next concern is with the dredging material itself. I don't see much discussion of the pollutants that might be in the material, and thus exposed to the citizens of Wabasha via this facility. Unfortunately, for many years the Mississippi has been a convenient dumping place for cities and companies that are along it. Though much of this has been stopped, the dredge material could still be holding it. This can contain what we are recently finding more and more as water contamination, Per- and polyfluoroalkyl substances (PFAS), also known as "forever chemicals." They are resistant to breakdown, and linger in the environment "forever." PFAS has been linked to a number of health issues. PFAS compounds have been found in dust accumulations, even in indoor spaces. My concern is by bringing this dredging material to shore where such pollutants can become airborne, that we increase this risk to our community. Will there be a plan in place to sample the dredge material for these and other pollutants, and an appropriate action plan to address their discovery?

Brian Raney

APPENDIX K

USFWS Information for Planning and Consultation (IPaC)

IPaC **U.S. Fish & Wildlife Service**

Endangered Species Act Review

DETERMINATION KEY

Minnesota-Wisconsin Federal Endangered Species Determination Key

Release date: September 8, 2023

You have not fully completed this determination key.

This key is intended to streamline review of projects for potential effects to Federally listed threatened and endangered (TE) species and designated critical habitat (CH)

This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect TE species and CH and covers certain routine and predictable projects for all species in Minnesota and Wisconsin.

Some projects may be outside the scope of this key. **The key DOES NOT cover impacts to the Northern Long-eared Bat (please complete the separate NLEB Determination Key)**. Additionally, this key DOES NOT cover impacts from wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's). Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the Minnesota-Wisconsin Ecological Service Field Office if you have questions (twincities@fws.gov).

If your project qualifies for use of this Dkey, you will be prompted to answer questions about your project to help you evaluate the effects of your action on Federally listed species and designated CH. If your completed TE review indicates a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act, no contact with our office is necessary. For Federal projects with a “Not Likely to Adversely Affect” determination, our concurrence becomes valid if you do not hear otherwise after a 30-day review period, as indicated in your letter. If your output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination”), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of this key; ESA

compliance cannot be concluded using the key for "May Affect" determinations unless otherwise indicated in your output letter.

Please note that only one assisted determination key may be completed per species for each project. Please carefully review the descriptions of all available determination keys to select the most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the determination key entitled, *FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat*.

Projects with unknown or potential effects to multiple Federally listed species in Minnesota or Wisconsin may find the *Minnesota-Wisconsin Federal Endangered Species Determination Key* most useful as a first step. Projects with potential effects to Northern Long-eared Bat (NLEB), or that wish to evaluate potential effects to NLEB, are advised to complete the *NLEB Consultation Determination Key*.

Finally, be advised that the *Minnesota-Wisconsin Federal Endangered Species Determination Key* is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

For a video demonstration of this DKey, click the link below.
Demo: Minnesota-Wisconsin Federal Endangered Species Determination Key

Species covered by this key

This key covers the following species, and critical habitat for these species, expected to occur in this project area:

BIRDS
Whooping Crane Grus americana

CLAMS
Sheepnose Mussel Plethobasus cyphyus
Higgins Eye (pearlymussel) Lampsilis higginsii
Spectaclecase (mussel) Cumberlandia monodonta

INSECTS
Monarch Butterfly Danaus plexippus

MAMMALS

Tricolored Bat Perimyotis subflavus

The following species, also covered by this key, are not expected to occur in this project area:

Pitcher's Thistle Cirsium pitcheri
Eastern Prairie Fringed Orchid Platanthera leucophaea
Piping Plover Charadrius melodus
Eastern Massasauga (=rattlesnake) Sistrurus catenatus
Topeka Shiner Notropis topeka (=tristis)
Dakota Skipper Hesperia dacotae
Karner Blue Butterfly Lycaeides melissa samuelis
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis
Canada Lynx Lynx canadensis
Minnesota Dwarf Trout Lily Erythronium propullans
Northern Riffleshell Epioblasma rangiana
Rufa Red Knot Calidris canutus rufa
Prairie Bush-clover Lespedeza leptostachya
Rayed Bean Villosa fabalis
Fassett's Locoweed Oxytropis campestris var. chartacea
Northern Wild Monkshood Aconitum noveboracense
Winged Mapleleaf Quadrula fragosa
Poweshiek Skipperling Oarisma poweshiek
Western Prairie Fringed Orchid Platanthera praeclara
Mead's Milkweed Asclepias meadii
Dwarf Lake Iris Iris lacustris
Gray Wolf Canis lupus
Leedy's Roseroot Rhodiola integrifolia ssp. leedyi
Iowa Pleistocene Snail Discus macclintocki
Snuffbox Mussel Epioblasma triquetra
Rusty Patched Bumble Bee Bombus affinis
Hine's Emerald Dragonfly Somatochlora hineana
Clubshell Pleurobema clava

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

Qualification interview

1. This determination key is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Additionally, this key DOES NOT cover wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's).

   Click **YES** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   ☑ Yes

2. Is the action being funded, authorized, or carried out by a Federal agency?

   ☑ Yes

3. Are you the Federal agency or designated non-federal representative?

   ☑ No

4. Does the action involve the installation or operation of wind turbines?

   ☑ No

5. Does the action involve purposeful take ("Take" is defined by the Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or attempt to engage in any such conduct." "Purposeful" take is intentional or direct take. If purposeful take is part of your proposed action (e.g., capture for scientific purposes or to enhance the propagation or survival of a wildlife species), select yes for this question.) of a listed animal?

   ☑ No

6. Does the action involve a new communications tower?

☑ No

7. Does the activity involve aerial or other large-scale application of ANY chemical, including pesticides (insecticide, herbicide, fungicide, rodenticide, etc)?

   ☑ No

8. Does the action occur near a bald eagle nest?

   Note: Contact the Minnesota or Wisconsin Department of Natural Resources for an up-to-date list of known bald eagle nests.

   ☑ Yes

9. Will your action permanently affect local hydrology (We consider "affecting hydrology" to include actions that are likely to change the elevations of surface water upstream or downstream, or in the local groundwater (as estimated pre-action vs. post-action)..)?

   ☑ No

10. Will your action temporarily affect local hydrology ("Temporarily" in this context includes non-permanant impacts lasting 2 weeks or more. We consider "affecting hydrology" to include actions that are likely to change the elevations of surface water upstream or downstream, or in the local groundwater (as estimated pre-action vs. post-action).)?

    ☑ Yes

11. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new stormwater outfall discharge, dams, other in-stream work, etc.)?

    ☑ Yes

12. Does your project have the potential to impact the riparian zone (Area perpendicular to the waters edge, up to 200 ft, all the way around a body of water.) or indirectly impact a stream/river (e.g., cut and fill; horizontal directional drilling; construction; vegetation removal; pesticide or fertilizer application; discharge; runoff of sediment or pollutants; increase in erosion, etc.)?

    Note: Consider all potential effects of the action, including those that may happen later in time and

outside and downstream of the immediate area involved in the action.

Endangered Species Act regulation defines "effects of the action" to include all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

☑ Yes

13. Will your action disturb the ground or existing vegetation?

Note: This includes any off-road vehicle access, soil compaction (enough to collapse a rodent burrow), digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application (herbicide, fungicide), vegetation management (including removal or maintenance using equipment or prescribed fire), cultivation, development, etc.

☑ Yes

14. Will your action include spraying insecticides?

☑ No

15. Does your action area occur entirely within an already developed area?

Note: Already developed areas are already paved, covered by existing structures, manicured lawns, industrial sites, or cultivated cropland, AND do not contain trees that could be roosting habitat. Be aware that listed species may occur in areas with natural, or semi-natural, vegetation immediately adjacent to existing utilities (e.g. roadways, railways) or within utility rights-of-way such as overhead transmission line corridors, and can utilize suitable trees, bridges, or culverts for roosting even in urban dominated landscapes (so these are not considered "already developed areas" for the purposes of this question). If unsure, select NO..

☑ No

16. Your project is within the range of federally listed freshwater mussels. Have surveys for freshwater mussels been conducted according to a Service-approved survey plan?

Note: You must receive prior approval for any proposed mussel survey by contacting the Minnesota-Wisconsin Ecological Services Field Office. All mussel surveys in Minnesota and Wisconsin must

comply with State approved protocols.
Minnesota Mussel Protocol: https://files.dnr.state.mn.us/eco/nhnrp/mn-mussel-survey-and-relocation-protocol.pdf.
Wisconsin Mussel Protocol: https://molluskconservation.org/Library/Protocol%20PDFs/WI%20Wadable%20Mussel%20Protocol_8-18-15.pdf

☑ Yes

17. Was sheepnose observed during surveys?

Note: A positive observation includes collection of any sheepnose shells (live or dead and in any condition)

☑ No

18. Was spectaclecase observed during surveys?

Note: A positive observation includes collection of any spectaclecase shells (live or dead and in any condition)

☑ No

19. Was Higgin's eye observed during surveys?

Note: A positive observation includes collection of any Higgin's eye shells (live or dead and in any condition)

☑ No

20. Have you determined that the action will have no effect on individuals within the whooping crane nonessential experimental population (NEP)?

☑ No

21. Does the action occur within a National Wildlife Refuge or National Park?

Note: For the purposes of section 7 of the Act, we treat nonessential experimental populations (NEPs) as threatened species when the NEP is located within a National Wildlife Refuge (NWR) or National Park (NP), and therefore section 7(a)(1) and the consultation requirements of section 7(a)(2) of the Act apply in NWRs and NPs. Section 7(a)(1) requires all Federal agencies to use their authorities to

conserve listed species. Section 7(a)(2) requires that Federal agencies consult with the Service before authorizing, funding, or carrying out any activity that would likely jeopardize the continued existence of a listed species or adversely modify its critical habitat.

☑ No

22. For Federal projects outside a National Wildlife Refuge or National Park, we treat the nonessential experimental population of whooping crane as proposed for listing and only two provisions of section 7 would apply: section 7(a)(1) and section 7(a)(4). Section 7(a)(4) requires Federal agencies to confer with the Service on actions that are likely to jeopardize the continued existence of (Jeopardize the continued existence of' means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution.) a proposed species. Have you determined that your action is likely to jeopardize the continued existence of whooping crane?

☑ No

23. [Hidden Semantic] Does the action area intersect the monarch butterfly species list area?

☑ **Automatically answered**
Yes

24. Under the ESA, monarchs remain warranted but precluded by listing actions of higher priority. The monarch is a candidate for listing at this time. The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary.

    If your project will have no effect on monarch butterflies (for example, if your project won't affect their habitat or individuals), then you can make a "no effect" determination for this project.

    Are you making a "no effect" determination for monarch?

    ☑ Yes

25. [Hidden semantic] Does the action intersect the Tricolored bat species list area?

☑ **Automatically answered**

Yes

26. The tricolored bat was proposed for listing as endangered on September 13, 2022. During winter, tricolored bats hibernate in caves, abandoned mines, and abandoned tunnels ranging from small to large in size. During spring, summer and fall months, they roost primarily among leaf clusters of live or recently dead deciduous/hardwood trees.

    What effect determination do you want to make for the tricolored bat (Only make a "may affect" determination if you think the project is likely to jeopardize the continued existence of the species)?

    ☑ 2. “May affect – not likely to adversely affect”

Determination result

You have reached a determination of may affect - not likely to adversely affect based on this determination key. Review the guidance below and generate a consistency letter to submit to the action agency for this project.

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect ” for at least one species as outlined in the U.S. Fish and Wildlife Service’s Minnesota-Wisconsin Endangered Species Determination Key.

If you no longer wish to use this key for your project, you can delete your evaluation.

IPaC **U.S. Fish & Wildlife Service**

Endangered Species Act Review

DETERMINATION KEY

Northern Long-eared Bat Rangewide Determination Key

Release date: October 19, 2023

You have not fully completed this determination key.

This key is intended to streamline review of projects for potential effects to the northern long-eared bat (*Myotis septentrionalis*). This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect the northern long-eared bat and covers certain routine and predictable projects for which predetermined consultation outcomes are feasible.

Some projects may be outside the scope of this key. Projects not eligible for pre-determined outcomes will be diverted for field office coordination. Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the appropriate Ecological Service Field Office if you have questions.

If your project qualifies for use of this determination key (key), you will be prompted to answer questions about your project to help you evaluate its effects on the northern long-eared bat. Three outcomes are possible:

1) If your completed review indicates a "No Effect" (NE) for northern long-eared bat, and you have made separate “No Effect” determinations for all other species and critical habitats, if any, on your Official Species List, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

2) For Federal projects with a “Not Likely to Adversely Affect” determination, our concurrence becomes valid if you do not hear otherwise after a 15-day review period, as specified in your letter.

3) If your output letter indicates additional coordination with the appropriate Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination” without a concurrence that adverse effects are not likely), you will be provided additional guidance on

contacting the Service to continue ESA coordination outside of this key; ESA compliance cannot be concluded using the key for simple “May Affect” determinations.

Please note that only one assisted key may be completed per species for each project. Please carefully review the descriptions of all available keys to select the most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the key entitled, FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat. Finally, be advised that this key is intended to assist the user in evaluating the effects of their actions on northern long-eared bat. It does not authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

Species covered by this key

This key covers the following species expected to occur in this project area:

Northern Long-eared Bat *Myotis septentrionalis*

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

Qualification interview

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   ☑ No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   ☑ No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions (Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:
   (a) actions intended to conserve listed species or their habitat;
   (b) the promulgation of regulations;
   (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
   (d) actions directly or indirectly causing modifications to the land, water, or air.

   50 CFR 402.02 “Action” .), answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   ☑ No

4. Is the proposed action (A federal action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:
   (a) actions intended to conserve listed species or their habitat;
   (b) the promulgation of regulations;
   (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
   (d) actions directly or indirectly causing modifications to the land, water, or air.

   50 CFR 402.02 "Action".) authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

☑ Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   ☑ No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative (Designated non-Federal representative refers to a person designated by the Federal agency as its representative to conduct informal consultation and/or to prepare any biological assessment. 50 CFR 402.02 “Designated non Federal representative” .) for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   ☑ No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   ☑ Yes

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required

for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

9. [Semantic] Is the action area located within 0.5 miles of a known northern long-eared bat hibernaculum?

Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

☑ **Automatically answered**
No

10. Does the action area contain any caves (or associated sinkholes, fissures (A narrow opening or crack of considerable length and depth usually occurring from some breaking or parting;), or other karst (An irregular limestone region with sinkholes, underground streams, and caverns.) features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

☑ No

11. Does the action area contain or occur within 0.5 miles of (1) talus (A slope formed especially by an accumulation of rock debris or rock debris at the base of a cliff.) or (2) anthropogenic or naturally formed rock crevices in rocky outcrops, rock faces or cliffs?

☑ No

12. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
(If unsure, answer "Yes.")

Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional

information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ Yes

13. Will the action cause effects to a bridge?

☑ No

14. Will the action result in effects to a culvert or tunnel?

☑ No

15. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

☑ No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

☑ No

17. Will the action directly or indirectly cause construction of one or more new roads that are open to the public?

Note: The answer may be yes when a publicly accessible road either (1) is constructed as part of the proposed action or (2) would not occur but for the proposed action (i.e., the road construction is facilitated by the proposed action but is not an explicit component of the project).

☑ No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic (the total volume of vehicle traffic of a highway or road for a year divided by 365 days - or, the volume of traffic moving in both directions on a highway for the most average traffic day of the year for 24 hours) on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    ☑ Yes

19. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    ☑ Yes

20. For every 1,000 feet of road where increased traffic is expected, will there be at least one place where bats could cross the road corridor by flying less than 33 feet (10 meters) between trees whose tops are at least 66 feet (20 meters) higher than the road surface?

    ☑ Yes

21. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    ☑ No

22. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    ☑ No

23. Will the action include drilling or blasting?

☑ No

24. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

☑ No

25. Will the proposed action involve the use of herbicides or pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

☑ No

26. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

27. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

28. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

☑ Yes

29. Has a presence/probable absence summer bat survey targeting the northern long-eared bat following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines been conducted within the project area? If unsure, answer "No."

☑ No

30. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property and has a diameter breast height of six inches or greater.

    ☑ No

31. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    ☑ Yes

32. [Semantic] Does your project intersect a known sensitive area for the northern long-eared bat?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state agency or USFWS field office

    ☑ **Automatically answered**
    No

33. Will all tree cutting/trimming or other knocking or bringing down of trees be restricted to the inactive season for the northern long-eared bat?

    Note: Inactive Season dates for summer habitat outside of staging and swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    ☑ Yes

34. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 10 acres?

    ☑ No

35. Will the action cause trees to be cut, knocked down, or otherwise brought down in a way that would fragment a forested connection (e.g., tree line) between two or more forest patches of at least 5 acres?

    The forest patches may consist of entirely contiguous forest or multiple forested areas that are separated by less than 1000’ of non-forested area. A project will fragment a forested connection if it creates an unforested gap of greater than 1000’.

    ☑ No

36. Will the action result in the use of prescribed fire?

    ☑ No

37. Will the action cause noises that are louder than ambient baseline noises within the action area?

    ☑ Yes

38. Will the action cause noises during the active season in suitable summer habitat that are louder than anthropogenic noises to which the affected habitat is currently exposed? Answer 'no' if the noises will occur only during the inactive period.

    Note: Inactive Season dates for areas within a spring staging/fall swarming area can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    ☑ Yes

Project questionnaire

1. Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

    2.7

2. In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat?

   Note: Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

   2.7

3. In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat?

   Note: Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

   0

4. Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

   Yes

5. Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

   2.7

6. For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

   2.7

7. Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

   No

8. Will all project activities by completed by April 1, 2024?

   No

Determination result

You have reached a determination of may affect - not likely to adversely affect based on this determination key. Review the guidance below and request USFWS concurrence for this project.

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

If you no longer wish to use this key for your project, you can delete your evaluation.

IPaC **U.S. Fish & Wildlife Service**

Endangered Species Act Review

DETERMINATION KEY

Minnesota-Wisconsin Federal Endangered Species Determination Key

Release date: September 8, 2023

You have not fully completed this determination key.

This key is intended to streamline review of projects for potential effects to Federally listed threatened and endangered (TE) species and designated critical habitat (CH)

This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect TE species and CH and covers certain routine and predictable projects for all species in Minnesota and Wisconsin.

Some projects may be outside the scope of this key. **The key DOES NOT cover impacts to the Northern Long-eared Bat (please complete the separate NLEB Determination Key)**. Additionally, this key DOES NOT cover impacts from wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's). Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the Minnesota-Wisconsin Ecological Service Field Office if you have questions (twincities@fws.gov).

If your project qualifies for use of this Dkey, you will be prompted to answer questions about your project to help you evaluate the effects of your action on Federally listed species and designated CH. If your completed TE review indicates a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act, no contact with our office is necessary. For Federal projects with a “Not Likely to Adversely Affect” determination, our concurrence becomes valid if you do not hear otherwise after a 30-day review period, as indicated in your letter. If your output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination”), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of this key; ESA

compliance cannot be concluded using the key for "May Affect" determinations unless otherwise indicated in your output letter.

Please note that only one assisted determination key may be completed per species for each project. Please carefully review the descriptions of all available determination keys to select the most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the determination key entitled, *FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat*.

Projects with unknown or potential effects to multiple Federally listed species in Minnesota or Wisconsin may find the *Minnesota-Wisconsin Federal Endangered Species Determination Key* most useful as a first step. Projects with potential effects to Northern Long-eared Bat (NLEB), or that wish to evaluate potential effects to NLEB, are advised to complete the *NLEB Consultation Determination Key*.

Finally, be advised that the *Minnesota-Wisconsin Federal Endangered Species Determination Key* is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

For a video demonstration of this DKey, click the link below.
Demo: Minnesota-Wisconsin Federal Endangered Species Determination Key

Species covered by this key

This key covers the following species, and critical habitat for these species, expected to occur in this project area:

BIRDS
Whooping Crane Grus americana

CLAMS
Sheepnose Mussel Plethobasus cyphyus
Higgins Eye (pearlymussel) Lampsilis higginsii
Spectaclecase (mussel) Cumberlandia monodonta

INSECTS
Monarch Butterfly Danaus plexippus

MAMMALS

Tricolored Bat Perimyotis subflavus

The following species, also covered by this key, are not expected to occur in this project area:

Pitcher's Thistle Cirsium pitcheri
Eastern Prairie Fringed Orchid Platanthera leucophaea
Piping Plover Charadrius melodus
Eastern Massasauga (=rattlesnake) Sistrurus catenatus
Topeka Shiner Notropis topeka (=tristis)
Dakota Skipper Hesperia dacotae
Karner Blue Butterfly Lycaeides melissa samuelis
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis
Canada Lynx Lynx canadensis
Minnesota Dwarf Trout Lily Erythronium propullans
Northern Riffleshell Epioblasma rangiana
Rufa Red Knot Calidris canutus rufa
Prairie Bush-clover Lespedeza leptostachya
Rayed Bean Villosa fabalis
Fassett's Locoweed Oxytropis campestris var. chartacea
Northern Wild Monkshood Aconitum noveboracense
Winged Mapleleaf Quadrula fragosa
Poweshiek Skipperling Oarisma poweshiek
Western Prairie Fringed Orchid Platanthera praeclara
Mead's Milkweed Asclepias meadii
Dwarf Lake Iris Iris lacustris
Gray Wolf Canis lupus
Leedy's Roseroot Rhodiola integrifolia ssp. leedyi
Iowa Pleistocene Snail Discus macclintocki
Snuffbox Mussel Epioblasma triquetra
Rusty Patched Bumble Bee Bombus affinis
Hine's Emerald Dragonfly Somatochlora hineana
Clubshell Pleurobema clava

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

Qualification interview

1. This determination key is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Additionally, this key DOES NOT cover wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's).

   Click **YES** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   ☑ Yes

2. Is the action being funded, authorized, or carried out by a Federal agency?

   ☑ Yes

3. Are you the Federal agency or designated non-federal representative?

   ☑ No

4. Does the action involve the installation or operation of wind turbines?

   ☑ No

5. Does the action involve purposeful take ("Take" is defined by the Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or attempt to engage in any such conduct." "Purposeful" take is intentional or direct take. If purposeful take is part of your proposed action (e.g., capture for scientific purposes or to enhance the propagation or survival of a wildlife species), select yes for this question.) of a listed animal?

   ☑ No

6. Does the action involve a new communications tower?

☑ No

7. Does the activity involve aerial or other large-scale application of ANY chemical, including pesticides (insecticide, herbicide, fungicide, rodenticide, etc)?

   ☑ No

8. Does the action occur near a bald eagle nest?

   Note: Contact the Minnesota or Wisconsin Department of Natural Resources for an up-to-date list of known bald eagle nests.

   ☑ Yes

9. Will your action permanently affect local hydrology (We consider "affecting hydrology" to include actions that are likely to change the elevations of surface water upstream or downstream, or in the local groundwater (as estimated pre-action vs. post-action)..)?

   ☑ No

10. Will your action temporarily affect local hydrology ("Temporarily" in this context includes non-permanant impacts lasting 2 weeks or more. We consider "affecting hydrology" to include actions that are likely to change the elevations of surface water upstream or downstream, or in the local groundwater (as estimated pre-action vs. post-action).)?

    ☑ Yes

11. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new stormwater outfall discharge, dams, other in-stream work, etc.)?

    ☑ Yes

12. Does your project have the potential to impact the riparian zone (Area perpendicular to the waters edge, up to 200 ft, all the way around a body of water.) or indirectly impact a stream/river (e.g., cut and fill; horizontal directional drilling; construction; vegetation removal; pesticide or fertilizer application; discharge; runoff of sediment or pollutants; increase in erosion, etc.)?

    Note: Consider all potential effects of the action, including those that may happen later in time and

outside and downstream of the immediate area involved in the action.

Endangered Species Act regulation defines "effects of the action" to include all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

☑ Yes

13. Will your action disturb the ground or existing vegetation?

Note: This includes any off-road vehicle access, soil compaction (enough to collapse a rodent burrow), digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application (herbicide, fungicide), vegetation management (including removal or maintenance using equipment or prescribed fire), cultivation, development, etc.

☑ Yes

14. Will your action include spraying insecticides?

☑ No

15. Does your action area occur entirely within an already developed area?

Note: Already developed areas are already paved, covered by existing structures, manicured lawns, industrial sites, or cultivated cropland, AND do not contain trees that could be roosting habitat. Be aware that listed species may occur in areas with natural, or semi-natural, vegetation immediately adjacent to existing utilities (e.g. roadways, railways) or within utility rights-of-way such as overhead transmission line corridors, and can utilize suitable trees, bridges, or culverts for roosting even in urban dominated landscapes (so these are not considered "already developed areas" for the purposes of this question). If unsure, select NO..

☑ No

16. Your project is within the range of federally listed freshwater mussels. Have surveys for freshwater mussels been conducted according to a Service-approved survey plan?

Note: You must receive prior approval for any proposed mussel survey by contacting the Minnesota-Wisconsin Ecological Services Field Office. All mussel surveys in Minnesota and Wisconsin must

comply with State approved protocols.
Minnesota Mussel Protocol: https://files.dnr.state.mn.us/eco/nhnrp/mn-mussel-survey-and-relocation-protocol.pdf.
Wisconsin Mussel Protocol: https://molluskconservation.org/Library/Protocol%20PDFs/WI%20Wadable%20Mussel%20Protocol_8-18-15.pdf

☑ Yes

17. Was sheepnose observed during surveys?

Note: A positive observation includes collection of any sheepnose shells (live or dead and in any condition)

☑ No

18. Was spectaclecase observed during surveys?

Note: A positive observation includes collection of any spectaclecase shells (live or dead and in any condition)

☑ No

19. Was Higgin's eye observed during surveys?

Note: A positive observation includes collection of any Higgin's eye shells (live or dead and in any condition)

☑ No

20. Have you determined that the action will have no effect on individuals within the whooping crane nonessential experimental population (NEP)?

☑ No

21. Does the action occur within a National Wildlife Refuge or National Park?

Note: For the purposes of section 7 of the Act, we treat nonessential experimental populations (NEPs) as threatened species when the NEP is located within a National Wildlife Refuge (NWR) or National Park (NP), and therefore section 7(a)(1) and the consultation requirements of section 7(a)(2) of the Act apply in NWRs and NPs. Section 7(a)(1) requires all Federal agencies to use their authorities to

conserve listed species. Section 7(a)(2) requires that Federal agencies consult with the Service before authorizing, funding, or carrying out any activity that would likely jeopardize the continued existence of a listed species or adversely modify its critical habitat.

☑ No

22. For Federal projects outside a National Wildlife Refuge or National Park, we treat the nonessential experimental population of whooping crane as proposed for listing and only two provisions of section 7 would apply: section 7(a)(1) and section 7(a)(4). Section 7(a)(4) requires Federal agencies to confer with the Service on actions that are likely to jeopardize the continued existence of (Jeopardize the continued existence of' means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution.) a proposed species. Have you determined that your action is likely to jeopardize the continued existence of whooping crane?

☑ No

23. [Hidden Semantic] Does the action area intersect the monarch butterfly species list area?

☑ **Automatically answered**
Yes

24. Under the ESA, monarchs remain warranted but precluded by listing actions of higher priority. The monarch is a candidate for listing at this time. The Endangered Species Act does not establish protections or consultation requirements for candidate species. Some Federal and State agencies may have policy requirements to consider candidate species in planning. We encourage implementing measures that will remove or reduce threats to these species and possibly make listing unnecessary.

    If your project will have no effect on monarch butterflies (for example, if your project won't affect their habitat or individuals), then you can make a "no effect" determination for this project.

    Are you making a "no effect" determination for monarch?

    ☑ Yes

25. [Hidden semantic] Does the action intersect the Tricolored bat species list area?

☑ **Automatically answered**

Yes

26. The tricolored bat was proposed for listing as endangered on September 13, 2022. During winter, tricolored bats hibernate in caves, abandoned mines, and abandoned tunnels ranging from small to large in size. During spring, summer and fall months, they roost primarily among leaf clusters of live or recently dead deciduous/hardwood trees.

    What effect determination do you want to make for the tricolored bat (Only make a "may affect" determination if you think the project is likely to jeopardize the continued existence of the species)?

    ☑ 2. “May affect – not likely to adversely affect”

Determination result

You have reached a determination of may affect - not likely to adversely affect based on this determination key. Review the guidance below and generate a consistency letter to submit to the action agency for this project.

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect ” for at least one species as outlined in the U.S. Fish and Wildlife Service’s Minnesota-Wisconsin Endangered Species Determination Key.

If you no longer wish to use this key for your project, you can delete your evaluation.

IPaC **U.S. Fish & Wildlife Service**

Endangered Species Act Review

DETERMINATION KEY

Northern Long-eared Bat Rangewide Determination Key

Release date: October 19, 2023

You have not fully completed this determination key.

This key is intended to streamline review of projects for potential effects to the northern long-eared bat (*Myotis septentrionalis*). This key is designed as a tool to help Federal agencies and other project proponents decide if their proposed action has the potential to adversely affect the northern long-eared bat and covers certain routine and predictable projects for which predetermined consultation outcomes are feasible.

Some projects may be outside the scope of this key. Projects not eligible for pre-determined outcomes will be diverted for field office coordination. Activities that fall outside the scope of this key will require additional evaluation and/or consultation outside of the IPaC application; please contact the appropriate Ecological Service Field Office if you have questions.

If your project qualifies for use of this determination key (key), you will be prompted to answer questions about your project to help you evaluate its effects on the northern long-eared bat. Three outcomes are possible:

1) If your completed review indicates a "No Effect" (NE) for northern long-eared bat, and you have made separate “No Effect” determinations for all other species and critical habitats, if any, on your Official Species List, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

2) For Federal projects with a “Not Likely to Adversely Affect” determination, our concurrence becomes valid if you do not hear otherwise after a 15-day review period, as specified in your letter.

3) If your output letter indicates additional coordination with the appropriate Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination” without a concurrence that adverse effects are not likely), you will be provided additional guidance on

contacting the Service to continue ESA coordination outside of this key; ESA compliance cannot be concluded using the key for simple “May Affect” determinations.

Please note that only one assisted key may be completed per species for each project. Please carefully review the descriptions of all available keys to select the most appropriate key for your project. For instance, federal transportation projects with potential effects to listed bats may be advised to complete the key entitled, FHWA, FRA, FTA Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat. Finally, be advised that this key is intended to assist the user in evaluating the effects of their actions on northern long-eared bat. It does not authorize any activities that are otherwise prohibited by the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other Federal or state statutes.

Species covered by this key

This key covers the following species expected to occur in this project area:

Northern Long-eared Bat *Myotis septentrionalis*

Critical habitats covered by this key

This key covers the critical habitats for the following species expected to occur in this project area:

None

For more information about this determination key, including a list of all potential questions, refer to the detailed overview.

Qualification interview

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   ☑ No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   ☑ No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions (Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:
   (a) actions intended to conserve listed species or their habitat;
   (b) the promulgation of regulations;
   (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
   (d) actions directly or indirectly causing modifications to the land, water, or air.

   50 CFR 402.02 “Action” .), answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   ☑ No

4. Is the proposed action (A federal action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to:
   (a) actions intended to conserve listed species or their habitat;
   (b) the promulgation of regulations;
   (c) the granting of licenses, contracts, leases, easements, rights-of-way, permits, or grants-in-aid; or
   (d) actions directly or indirectly causing modifications to the land, water, or air.

   50 CFR 402.02 "Action".) authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

☑ Yes

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   ☑ No

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative (Designated non-Federal representative refers to a person designated by the Federal agency as its representative to conduct informal consultation and/or to prepare any biological assessment. 50 CFR 402.02 “Designated non Federal representative” .) for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   ☑ No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   ☑ Yes

8. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required

for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

9. [Semantic] Is the action area located within 0.5 miles of a known northern long-eared bat hibernaculum?

Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

☑ **Automatically answered**
No

10. Does the action area contain any caves (or associated sinkholes, fissures (A narrow opening or crack of considerable length and depth usually occurring from some breaking or parting;), or other karst (An irregular limestone region with sinkholes, underground streams, and caverns.) features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

☑ No

11. Does the action area contain or occur within 0.5 miles of (1) talus (A slope formed especially by an accumulation of rock debris or rock debris at the base of a cliff.) or (2) anthropogenic or naturally formed rock crevices in rocky outcrops, rock faces or cliffs?

☑ No

12. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
(If unsure, answer "Yes.")

Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional

information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ Yes

13. Will the action cause effects to a bridge?

☑ No

14. Will the action result in effects to a culvert or tunnel?

☑ No

15. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

☑ No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

☑ No

17. Will the action directly or indirectly cause construction of one or more new roads that are open to the public?

Note: The answer may be yes when a publicly accessible road either (1) is constructed as part of the proposed action or (2) would not occur but for the proposed action (i.e., the road construction is facilitated by the proposed action but is not an explicit component of the project).

☑ No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic (the total volume of vehicle traffic of a highway or road for a year divided by 365 days - or, the volume of traffic moving in both directions on a highway for the most average traffic day of the year for 24 hours) on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    ☑ Yes

19. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    ☑ Yes

20. For every 1,000 feet of road where increased traffic is expected, will there be at least one place where bats could cross the road corridor by flying less than 33 feet (10 meters) between trees whose tops are at least 66 feet (20 meters) higher than the road surface?

    ☑ Yes

21. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    ☑ No

22. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    ☑ No

23. Will the action include drilling or blasting?

☑ No

24. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

☑ No

25. Will the proposed action involve the use of herbicides or pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

☑ No

26. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

27. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

☑ No

28. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

☑ Yes

29. Has a presence/probable absence summer bat survey targeting the northern long-eared bat following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines been conducted within the project area? If unsure, answer "No."

☑ No

30. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property and has a diameter breast height of six inches or greater.

    ☑ No

31. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    ☑ Yes

32. [Semantic] Does your project intersect a known sensitive area for the northern long-eared bat?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state agency or USFWS field office

    ☑ **Automatically answered**
    No

33. Will all tree cutting/trimming or other knocking or bringing down of trees be restricted to the inactive season for the northern long-eared bat?

    Note: Inactive Season dates for summer habitat outside of staging and swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    ☑ Yes

34. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 10 acres?

    ☑ No

35. Will the action cause trees to be cut, knocked down, or otherwise brought down in a way that would fragment a forested connection (e.g., tree line) between two or more forest patches of at least 5 acres?

    The forest patches may consist of entirely contiguous forest or multiple forested areas that are separated by less than 1000’ of non-forested area. A project will fragment a forested connection if it creates an unforested gap of greater than 1000’.

    ☑ No

36. Will the action result in the use of prescribed fire?

    ☑ No

37. Will the action cause noises that are louder than ambient baseline noises within the action area?

    ☑ Yes

38. Will the action cause noises during the active season in suitable summer habitat that are louder than anthropogenic noises to which the affected habitat is currently exposed? Answer 'no' if the noises will occur only during the inactive period.

    Note: Inactive Season dates for areas within a spring staging/fall swarming area can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    ☑ Yes

Project questionnaire

1. Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

    2.7

2. In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat?

   Note: Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

   2.7

3. In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat?

   Note: Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

   0

4. Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

   Yes

5. Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

   2.7

6. For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

   2.7

7. Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

   No

8. Will all project activities by completed by April 1, 2024?

   No

Determination result

You have reached a determination of may affect - not likely to adversely affect based on this determination key. Review the guidance below and request USFWS concurrence for this project.

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for the Endangered northern long-eared bat (*Myotis septentrionalis*).

If you no longer wish to use this key for your project, you can delete your evaluation.

APPENDIX L

217(d) Agreement between USACE and the City of Wabasha

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE CITY OF WABASHA, MINNESOTA
FOR CALCULATION OF USER FEES FOR USE OF
DREDGED MATERIAL PLACEMENT FACILITIES IN WABASHA, MINNESOTA

THIS Memorandum of Agreement (MOA) is entered into this 24th day of July, 2023, by and between Department of the Army (hereinafter the "Government"), represented by the U.S. Army Engineer, St. Paul District (hereinafter the "District Engineer") and the City of Wabasha, Minnesota (hereinafter the "City") represented by its Mayor.

WITNESSETH, THAT:

WHEREAS, the Government has the authority for continued operation and maintenance of the Mississippi River 9-Foot Navigation Channel Project pursuant to the River and Harbor Act of 1930 and is directed by the Secretary of the Army who shall, as he determines feasible, dispose of dredged material from the Upper Mississippi River system pursuant to the recommendations of the GREAT I study as provided in Section 1103(i) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. § 652(i)); and

WHEREAS, it is the Government's policy to dispose of dredged material in the least costly way consistent with sound engineering practices and meeting the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process (hereinafter the "Federal standard"); and

WHEREAS, the Government, on or about May 11, 2017, published for notice and public comment its long-term plan for managing dredged material in Lower Pool 4 of the Upper Mississippi River entitled "Draft Feasibility Report and Integrated Environmental Assessment, Lower Pool 4 Dredged Material Management Plan" (hereinafter the "DMMP"); and

WHEREAS, the City, through a series of formal comment letters and meetings with the Government expressed what it deemed to be important concerns and objections related to the Government's identification of certain sites, such as Southside Fitzgerald, as temporary and permanent placement or transfer sites for dredged material management in the Tentatively Selected Plan (hereinafter the "TSP") within the DMMP and identifying such TSP as the Federal standard; and

WHEREAS, Section 217(d) of the Water Resources Development Act of 1996, Public Law 104-303, as amended by Section 2005 of the Water Resources Development Act of 2007, Public Law 110-300 (33 U.S.C. § 2326a(d)), provides that the Government may enter into agreements with non-Federal providers of disposal facilities and non-Federal sponsors to utilize the non-Federal public or private facility for disposal of dredged material from a Federal navigation project and to pay a user fee for placement of the material at the disposal facility in an

amount that shall be sufficient to repay funds contributed by the private entity plus a reasonable return on investment; and

WHEREAS, the City submitted a proposal to the Government on July 29, 2020 (hereinafter the "City's proposal") to partner with the Government under Section 217(d) and has identified the Carrells Facility and Wabasha Sand and Gravel Facility as disposal facilities for Government use; and

WHEREAS, in working with the Government, the City's proposal has undergone additional refinements as discussed in the City's letter of intent dated November 15, 2022 and updated on May 31, 2023 ("Letter of intent"); and

WHEREAS, the Government has determined that use of the Carrells Facility and Wabasha Sand and Gravel Facility, as identified in the City's proposal and Letter of intent is consistent with the Federal standard as explained in the Government's decision memorandum for this MOA, dated June 12, 2023; and

WHEREAS, the Government and the City have agreed upon a user fee, which may be adjusted in subsequent years, for the placement of such dredged or excavated material at the Carrells Facility and Wabasha Sand and Gravel Facility.

NOW, THEREFORE, the Government and the City agree as follows:

ARTICLE I – DEFINITIONS

A. The term "Facilities" shall mean the Carrells Facility and Wabasha Sand and Gravel Facility provided by the City for the placement of dredged or excavated material as identified in Exhibit A to this MOA.

B. The term "Island Transfer Sites" shall mean the Government owned Reads Landing, Crats Island, Teepeeota Point, and Grand Encampment temporary island dredged material placement sites as identified in Exhibit A to this MOA.

C. The term "Wabasha Gravel Pit" shall mean the Government owned dredged material placement site as identified in Exhibit A to this MOA.

D. The term "user fee" shall mean the amount to be paid per cubic yard ("CY") of dredged or excavated material placed at the Facilities. The user fee shall be sufficient to repay funds contributed by the City plus a reasonable return on investment as approved by the Government in cooperation with the City with respect to the costs of the Facilities.

E. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

ARTICLE II – GENERAL PROVISIONS

A. Subject to the requirements of this Article, the City may allow material dredged or excavated by the Government and located at the Wabasha Gravel Pit and Island Transfer Sites to be placed in the Facilities when sufficient capacity is available as determined by the City. The Government's use of the Facilities shall be on an as needed basis. Nothing in this MOA, however, is to be interpreted as requiring the City to accept or reserve space in the Facilities for placement of dredged or excavated material by the Government. The City may allow both private entities and other Federal and non-Federal interests to use the Facilities for placement of suitable dredged or excavated material provided that the user fee per cubic yard charged to the Government shall not be higher than the lowest user fee per cubic yard charged to any other user of the Facilities for comparable placement service.

B. The Government, on or before June 1 of each year, shall notify the City of the estimated cubic yardage of dredged or excavated material that the Government desires to place at the Facilities during the upcoming fiscal year from the Wabasha Gravel Pit and Island Transfer Sites. The estimated average annual volume is projected to be one-hundred and twenty thousand (120,000) cubic yards from the Island Transfer Sites and one-hundred and thirty-five thousand (135,000) cubic yards from the Wabasha Gravel Pit. Within sixty (60) days of such notice, the City shall provide the Government a written statement indicating availability of space to accommodate all or a portion of the estimated volume of dredged or excavated material along with the estimated user fees for the upcoming fiscal year. The Government has the right to monitor the placement of dredged or excavated material in the Facilities and to ensure the accurate determination of the amount of material placed in the Facilities.

C. At the beginning of each fiscal year by October 5, until depletion of available capacity in the Facilities, the City shall provide to the Government in writing the estimated current capacity of the Facilities; the estimated number of years that the Facilities will provide capacity; and the user fees paid by non-Federal users of the Facilities, if any.

D. Before any dredged or excavated material is accepted by the City for placement in the Facilities each fiscal year, the Government shall provide the City written notification of the maximum amount of material that the Government allows to be placed during the fiscal year, along with the maximum total amount of the user fees for which payment may be made for material placed during that fiscal year. The Government shall be responsible for payment of the applicable user fee, up to the maximum total amount allowed, for each cubic yard of dredged or excavated material placed in the Facilities from the Wabasha Gravel Pit or Island Transfer Sites during the fiscal year. Payment will be due to the City within 30 days upon Government verification of the amount of dredged or excavated material periodically placed in the Facilities in accordance with Article II.F. If at any time the Government determines that an overpayment has occurred, the City shall return the overpaid amount within sixty (60) calendar days from receipt of written notice from the Government. Nothing in this MOA, however, is to be interpreted as requiring the Government to place or authorize placement of dredged or excavated material in the Facilities.

E. The total user fee to be paid by the Government for dredged or excavated material placement, as agreed to by the City, is $24.80/CY for material contained at the Island Transfer Sites that will be initially placed at the Carrells Facility and moved to the Wabasha Sand and

Gravel Facility for final placement, and $13.70/CY for material contained at the Wabasha Gravel Pit that will be placed at the Wabasha Sand and Gravel Facility. The user fees will be adjusted annually in an amount agreed to by the parties to account for variations between actual placement amounts in the Facilities, during the prior fiscal year, and the estimated average annual volume amounts listed in Article II.B.; inflation; and any other relevant change in circumstances that the parties so deem material to the determination of user fees. Negotiations on adjusting the user fees will be initiated no later than the month of August. Both parties agree to make a good faith effort to set the adjusted user fees prior to the start of the next fiscal year. In no event shall the adjusted user fees be negotiated in an amount expected to exceed the Federal standard for Government dredged or excavated material placement.

F. The actual amount of cubic yards of dredged or excavated material placed in the Facilities and eligible for payment shall be determined from Government approved measurements at the Wabasha Gravel Pit and Island Transfer Sites. These measurements may occur periodically as dredged or excavated material is being removed for placement in the Facilities during the fiscal year.

G. The Government shall test the dredged or excavated material placed at the Wabasha Gravel Pit and Island Transfer Sites for contamination in manner consistent with applicable federal and state law, regulations, guidance, and best practices on an adequate basis and forward the test results to the City along with the written notice required by Article II.D. If the City expects to disapprove the placement of any dredged or excavated material in the Facilities for reasons of contamination, such determination shall be addressed under Article II.K. To the knowledge of the parties, the character of the dredged or excavated material placed at the Island Transfer Sites and Wabasha Gravel Pit over the past five to ten years is consistent with the most recent sample reports completed by the Government, which was provided to the City on August 26, 2021.

H. After placement of dredged or excavated material in the Facilities, the Government shall relinquish all rights, title, and interest in the material.

I. This MOA shall not be construed as authorizing the Government to assume any of the responsibilities placed on the City or another non-Federal entity.

J. Other than permission on a limited basis to access the Facilities for dredged or excavated material placement purposes, nothing contained herein, however, shall convey to the Government any interest in real property owned or controlled by the City.

K. The parties shall meet when necessary to discuss the use of the Facilities and other such matters as may be necessary such as developing an operation or coordination plan. If any disputes arise the parties shall work in good faith to attempt to resolve them at the lowest level necessary between City staff and its contractors and the Government's project management office and operations staff. If the parties cannot resolve such disputes at the staff level, disputes may be escalated for attempted resolution between the District Engineer and the Mayor and as otherwise provided for in Article III.

L. As between the Government and the City, the City shall be considered the owner and operator of the Facilities for purposes of Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA") (42 U.S.C. 9601-9675) liability or liability arising from other applicable laws and regulations pertaining to hazardous, toxic, and radioactive wastes (hereinafter "HTRW"). This does not restrict the City's right to pursue any non-Federal potential responsible party regarding any applicable liability. To the maximum extent practicable, the Government and the City shall perform their responsibilities under this MOA in a manner that will not cause liability to arise under CERCLA or other applicable law for HTRW.

M. In implementing this MOA, the City shall comply, or ensure the compliance of its agents and contractors, with all conditions and requirements of applicable Federal, State and local laws, regulations and permits including but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000D) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army"; all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)). The Government reserves the right to withhold payment under Article II.D. for noncompliance.

N. Performance by the Government of any promise, covenant, or obligation in this MOA, and the Government's liability under this MOA, is subject to and dependent on the availability of sufficient funds appropriated and allocated for that purpose. The Government will use its best efforts to prioritize appropriated funds made available for channel maintenance in order to comply with the terms of this MOA. In the event that sufficient funds are not available to liquidate a liability or undertake an obligation arising under this MOA, the Government's duties with respect to that liability or obligation shall be deferred until such time as sufficient funds are lawfully made available (appropriated and allocated) for that purpose.

O. Unless otherwise notified, this MOA shall expire 10 years after its effective date. Any revision of this MOA must be made by written mutual amendment approved and executed by both parties. Either party may terminate this MOA upon thirty days written notice.

ARTICLE III – DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this MOA, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation in accordance with Article II.K. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The Government shall pay 50 percent and the City shall pay 50 percent of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this MOA.

ARTICLE IV – HOLD AND SAVE

The City shall hold and save the Government free from all damages arising from the implementation of this MOA, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE V - MAINTENANCE OF RECORDS AND AUDITS

A. The parties shall develop procedures for the maintenance by the City of books, records, documents, or other evidence pertaining to costs and expenses for a minimum of three years of the accounting for which such books, records, documents, or other evidence were required. The City shall assure that such materials are reasonably available for examination, audit, or reproduction by the Government.

B. The Government may conduct, or arrange for the conduct of, audits. Government audits shall be conducted in accordance with applicable Government cost principles and regulations. The Government's cost of audits shall be included in any user fee payment for use of the Carrells Facility or Wabasha Sand and Gravel Facility, as applicable.

C. To the extent permitted under applicable Federal laws and regulations, the Government shall allow the City to inspect books, records, documents, or other evidence pertaining to costs and expenses maintained by the Government, or at the City's request, provide to the City or independent auditors any such information necessary to enable an audit of the City's activities under this MOA. The cost of any non-Federal audits performed in accordance with this paragraph shall be included in any user fee payment for use of the Carrells Facility or Wabasha Sand and Gravel Facility, as applicable.

ARTICLE VI – RELATIONSHIP OF PARTIES

In the exercise of their respective rights and obligations under this MOA, the Government and the City each act in an independent capacity, and neither is to be considered the officer, agent, contractor or employee of the other. Neither party shall provide, without the consent of the other party, any contractor with a release that waives or purports to waive any rights a party may have to seek relief or redress against that contractor.

ARTICLE VII – NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this MOA shall be deemed to have been duly given if in writing and delivered personally or mailed by registered or certified mail, with return receipt, as follows:

If to the City:

Mayor
P.O. Box 268
Wabasha, MN 55981

If to the Government:

District Engineer
U.S. Army Corps of Engineers, St. Paul District
332 Minnesota Street, Suite E1500
St. Paul, MN 55101

B. A party may change the recipient or address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

ARTICLE VIII – CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party. The parties acknowledge that this MOA and other communications between the parties associated with the MOA, including information viewed as confidential by one or all parties, may be subject to the requirements of Minnesota's Government Data Practices Act, Minnesota Statutes, Section 13.01 et. seq., and the Freedom of Information Act, 5 U.S.C. § 552.

ARTICLE IX – THIRD PARTY RIGHTS, BENEFITS, OR LIABILITIES

Nothing in this MOA is intended, nor may be construed, to create any rights, confer any benefits, or relieve any liability, of any kind whatsoever in any third person not a party to this MOA.

ARTICLE X – OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or any resident commissioner, shall be admitted to any share or part of this MOA, or to any benefit that may arise therefrom.

IN WITNESS WHEREOF, the parties hereto have executed this MOA, which shall become effective upon the date it is signed by the District Engineer.

DEPARTMENT OF THE ARMY

BY: _____
Eric R. Swenson
COL, Corps of Engineers
District Engineer

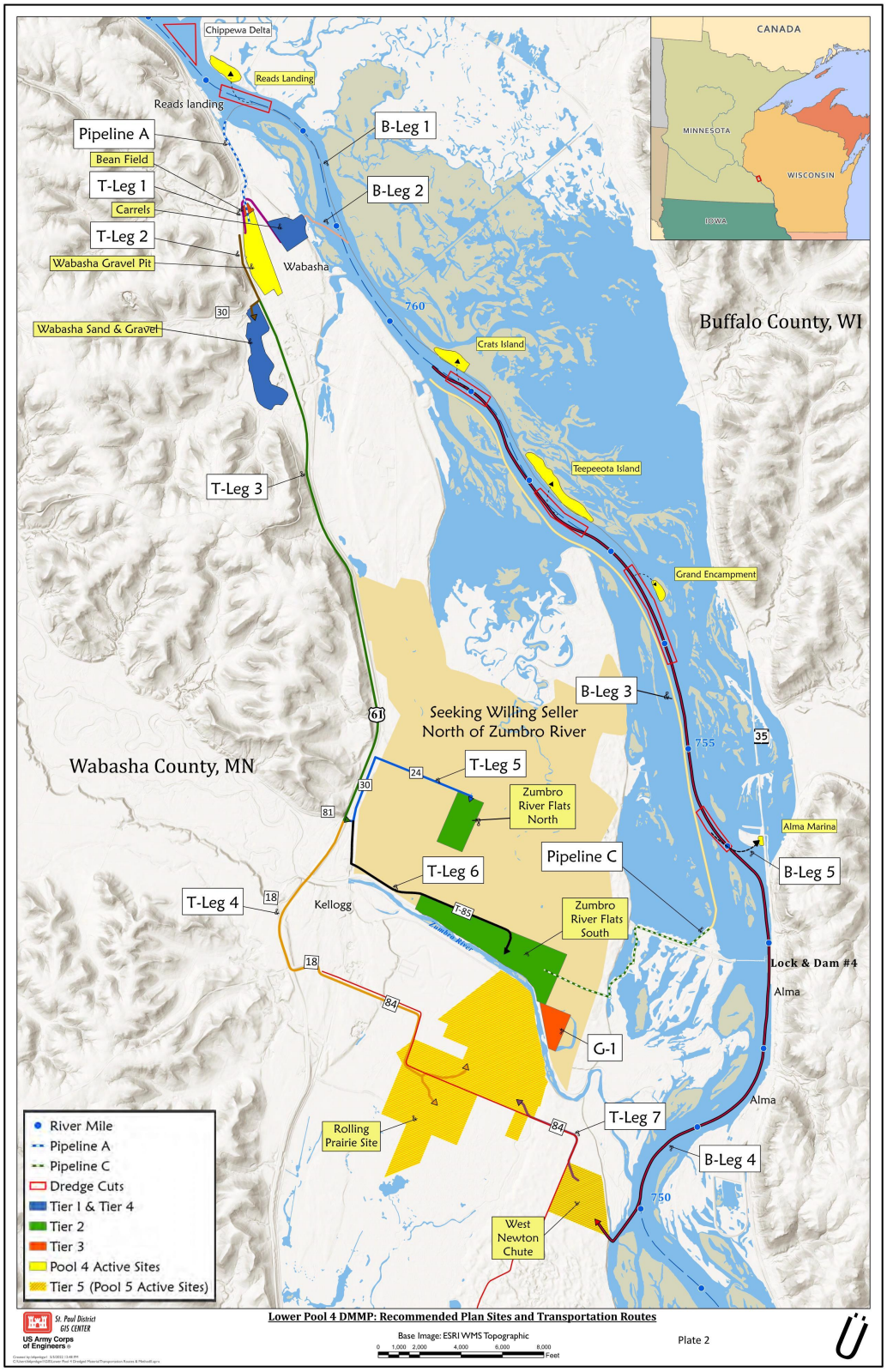
DATE: 7-24-23

THE CITY OF WABASHA, MINNESOTA

BY: _____
Emily Durand
Mayor

DATE: 7-24-23

EXHIBIT A


Chippewa Delta
Reads Landing
Reads landing
Pipeline A
Bean Field
T-Leg 1
Carrels
T-Leg 2
Wabasha Gravel Pit
Wabasha Sand & Gravel
B-Leg 1
B-Leg 2
Wabasha
760
Crats Island
Teepeeota Island
Grand Encampment
T-Leg 3
B-Leg 3
Seeking Willing Seller
North of Zumbro River
Wabasha County, MN
Buffalo County, WI
T-Leg 5
Zumbro River Flats North
Pipeline C
Alma Marina
B-Leg 5
T-Leg 6
T-Leg 4
Kellogg
Zumbro River Flats South
Lock & Dam #4
Alma
G-1
Alma
T-Leg 7
Rolling Prairie Site
B-Leg 4
750
West Newton Chute
CANADA
MINNESOTA
WISCONSIN
IOWA
River Mile
Pipeline A
Pipeline C
Dredge Cuts
Tier I & Tier 4
Tier 2
Tier 3
Pool 4 Active Sites
Tier 5 (Pool 5 Active Sites)
St. Paul District GIS CENTER
US Army Corps of Engineers
Lower Pool 4 DMMP: Recommended Plan Sites and Transportation Routes
Base Image: ESRI WMS Topographic
Plate 2

CERTIFICATE OF AUTHORITY

I, Michael Flaherty do hereby certify that I am the principal legal officer of the City of Wabasha, Minnesota, that the City of Wabasha, Minnesota is a legally constituted public body with full authority and legal capability to perform the terms of the MOA between the Department of the Army and the City of Wabasha, Minnesota in connection with the Calculation of User Fees for Use of Dredged Material Placement Facilities in Wabasha, Minnesota, and that the persons who have executed this MOA on behalf of the City of Wabasha, Minnesota have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 24th day of July 2023.

BY: _____

APPENDIX M

Port Operations Agreement

PORT OPERATOR CONTRACT

This Port Operator Contract ("Contract") is made this 6 day of October, 2023 by and between the PORT AUTHORITY OF THE CITY OF WABASHA, a body politic and corporate under the laws of the state of Minnesota, 900 Hiawatha Drive East, Wabasha, MN 55981 ("PORT"), and WABASHA TRANSPORT TERMINAL LLC, a for profit corporation under the laws of the state of Minnesota, 4980 W. 6th Street, Winona, MN 55987 ("OPERATOR"); (collectively the "PARTIES").

WHEREAS, the OPERATOR has agreed, by separate purchase agreement between the OPERATOR and the PORT, to sell approximately five (5) acres of land, ("Kohner parcel") to PORT that is located directly adjacent to the Mississippi River, along with a 30-foot-wide access and utility easement, on which PORT will construct improvements to develop an operational commercial port facility; and

WHEREAS, a legal description and depiction of the Kohner parcel to be sold to the PORT for the Port Facility (the "Port Facility" or "Licensed Premises"), is attached hereto and incorporated herein by reference as Exhibit 1, along with a legal description and depiction of the access and utility easement described herein (the "Access Easement"), is attached hereto and incorporated herein by reference as Exhibit 2, both exhibits containing two separate legal descriptions and two separate depictions because the licensed premises and easement span two separate parcels; and

WHEREAS, the timely sale of the Kohner parcel by the OPERATOR to the PORT is a material condition subsequent of this Contract and in the event such conveyance does not close for any reason resulting in a recorded deed evidencing ownership of the Kohner parcel by the PORT within six months of the date of this Contract, this Contract shall be null and void without further action and without obligation, financial or otherwise, upon either PARTY; and

WHEREAS, PORT requires certain port operations, stevedore services, barge transportation services, and trucking services to fulfill the PORT's responsibilities contained within the Memorandum of Understanding between the City of Wabasha ("City") and the United States Army Corps of Engineers ("USACE") pursuant to Section 217(d) of the Water Resources Development Act of 1996, Public Law 104-303, as amended by Section 2005 of the Water Resources Development Act of 2007, Public Law 110-300 (33 U.S.C. § 2326a(d) ("USACE Agreement"), which USACE Agreement services, duties and obligations (collectively the "services") have been delegated and assigned by separate agreement from the City to PORT by which PORT has assumed all such duties and obligations and agreed to perform the services under the USACE Agreement though this Contract with the OPERATOR; and

WHEREAS, PORT and USACE have also adopted a joint statement outlining the partnership between the City and USACE to transport dredge materials collected and stored by USACE on USACE controlled sites, and to do so consistent with the USACE's Dredge Material Management Plan ("DMMP") in and around the City, which forms the basis of the USACE Agreement and is attached hereto and incorporated herein by reference as Exhibit 3; and

WHEREAS, OPERATOR agrees to furnish the various services to PORT for the purpose of fulfilling PORT's obligations under the USACE Agreement, and to be compensated based on the quantity of dredge materials retrieved from the USACE storage sites referenced in the USACE Agreement and removed to OPERATOR owned and controlled sand and gravel mining facilities located on or adjacent to 905 Church Avenue in the City, or such other OPERATOR owned sites not adjacent to 905 Church Avenue with prior approval of PORT.

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein, the Parties agree as follows:

SECTION I – OPERATOR'S SERVICES AND RESPONSIBILITIES

A. **Scope of Services.** OPERATOR agrees to perform all services under the USACE Agreement, which is attached hereto and incorporated herein by reference as Exhibit 4. To the extent that this Contract requires the City to directly perform certain services required by the USACE Agreement without the aid of a consultant, OPERATOR and PORT agree that PORT shall perform those services on behalf of the City. All other obligations placed on the City by the USACE Agreement shall be performed by OPERATOR, and are incorporated herein by reference, regardless of whether those services are discussed in the text of this Contract. Subsequent notices from the USACE that effectuate changes in the scope of services, shall be incorporated herein by reference without amendment to this Contract. Specific limitations on OPERATOR's use of the Port Facility, limitations on the methods used by OPERATOR to perform the services referenced in the USACE Agreement, and requirements placed on OPERATOR to prevent and remove nuisance conditions are set forth in the document entitled Special Conditions, which is attached hereto and incorporated herein by reference as Exhibit 5. The listed special conditions in Exhibit 5 include but are not limited to the hours of operations of the Port Facility, the location of temporary storage of dredge materials on the Port Facility, conditions related to removal of dredge materials from public and private grounds caused by the OPERATOR'S performance of the services, and the routes used for trucking dredge materials. The terms and conditions in Exhibit 5 are incorporated herein by reference and are fully effective contract terms as if they were stated in the text of this Agreement. The special conditions in Exhibit 5 are in addition to any other applicable requirements contained in federal or state law, and the City Code of Ordinances ("City"), as the same may be amended from time to time, except that in the event of conflicts, ambiguities, or inconsistencies between the provisions of this Contract and applicable law or City Code, the applicable law and City Code shall prevail.

B. **Changes to Scope of Services/Additional Services.** Except for subsequent notices from the USACE that effectuate changes in the scope of services, upon mutual agreement of the PARTIES hereto pursuant to Section VI, Paragraph H of this Contract, a change to the scope of services detailed in the USACE Agreement, attached hereto, may be authorized as provided in that section. In the event that the City and USACE amend the USACE Agreement, any such amendment shall be incorporated herein by written notice from the PORT to the OPERATOR.

C. **Changed Conditions.** Except for subsequent notices from the USACE that effectuate changes in the scope of services, if OPERATOR determines that any services it has been directed or requested to perform by PORT are beyond the scope of services detailed in the USACE Agreement, or that, due to changed conditions or changes in the method or manner of administration of the USACE Agreement, OPERATOR's effort required to perform its services under this Contract exceeds the estimate which formed the basis for OPERATOR's compensation, OPERATOR shall promptly notify PORT of that fact, but not later than 30 days after the event giving rise to the change. Changes to the scope of services or Operator compensation for the contract year in which such a notice is delivered to PORT will only be approved by mutual agreement of the PARTIES and by approval of USACE, which must be memorialized in an amendment to the USACE Agreement or by written approval from USACE to the City. Except for subsequent notices from the USACE that effectuate changes in the scope of services, in the absence of such a mutual agreement, amounts of compensation and time for completion shall be equitably adjusted, provided that OPERATOR first provides notice to PORT as required by this Paragraph and PORT has not terminated this Contract pursuant to Section IV, Paragraph B. Changes in the quantity of dredge material OPERATOR is required to transport, or the frequency at which dredge materials must be transported by OPERATOR under this Contract or the USACE Agreement shall not constitute a changed condition under this paragraph, except that the compensation paid to OPERATOR may be altered as provided for in Exhibit 7.

D. **Standard of Performance Care.** Services provided by OPERATOR or its subcontractors and/or sub-OPERATORs under this Contract will be conducted in a manner consistent with that level of care and skill ordinarily exercised by members of OPERATOR's profession or industry. OPERATOR shall be liable to the fullest extent permitted under applicable law, without limitation, for any injuries, loss, or damages proximately caused by OPERATOR's breach of this standard of Performance.

E. **Security Requirements**. To guarantee compliance with the terms of this Contract, and to ensure the PORT does not default on the USACE Agreement due to breach of this Contract by OPERATOR, OPERATOR shall furnish financial security during each year of this Contract in the form of either a letter of credit or performance and payment bonds. If in the form of a letter of credit, such security shall be in the form of annually renewable letters of credit. In the alternative, the OPERATOR may furnish performance and payment bonds each year of this Contract. The performance and payment bonds shall each be issued in an amount equal to 10% of the Operator Fee, as defined in Section 2(G) of Exhibit 7 – Compensation. The value of the bonds issued will change each contract year after the Operator Fee is established pursuant to Exhibit 7. The payment bond furnished by OPERATOR shall be issued in favor of the PORT for use by the PORT and all persons doing work or furnishing skill, tools, machinery, materials, or insurance premiums under or for the purpose of this Contract, to secure the faithful performance under this Contract. The PORT shall make written notice of the security requirement to the OPERATOR as soon as possible during each contract year after determining the Operator Fee. OPERATOR shall furnish to the PORT, within 30 days of this notice, the financial security in the amount demanded in the notice, which shall secure the faithful

performance of this Contract by OPERATOR and to be conditioned as required by Minn. Stat. §§ 574.26 to 574.32. If providing bonds, the performance and payment bonds shall be furnished by OPERATOR in a form and with a surety company authorized to do business in Minnesota and satisfactory to PORT, and subject to the following.

1. All bonds shall be furnished in a form and with a surety company authorized to do business in Minnesota and satisfactory to PORT.

2. OPERATOR agrees to pay all laborers employed and all subcontractors furnishing material to the OPERATOR in the performance of this Contract. If the OPERATOR fails to pay any claims and demands for labor and materials, the PORT may, in its sole discretion, apply the monies due to the OPERATOR pursuant to Exhibit 6 toward paying and satisfying such claims and demands.

3. The PORT further has the right to apply monies due to the OPERATOR to pay any accrued indebtedness or any claim which may hereafter come due against the OPERATOR. The amount of such payments shall be deducted from the balance due to the OPERATOR pursuant to Exhibit 7; provided that nothing herein nor any variation from the amounts and timing of the installments shall be construed as impairing the right of the PORT or of those to whose benefit the bond herein agreed upon shall insure, to hold the PORT or surety liable on the bond for any breach of the conditions of the same nor as imposing upon the PORT any obligation to laborers, materialmen, contractors, or sureties to pay or to retain for their benefit any monies coming to the OPERATOR hereunder.

4. Additionally, PORT may draw down the security, without notice, for any violation of the terms of this Contract, or if the security is allowed to lapse prior to the end of the required term by presenting the bank/escrow agent/surety with a written demand or an affidavit signed by the City Administrator or the City Administrator's designee attesting to the PORT's right to draw down and receive funds under the security. If the security is drawn down, the proceeds shall be used to cure the default.

F. **Insurance.** OPERATOR shall not commence work under this Contract until OPERATOR has obtained all insurance required herein and such insurance has been approved by PORT, nor shall OPERATOR allow any subcontractor to commence work on a subcontract until such subcontractor has obtained like insurance covering as to worker's compensation, liability, and automobile insurance. All this insurance coverage shall be maintained throughout the life of this Contract. The PORT and City of Wabasha shall be listed as named insureds and the policies shall provide that OPERATOR’s coverage shall be primary and noncontributory in the event of loss.

1. OPERATOR agrees to procure and maintain, at OPERATOR's expense, all insurance coverages required by law for OPERATOR’s services under this Contract, including but not limited to, statutory Workers’ Compensation coverage, Marine Hull and Machinery Insurance (or the reasonable commercial

equivalent if not available), United States Longshore and Harbor Workers, and Jones Act insurance coverages. Except as provided below, OPERATOR must provide Workers' Compensation insurance for all its employees. If Minnesota Statutes, section 176.041 exempts OPERATOR from Workers' Compensation insurance or if OPERATOR has no employees in the City, OPERATOR must provide a written statement, signed by an authorized representative, indicating the qualifying exemption that excludes OPERATOR from the Minnesota Workers' Compensation requirements. If during the course of the Contract OPERATOR becomes eligible for Workers' Compensation, OPERATOR must comply with the Workers' Compensation insurance requirements herein and provide PORT with a certificate of insurance.

2. OPERATOR further agrees to procure and maintain, at OPERATOR's expense, Commercial General Liability ("CGL") and business automobile liability insurance coverages insuring OPERATOR against claims for bodily injury or death, or for damage to property, including loss of use, which may arise out of operations by OPERATOR or by any subcontractor or by anyone employed by any of them or by anyone for whose acts any of them may be liable (including automobile use). The following coverages shall, at a minimum, be included in the CGL insurance: Premises and Operations Bodily Injury and Property Damage, Personal and Advertising Injury, Blanket Contractual Liability, and Products and Ongoing and Completed Operations Liability. The required automobile liability coverage must include coverage for "any auto" which extends coverage to owned autos, non-owned autos, and hired autos. Such insurance shall include, but not be limited to, minimum coverages and limits of liability specified in this Paragraph, or required by law. PORT and City shall have additional insured status and be listed by name on an endorsement attached to such policy(ies) for the services provided under this Contract and shall provide that OPERATOR's coverage shall be primary and noncontributory in the event of a loss.

3. OPERATOR agrees to procure and maintain, at OPERATOR's expense, the following insurance policies, including the minimum coverages and limits of liability specified below, or as specified in the applicable insurance certificate(s), or as required by law, whichever is greater:

Worker's Compensation	Statutory Limits
Employer's Liability	$500,000 bodily injury by accident $500,000 bodily injury by disease aggregate $500,000 bodily injury by disease per employee
Commercial General Liability	$2,000,000 property damage and bodily injury per occurrence $4,000,000 annual aggregate

	$2,000,000 annual aggregate Products – Completed Operations
Automobile Liability	$2,000,000 per occurrence combined single limit for Bodily Injury and Property Damage (shall include coverage for all owned, hired and non-owned vehicles
Umbrella or Excess Liability	$5,000,000

4. True, accurate and current certificates of insurance, showing evidence of the required insurance coverages, are hereby provided to PORT by OPERATOR and are attached hereto as Exhibit 6.

5. Any insurance limits in excess of the minimum limits specified herein above shall be available to PORT.

6. OPERATOR's insurance policies and certificate(s) shall not be cancelled without at least thirty (30) days' advance written notice to PORT, or Ten (10) days' prior written notice to PORT for nonpayment of premium.

7. OPERATOR's policies shall be primary insurance and noncontributory to any other valid and collectible insurance available to PORT with respect to any claim arising out of OPERATOR's performance under this Contract.

8. OPERATOR is responsible for payment of Contract related insurance premiums and deductibles. If OPERATOR is self-insured, a Certificate of Self-Insurance must be attached.

9. OPERATOR shall ensure that all subcontractors comply with the insurance provisions contained in this Contract and such insurance is maintained as specified.

10. OPERATOR's policies shall include legal defense fees in addition to its liability policy limits.

11. All policies listed above shall be written on a per "occurrence" basis ("claims made" and "modified occurrence" forms are not acceptable) and shall apply on a "per project" basis.

12. OPERATOR shall obtain insurance policies from insurance companies having an "AM BEST" rating of A- (minus); Financial Size Category (FSC) VII or better, and authorized to do business in the State of Minnesota, or as approved by PORT.

13. Effect of Failure to Provide Insurance. If OPERATOR fails to provide the

specified insurance, then OPERATOR will defend, indemnify and hold harmless PORT and PORT's officials, agents and employees from any loss, claim, liability and expense (including reasonable attorney's fees and expenses of litigation) to the extent necessary to afford the same protection as would have been provided by the specified insurance. Except to the extent prohibited by law, this indemnity applies regardless of any strict liability or negligence attributable to PORT (including sole negligence) and regardless of the extent to which the underlying occurrence (i.e., the event giving rise to a claim which would have been covered by the specified insurance) is attributable to the negligent or otherwise wrongful act or omission (including breach of contract) of OPERATOR, its subcontractors, agents, employees or delegates. OPERATOR agrees that this indemnity shall be construed and applied in favor of indemnification. OPERATOR also agrees that if applicable law limits or precludes any aspect of this indemnity, then the indemnity will be considered limited only to the extent necessary to comply with that applicable law. The stated indemnity continues until all applicable statutes of limitation have run.

If a claim arises within the scope of the stated indemnity, PORT may require OPERATOR to:

a. Furnish and pay for an additional surety bond, satisfactory to PORT, guaranteeing performance of the indemnity obligation; or

b. Furnish a written acceptance of tender of defense and indemnity from OPERATOR's insurance company.

OPERATOR will take the action required by PORT within Fifteen (15) days of receiving notice from PORT.

14. Notwithstanding the foregoing, PORT reserves the right to immediately terminate this Contract if OPERATOR is not in compliance with the insurance requirements contained herein and retains all rights to pursue any legal remedies against OPERATOR. In event of termination by PORT due to failure by OPERATOR to comply with insurance requirements, OPERATOR shall not be relieved of its liability and obligations for compliance with terms of this agreement surviving termination.

G. **Use of Port Facility**. Subject to the other terms and provisions contained herein, the OPERATOR shall be permitted to use the Port Facility only for the specific purpose hereinabove stated to provide the services at OPERATOR's sole cost and expense, except for costs shared between the parties by this or other agreement. This Contract is intended to permit OPERATOR through the grant of this operations license to use the Licensed Premises for the purposes of: 1) constructing, operating, maintaining, repairing, altering, and replacing dredge materials loading and offloading road and truck staging area on the Licensed Premises; 2) the placement of equipment and docking facilities on the Licensed Premises necessary to offload dredge sand from OPERATOR owned or contracted

barges (collectively 1) and 2) shall be referred to hereinafter as the "improvements"); and 3) the offloading of dredge materials from OPERATOR owned or contracted barges onto OPERATOR owned or contracted trucks in order that such offloaded dredge sand is, commensurate with being offloaded from OPERATOR owned or contracted barges and not stockpiled on the Licensed Premises, removed and hauled by such trucks to other locations arranged by the OPERATOR, not on the Licensed Premises, for subsequent use, deposit, disposal, stockpiling and/or storage (collectively 1), 2) and 3) shall be referred to hereinafter as the "activities" or "purposes"); provided, however, that during the term of this Contract, the OPERATOR shall comply with all applicable laws, regulations, conditions, and covenants affecting the Port Facility, whether federal, state, local, or contractual in addition to any such other requirements as applicable to the Port Facility. Notwithstanding the preceding, the OPERATOR may temporarily stockpile dredge sand due to equipment failure or during times of equipment maintenance and repair, but only for the time period necessary to repair said equipment. The OPERATOR shall not intentionally commit or allow to be committed any waste on, destruction of, or damage to, or nuisance on the Port Facility. Should the OPERATOR intentionally commit or allow to be committed any waste on or destruction to the Port Facility, the OPERATOR shall immediately restore the Port Facility to the original condition of the Port Facility at the inception of this Contract or as altered in accordance with plans and specifications as submitted to, and approved by, the City Engineer, or his or her designated representative, or, alternatively, pay to the PORT the cost of restoring the Port Facility to the condition herein stated, payment to be made within 30 days from the date of written notice given by PORT to the OPERATOR of the amount of such costs.

H. **Costs of Operation, Maintenance and Services**. Except as otherwise provided in this Contract, OPERATOR shall be responsible for all costs and expenses of operation and maintenance of the Port Facility and provision of the required services hereunder, including but not limited to all water, gas, heat, light, power, telephone, internet, and any other public and private utilities of every kind furnished to the Port Facility throughout the term hereof and all other costs and expenses of every kind whatsoever of or in connection with the use, operation, and maintenance of the Port Facility and all activities conducted thereon and neither PORT nor the City shall have no responsibility of any kind for such costs or expenses. PORT does not warrant that any of the services referred to above or any other services upon or to the Licensed Premises will be free from interruption. OPERATOR acknowledges that any one or more of such services may be suspended if there is a strike, an accident, or if repairs or improvements must be made for reasons beyond PORT's or City's control. Any such interruption or discontinuance of services shall never be deemed a default or disturbance of OPERATOR's use of the Licensed Premises, or any part thereof, or render the PORT or City liable to OPERATOR for damages, or relieve OPERATOR from performance of the services under this Contract.

I. **Right of Entry**. The OPERATOR shall permit or allow the PORT and the City and the agents and employees of the same to the Port Facility at all reasonable times for the purpose of inspecting them. The PORT or City may order the immediate cessation of any project or work that exceeds the scope of this Contract or otherwise poses a threat to the

life, health, safety or welfare of the public. The PORT or City may order OPERATOR to correct any project or work or condition to comply with the scope of this Contract or other applicable standards, conditions, ordinances or laws. If the improvements made by OPERATOR in the Port Facility fall into disrepair at any time during the term of this Contract, in the City Engineer's discretion, the PORT or City may order OPERATOR to conduct any repairs or perform any maintenance necessary to bring the improvements into compliance. Any such an order by the PORT or City authorized by this Paragraph shall state the violation or condition, the terms of correcting the violation or condition and that failure to correct the violation or condition within the stated time limits shall be cause for termination of this Contract. If the violation or condition is not corrected within the stated time limits, the PORT or City may terminate this Contract and/or pursue any and all remedies available to it as provided herein or in law or equity.

J. **Alterations to Port Facility**. OPERATOR shall not be permitted to make any additional improvements or alterations to the Port Facility without the prior written consent of the PORT, except, however, the OPERATOR shall, at OPERATOR's expense, make any additional improvements to the Port Facility that are needed to maintain the Port Facility in their original condition or their condition as altered pursuant to this Contract, or their condition if such alteration has otherwise been approved in writing by the PORT. All improvements or alterations or repairs to authorized improvements or alterations within the Port Facility shall be subject to the written approval of the PORT. Plans and specifications for all improvements shall be presented to the City Engineer for his or her approval; if approved, that fact shall be noted on the plans and specifications which shall be filed with the PORT. Plans and specifications shall be sufficiently detailed to show the materials to be used, shape and size of the improvement(s), safety features, lighting, the presence of utilities affected by the work and such other or different information as the City Engineer may require.

K. **Equipment and Improvements**.

1. Upon the prior written consent of the PORT, which shall not be unreasonably withheld, OPERATOR shall have the right to establish and use auxiliary equipment on the Licensed Premises. Upon the prior written consent of the PORT, which shall not be unreasonably withheld, OPERATOR shall have the right to make improvements to the Licensed Premises. All auxiliary equipment or improvements placed or constructed on the Licensed Premises shall be kept in compliance with all federal, state, and local laws and ordinances at OPERATOR's sole expense. Written consent shall be obtained by submitting a written description to PORT, along with plans and specifications, of the proposed auxiliary equipment or improvement, including its location, dimensions, size, materials, proposed use, and any other information that may be required by the PORT. PORT may approve, disapprove, require more information, or require certain modifications to the proposed equipment or improvement in its reasonable judgment and discretion. OPERATOR's final written proposal, and plans and specification as applicable, including a clear indication of PORT's approval and signed by PORT's authorized representatives shall constitute written consent of

PORT. Unless otherwise agreed by both parties, approved equipment or improvements shall be at the sole expense of OPERATOR.

2. Upon termination of this Contract, all auxiliary equipment and improvements on the Licensed Premises shall become the property of the OPERATOR if the OPERATOR so elects in writing. No compensation shall be paid to the OPERATOR regarding the same at any time, unless otherwise agreed in writing by PORT. If the PORT elects not to become the owner of said auxiliary equipment and improvements, or any part thereof, then OPERATOR shall, at OPERATOR's expense, remove the auxiliary equipment and improvements from the Licensed Premises and restore the Licensed Premises to their original condition, normal wear and tear excepted.

3. OPERATOR acknowledges and agrees that it has examined and knows the condition of the Licensed Premises and stipulates that the Licensed Premises are, as of the date hereof, in good order, good repair, safe, and clean condition, and accepts the Licensed Premises in an "as is" condition. OPERATOR agrees and acknowledges that PORT is licensing the Licensed Premises to OPERATOR without any obligation of any kind to make any additions or improvements thereto or alterations thereof. PORT further agrees and acknowledges that other than those representations and warranties expressly set forth in this Contract, neither PORT nor any agent, representative or employee of PORT or the City has made any representations or warranties as to (i) the condition or repair of the Licensed Premises prior to or at the date hereof, (ii) the utility, fitness, suitability or adequacy of the Licensed Premises for the uses thereof by OPERATOR as authorized by this Contract.

L. **Other Conditions**. The PORT's grant of this Contract, in addition to the other terms contained herein, is subject to the following conditions:

1. OPERATOR shall commence no work within the Port Facility during its term until all necessary and legally required approvals and permits are obtained by either PORT or Operator.

2. OPERATOR shall take all necessary precautions to protect and preserve any public utilities or public utilities easements within the Port Facility during any activities within or use of the Port Facility as contemplated in this Contract.

3. OPERATOR shall take all necessary precautions to avoid creating unsafe or unsanitary conditions and shall keep the Port Facility free from refuse.

4. OPERATOR shall notify Gopher State One Call prior to conducting any excavation necessary to construct, maintain, repair or replace the improvements and comply with the requirements thereof.

5. OPERATOR shall be responsible for the costs associated with any damage to

public utilities located within the Port Facility, which is caused by OPERATOR as a result of its use of or operations within the Port Facility. OPERATOR shall pay such costs within 30 days of OPERATOR's receipt of a billing statement for such charges from the PORT.

6. During the term of this Contract, OPERATOR shall, at OPERATOR's sole cost and expense, be responsible for the maintenance of the Port Facility. Such maintenance shall include, but is not limited to, removal of dirt, debris, ice and snow from the pavement and the mowing of grass or removal of weeds from the area adjacent to the pavement.

7. OPERATOR shall be responsible for performing, at its sole cost and expense, all general upkeep, maintenance, and repair of the Port Facility.

8. OPERATOR shall gain no property interest in the Port Facility by virtue of this Contract and/or by virtue of performing any maintenance, repair, alteration or improvement of the Port Facility.

9. Except as provided in Exhibit 7, OPERATOR shall receive no compensation or reimbursement for performing any maintenance, repair, alteration or improvement of, to, under or upon the Port Facility or any other costs incurred by OPERATOR related to this Agreement of any kind or nature whatsoever during the term hereof or following termination hereof.

10. In the event that OPERATOR fails to provide maintenance and/or repairs as outlined herein, the PORT may perform the work and shall invoice the OPERATOR for all costs incurred by PORT in providing such maintenance. Invoices shall be due and payable within 30 days of the date of the invoice. If OPERATOR fails to make payment to PORT as required by this paragraph within 30 days of OPERATOR's receipt of a billing statement for such charges from the PORT, the PORT may take any action it is authorized under law or this Contract to take to recover such unpaid charges.

11. OPERATOR shall not intentionally commit or allow to be committed any waste on, destruction of, or damage to, or nuisance on the Port Facility or to any utilities located therein. In the event of such occurrence, PORT may terminate this Contract as provided herein, unless such waste, destruction or damage is timely repaired to PORT's satisfaction by OPERATOR, at OPERATOR's cost.

12. In addition to the foregoing and any other responsibilities contained in this Contract, with the exception of shared costs as described herein or channel maintenance which is a PORT responsibility, OPERATOR shall be responsible, at OPERATOR's expense, for ancillary services, including but not limited to the following, which services shall be performed at a frequency and level as needed and determined by OPERATOR, or as otherwise required by the PORT or City, to keep the Licensed Premises in good working order, condition and in compliance

with City Code and applicable law (the "ancillary services"):

i. All snow and ice removal, plowing, landscaping, mowing, lawn care, maintenance and grounds-keeping at the Licensed Premises.
ii. Stormwater management and control.
iii. Custodial and cleaning services.
iv. Pest control.
v. Trash collection, removal and proper disposal and recycling.
vi. Topside and underwater dock inspections (50% cost share with PORT).
vii. Fender maintenance (50% cost share with PORT).
viii. All other ancillary services necessary for OPERATOR's proper operation and maintenance of the Port Facility.

SECTION II – PORT'S RESPONSIBILITIES

A. PORT hereby grants, an exclusive and terminable license to the OPERATOR, for the placement of permanent and movable infrastructure and equipment on the Port Facility, to perform the services, and for an additional area within the Port Facility for temporary storage of dredge materials transported by OPERATOR pursuant to this Contract and the USACE Agreement. The Port Facility and Port Facility are described and depicted in Exhibit 1.

B. PORT shall promptly compensate OPERATOR as services are performed to the satisfaction of the City's Engineer, in accordance with Section III of this Contract.

C. PORT shall provide access to any and all previously acquired information relevant to the scope of services detailed in Exhibit 4, attached hereto, in its custody to OPERATOR for its use, at OPERATOR's request.

D. PORT will, to the fullest extent possible, grant access to and make all provisions for entry upon both public and private property as necessary for OPERATOR's performance of the services detailed in Exhibit 4, attached hereto.

E. The City Administrator or her designee shall serve as the liaison to act as PORT's representative with respect to services to be rendered under this contract. Said representative shall have the authority to transmit instructions, receive instructions, receive information, interpret and define PORT's policies with respect to the Project and OPERATOR's services. PORT's representative shall be the primary contact person between PORT and OPERATOR with respect to the services from OPERATOR under this Contract. PORT reserves the right to substitute another person or entity as the PORT's representative at any time and shall notify OPERATOR thereof pursuant to Section VI, Paragraph C.

SECTION III – CONSIDERATION

A. **Fees.** PORT will compensate OPERATOR as detailed in Exhibit 7, Compensation,

which is attached hereto and incorporated herein by reference, for OPERATOR's performance of services under this Contract.

B. If PORT fails to make any payment due OPERATOR for services performed to the satisfaction of the City Engineer and expenses within thirty days after the date of OPERATOR's invoice, OPERATOR may, after giving thirty days written notice to PORT, and without waiving any claim or right against PORT and without incurring liability whatsoever to PORT, suspend services and withhold port operations services required hereunder until OPERATOR has been paid in full all amounts due for services, expenses and charges.

SECTION IV – TERM AND TERMINATION

A. **Term.** This Contract shall be in effect from the date that the Kohner parcel is sold to and purchased by the Port. The Contract will continue for ten years from the date that PORT provides written notice to the OPERATOR that construction of the Port Facility has been deemed substantially complete by the City Engineer and shall expire on the ten-year anniversary of that notice ("Term"). By way of example only, if notice of substantial completion is provided by PORT to OPERATOR on January 1, 2023, the Term will expire on December 31, 2032.

B. **Termination by PORT.** Notwithstanding the Term, this Contract may be terminated by the PORT on the occurrence of the following events upon 180 days written notice:

1. In the event that the USACE Agreement contained in Exhibit 4 expires, is terminated by either the PORT or USACE, or in the event that USACE determines a new lowest cost alternative exists for the deposit of the dredge materials that are the subject of the USACE Agreement, which shall be at the sole discretion of USACE, or in the event USACE ceases making payments or is otherwise in default of the USACE Agreement.

2. In the event OPERATOR defaults in the performance of any duty required of OPERATOR described herein or fails to be in compliance with any term or requirement of this Contract, including maintaining performance of the City's obligations in the USACE Agreement contained in Exhibit 3.

3. In the event that the results of any Environmental Impact Study ("EIS") or Environmental Assessment Worksheet ("EAW") completed by the PORT make completion of the Port Facility not practically or economically feasible, as determined by and at the sole discretion of PORT, or inadequate funding through State grants are not awarded to the City and/or the PORT for the Port Facility.

4. In the event the PARTIES do not sign a purchase agreement for the sale of the Kohner parcel and closing on and recording such deed of conveyance of the Kohner parcel to the PORT where the Port Facility will be located.

5. In the event PORT does not sign an agreement with the City for the City to assign or otherwise transfer its rights and obligations under the USACE Agreement to PORT and whereby PORT assumes all such duties and obligations.

6. In the event of a material change of use which includes, but is not limited to, abandonment by OPERATOR for a period of more than 270 days, destruction or demolition of OPERATOR's improvements or equipment without timely replacement, transfer, sale or assignment (other than to OPERATOR's various family legal entities). For purposes of this Agreement, "material change of use" do not include the mere convenience, but instead include reasons of a material nature, including but not limited to, changed circumstances affecting the purpose of this Agreement, or for reasons affecting the public interest or public health, safety or welfare.

C. **Termination by OPERATOR.**

1. In the event the PORT defaults in the performance of any duty required of the PORT herein or fails to be in compliance with any term or requirement of this Contract.

2. In the event the PARTIES do not sign a purchase agreement for the sale of the Kohner parcel and closing on and recording such deed of conveyance of the Kohner parcel to the PORT where the Port Facility will be located.

D. **Default.** If OPERATOR fails to satisfy any of the provisions of this Contract, or so fails to perform and/or administer the services detailed in Exhibit 4, in the manner detailed in Exhibit 5, attached hereto, pursuant to the requirements of Section I of this Contract, in such a manner as to endanger the performance of the Contract or the services provided hereunder, this shall constitute default. Unless OPERATOR's default is excused by PORT, PORT may, upon written notice, immediately cancel this Contract or exercise any other rights or remedies available to PORT under this Contract or law. In the event of OPERATOR's default, OPERATOR shall be liable to PORT for any and all costs, disbursements, attorneys and OPERATOR fees reasonably incurred by PORT in enforcing this Contract, and PORT shall be able to enforce, to the full extent of the law, the provisions of the performance bond required by Section I, Paragraph E of this Contract.

E. **Restoration.** Before the effective date of any such termination of this Agreement under this Section, OPERATOR shall remove all of OPERATOR's improvements and personal property from the Port Facility, at OPERATOR's sole cost and expense, and shall restore the Port Facility to a reasonably depreciated condition or better pursuant to the standards and requirements set forth in City Code, as amended, unless otherwise directed by the PORT in writing. In the event that OPERATOR fails to remove the improvements and personal property or to restore the Port Facility before the effective termination date of this Contract, the PORT or the City or their authorized agents or representatives may perform any work necessary to remove the improvements and personal property from the

Port Facility and restore the Port Facility to its preexisting condition, and OPERATOR shall reimburse PORT for all expenses reasonably incurred by the PORT or the City in performing such work. The OPERATOR shall reimburse the PORT and City as required by this paragraph within 30 days of OPERATOR's receipt of a billing statement for such charges from the PORT or City. The City may take any action it is authorized under law to take to recover any unpaid charges, including assessing and certifying such unpaid charges to the County Auditor for collection with property taxes on any property owned by the OPERATOR located in the City.

SECTION V – INDEMNIFICATION

A. The OPERATOR shall be responsible for and liable for any and all costs and/or damages associated with the OPERATOR's activities or those of the OPERATOR's employees, contractor's or agents on the Licensed Premises. Conversely, the PORT and City shall not be responsible for or liable for any costs or damages associated with the OPERATOR's services or activities or those of the OPERATOR's employees, contractor's or agents on the Licensed Premises. The OPERATOR knows, understands and acknowledges the risks and hazards associated with using the Licensed Premises for the purposes permitted herein and the improvements thereon and hereby assumes any and all risks and hazards associated therewith. The OPERATOR hereby irrevocably waives any and all claims against the PORT and/or the City or any of their officials, employees or agents for any bodily injury (including death), loss or property damage incurred by the OPERATOR as a result of using the Licensed Premises or any of OPERATOR's services, activities or improvements, and hereby irrevocably releases and discharges the PORT and City and any of their officials, employees or agents from any and all such claims of liability related to the OPERATOR's use of the Licensed Premises or the improvements thereon, except those resulting from the negligence or intentional misconduct of the PORT or the City.

B. OPERATOR shall indemnify, protect, save, and hold harmless PORT and the City, and its respective officers, directors, employees and members and agents, from and against any claims, liability, damages, costs, judgments, or expenses, including reasonable attorney's fees, to the extent attributable to or caused by the negligent or otherwise wrongful acts or omissions, including breach of a specific contractual duty, of OPERATOR or OPERATOR's independent contractors, subcontractors, agents, employees, vendors or delegates with respect to this Contract or the services. OPERATOR shall defend PORT against the foregoing, or litigation in connection with the foregoing, at OPERATOR's expense, with counsel reasonably acceptable to PORT, PORT, at its expense, shall have the right to participate in the defense of any claims or litigation and shall have the right to approve any settlement, which approval shall not be unreasonably withheld. The indemnification provision of this Section shall not apply to damages or other losses proximately caused by or resulting from the negligence or willful misconduct of PORT or the City. All indemnification obligations shall survive termination, expiration or cancellation of this Contract. OPERATOR agrees, that in order to protect itself, PORT and the City under the indemnity provisions set forth above, it will at all times during the term of this Contract keep in force policies of insurances

required in the Paragraph entitled, "Insurance." Nothing in this Contract shall be construed to waive any immunities or limitations to which PORT or the City are entitled under Minn. Stat. Chapter 466 or otherwise.

C. Nothing contained in this Contract shall create a contractual relationship with or a cause of action in favor of a third party against PORT or OPERATOR. OPERATOR's services under this Contract are being performed solely for PORTS's benefit, and no other entity shall have any claim against OPERATOR because of this Contract or the performance or nonperformance of services provided hereunder.

SECTION VI – GENERAL TERMS

A. **Voluntary and Knowing Action.** The PARTIES, by executing this Contract, state that they have carefully read this Contract and understand fully the contents hereof; that in executing this Contract they voluntarily accept all terms described in this Contract without duress, coercion, undue influence, or otherwise, and that they intend to be legally bound hereby.

B. **Authorized Signatories.** The PARTIES each represent and warrant to the other that (1) the persons signing this Contract are authorized signatories for the entities represented, and (2) no further approvals, actions or ratifications are needed for the full enforceability of this Contract against it; each PARTY indemnifies and holds the other harmless against any breach of the foregoing representation and warranty.

C. **Notices**. All notices and other communications required or permitted under this Contract shall be in writing, and hand delivered or sent by registered or certified mail, return-receipt requested, postage prepaid, or by overnight delivery service and shall be effective upon receipt at the following addresses or as either PARTY shall have notified the other PARTY. The PARTIES' representatives for notification for all purposes are:

PORT:
Caroline Gregerson, City Administrator
Wabasha Port Authority
P.O. Box 268
900 Hiawatha Drive, East
Wabasha, MN 55981
Phone: (651) 565-4568
Email: cityadmin@wabasha.org

OPERATOR:
Stephanie Vargas, President
Wabasha Transport Terminal LLC
4980 W 6th St
Winona, MN 55987
Phone: (507) 454-5093

Email: svargas@kohnermaterials.com

D. **Dispute Resolution**. PORT and OPERATOR agree to negotiate all disputes between them in good faith for a period of Thirty (30) days from the date of notice of dispute prior to proceeding to formal dispute resolution or exercising their rights under law

E. **Independent Contractor Status.** OPERATOR, at all times and for all purposes hereunder, shall be an independent contractor and is not an employee of PORT for any purpose. No statement contained in this Contract shall be construed so as to find OPERATOR to be an employee of PORT, and OPERATOR shall not be entitled to any of the rights, privileges, or benefits of employees of CITY, including but not limited to, workers' compensation, health/death benefits, and indemnification for third-party personal injury/property damage claims. OPERATOR acknowledges that no withholding or deduction for State or Federal income taxes, FICA, FUTA, or otherwise, will be made from the payments due OPERATOR, and that it is OPERATOR's sole obligation to comply with the applicable provisions of all Federal and State tax laws. OPERATOR shall at all times be free to exercise initiative, judgment and discretion as to how to best perform or provide services identified herein. OPERATOR is responsible for hiring sufficient workers to perform the services/duties required by this Contract, withholding their taxes and paying all other employment tax obligations on their behalf.

F. **Subcontracting.** OPERATOR shall not enter into any subcontract for performance of any services located within the license premises without prior notification to the PORT of the identity of the proposed subcontractor. Such proposed subcontractor shall be deemed acceptable to PORT unless PORT raises a substantive, reasonable objection within 5 days of notification. PORT may require the replacement of any subcontractor. PORT also may require OPERATOR to retain specific replacements; provided, however, that PORT may not require a replacement to which OPERATOR has a reasonable objection. If OPERATOR has submitted the identity of a certain subcontractor for acceptance by PORT, and PORT has accepted it (either in writing or by failing to make written objection thereto), then PORT may subsequently revoke the acceptance of any such subcontractor so identified solely on the basis of substantive, reasonable objection after due investigation. OPERATOR shall submit an acceptable replacement for the rejected subcontractor. If PORT requires the replacement of any subcontractor retained by OPERATOR to perform any services, then OPERATOR shall be entitled to an adjustment in cost, with respect to the replacement; and OPERATOR shall initiate a request for such adjustment in accordance with the compensation provisions of this agreement. The preceding provision does not apply to services performed pursuant to the USACE Agreement in areas outside the licensed premises, such as on the Mississippi River or the USACE controlled island site. OPERATOR shall be responsible for the performance of all subcontractors and/or sub-OPERATORs. As required by Minn. Stat. § 471.425, OPERATOR must pay all subcontractors, less any retainage, within Ten (10) calendar days of OPERATOR's receipt of payment from PORT for undisputed services provided by the subcontractor(s) and must pay interest at the rate of one and one half percent per month or any part of a month to the subcontractor(s) on any undisputed amount not paid on time to the subcontractor(s).

G. **Assignment.** This Contract may not be assigned by either PARTY without the written consent of the other PARTY.

H. **Modifications/Amendment.** Any alterations, variations, modifications, amendments or waivers of the provisions of this Contract shall only be valid when they have been reduced to writing, and signed by authorized representative of PORT and OPERATOR.

I. **Records—Availability and Retention.** Pursuant to Minn. Stat. § 16C.05, subd. 5, OPERATOR agrees that PORT, the State Auditor, or any of their duly authorized representatives at any time during normal business hours and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt, and transcribe any books, documents, papers, records, etc., which are pertinent to the accounting practices and procedures of OPERATOR and involve transactions relating to this Contract. OPERATOR agrees to maintain these records for a period of six years from the date of termination of this Contract. OPERATOR shall develop policies and procedures, as requested by PORT, to ensure the City of Wabasha can comply with Article V of the USACE Agreement.

J. **Force Majeure**. The PARTIES shall each be excused from performance under this Contract while and to the extent that either of them are unable to perform, for any cause beyond its reasonable control. Such causes shall include, but not be restricted to fire, storm, flood, earthquake, explosion, war, total or partial failure of transportation or delivery facilities, raw materials or supplies, interruption of utilities or power, and any act of government or military authority. In the event either PARTY is rendered unable wholly or in part by force majeure to carry out its obligations under this Contract then the PARTY affected by force majeure shall give written notice with explanation to the other PARTY immediately.

K. **Compliance with Laws.** OPERATOR shall abide by all Federal, State and local laws, statutes, ordinances, rules and regulations now in effect or hereinafter adopted pertaining to this Contract or to the Port Facility, programs and staff for which OPERATOR is responsible. OPERATOR shall at all times comply with any environmental permits issued by the Minnesota Pollution Control agency, including but not limited to any EIS or EAW that may be issued, or other permits or regulations imposed on the Port Facility or PORT by any agency of the Federal, State, or local government and their agencies. This paragraph specifically requires the OPERATOR to comply with laws, statutes, ordinances, rules or permits not enacted, issued or adopted at the time of this Contract, but are subsequently applicable to this Contract or the Port Facility.

L. **Covenant Against Contingent Fee.** OPERATOR warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for OPERATOR to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee, any fee, commission, percentage, brokerage fee, gift or any other consideration, contingent upon or resulting from award or making of this Contract.

M. **Covenant Against Vendor Interest.** OPERATOR warrants that it is not employed by any vendor of equipment or service provider that could result in a commission, percentage, brokerage, or contingent fee as a result of OPERATOR's association with PORT.

N. **Non-Discrimination.** The provisions of any applicable law or ordinance relating to civil rights and discrimination shall be considered part of this Contract as if fully set forth herein.

O. **Interest by City Officials.** No elected official, officer, or employee of PORT shall during his or her tenure or employment and for one year thereafter, have any interest, direct or indirect, in this Contract or the proceeds thereof.

P. **Governing Law**. This Contract shall be deemed to have been made and accepted in Wabasha County, Minnesota, and the laws of the State of Minnesota shall govern any interpretations or constructions of the Contract without regard to its choice of law or conflict of laws principles.

Q. **Data Practices.** The PARTIES acknowledge that this Contract is subject to the requirements of Minnesota's Government Data Practices Act (Act), Minnesota Statutes, Section 13.01 *et seq*. OPERATOR agrees to abide by the applicable provisions of the Act, HIPAA requirements and all other applicable state or federal rules, regulations or orders pertaining to privacy or confidentiality. OPERATOR understands that all of the data created, collected, received, stored, used, maintained or disseminated by OPERATOR in performing those functions that the PORT would perform is subject to the requirements of the Act, and OPERATOR must comply with those requirements as if it were a government entity. This does not create a duty on the part of OPERATOR to provide the public with access to public data if the public data is available from the PORT, except as required by the terms of this Contract.

R. **No Waiver.** Any PARTY's failure in any one or more instances to insist upon strict performance of any of the terms and conditions of this Contract or to exercise any right herein conferred shall not be construed as a waiver or relinquishment of that right or of that PARTY's right to assert or rely upon the terms and conditions of this Contract. Any express waiver of a term of this Contract shall not be binding and effective unless made in writing and properly executed by the waiving PARTY.

S. **Data Disclosure**. Under Minn. Stat. § 270C.65, subd. 3 and other applicable law, OPERATOR consents to disclosure of its social security number, federal employer tax identification number, and/or Minnesota tax identification number, already provided to PORT, to federal and state agencies and state personnel involved in the payment of CITY obligations. These identification numbers may be used in the enforcement of federal and state laws which could result in action requiring OPERATOR to file state tax returns, pay delinquent state tax liabilities, if any, or pay other PORT liabilities.

T. **Mechanic's Liens.** OPERATOR hereby covenants and agrees that OPERATOR will not

permit or allow any mechanic's or materialman's liens to be placed on PORT's interest in the Property that is the subject of the Project during the term hereof. Notwithstanding the previous sentence, however, in the event any such lien shall be so placed on PORT's interest, OPERATOR shall take all steps necessary to see that it is removed within thirty (30) days of its being filed; provided, however, that OPERATOR may contest any such lien provided OPERATOR first posts a surety bond, in favor of and insuring PORT, in an amount equal to 125% of the amount of any such lien.

U. **Severability.** The invalidity or unenforceability of any provision of this Contract shall not affect the validity or enforceability of any other provision. Any invalid or unenforceable provision shall be deemed severed from this Contract to the extent of its invalidity or unenforceability, and this Contract shall be construed and enforced as if the Contract did not contain that particular provision to the extent of its invalidity or unenforceability.

V. **Entire Contract.** These terms and conditions constitute the entire Contract between the PARTIES regarding the subject matter hereof. All discussions and negotiations are deemed merged in this Contract.

W. **Headings and Captions.** Headings and captions contained in this Contract are for convenience only and are not intended to alter any of the provisions of this Contract and shall not be used for the interpretation of the validity of the Contract or any provision hereof.

X. **Survivability**. All covenants, indemnities, guarantees, releases, representations and warranties by any PARTY or PARTIES, and any undischarged obligations of PORT and OPERATOR arising prior to the expiration of this Contract (whether by completion or earlier termination), shall survive such expiration.

Y. **Execution**. This Contract may be executed simultaneously in two or more counterparts that, when taken together, shall be deemed an original and constitute one and the same document. The signature of any PARTY to the counterpart shall be deemed a signature to the Contract, and may be appended to, any other counterpart. Facsimile and email transmissions of executed signature pages shall be deemed as originals and sufficient to bind the executing PARTY.

Z. **Recitals and Exhibits**. The recitals and all exhibits to this Contract are made a part hereof and incorporated herein by reference.

AA. **Permits**. PORT shall acquire and provide at its own cost all necessary permits for the establishment and construction of the Port Facility. PORT shall provide copies of any PORT acquired permits, as well any License Agreements between the City and the USACE for the placement and management of dredged material, to the OPERATOR. OPERATOR shall be responsible for compliance with the provisions of such permits and license agreements as they pertain to its work and services under this agreement.

OPERATOR shall acquire and provide at its own cost and keep in force during the term of this Contract, any additional permits, governmental certificates, and licenses, local, state or federal, required to perform the work and services under this agreement. OPERATOR shall comply with all lawful requirements applicable to the work and services, and shall give and maintain any and all notices required by applicable law pertaining to the work or services.

BB. **Taxes**. Real estate taxes assessed against the Port Facility shall be paid by PORT. OPERATOR shall pay any applicable state sales taxes and shall also be responsible for the payment of any and all payroll taxes and contributions for unemployment compensation insurance and Social Security which are measured by the wages, salaries or other remunerations paid to employees or contractors of OPERATOR and shall submit evidence of same to PORT when requested. OPERATOR shall pay any taxes owed under the Wabasha County Aggregate Removal Production Tax Ordinance adopted on October 2, 2018 with an effective date of January 1, 2019.

CC. **No Partnership, Joint Venture, Or Fiduciary Relationship Created Hereby**. Nothing contained in this Contract shall be interpreted as creating a partnership, joint venture, or relationship of principal and agent between the PORT, City and the OPERATOR.

DD. **Regulatory Authority Not Waived**. Nothing contained in this Contract shall be interpreted as a waiver by PORT or the City as a waiver of PORT or the City's regulatory authority over OPERATOR or any entity or agent working in furtherance of this Contract. The PORT and City may take any legal or legislative actions authorized by the City Charter, City ordinances, or State law, regardless if such actions are actually or perceived to be adverse to OPERATOR's interests. PORT and the City's authority hereunder extends to issues relating to the terms of this Contract, including OPERATOR's requests for additional sites and uses related to the scope of services contained herein. OPERATOR's sole recourse pursuant to any City action deemed adverse to the OPERATOR's interest shall be as set forth in Sections I.B, I.C and Exhibit 6 of this Contract.

EE. **Cumulative Rights**. Except as otherwise expressly stated herein, no right or remedy herein conferred on or reserved to the PARTIES is intended to be exclusive of any other right or remedy hereby provided by law, but each shall be cumulative in, and in addition to, every other right or remedy given herein or hereafter existing at law, in equity, or by statute.

FF. **Records—Availability And Retention**. Pursuant to Minn. Stat. § 16C.05, subd. 5, OPERATOR agrees that the PORT, City, the State Auditor, or any of their duly authorized representatives at any time during normal business hours and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt, and transcribe any books, documents, papers, records, etc., which are pertinent to the accounting practices and procedures of OPERATOR and involve transactions relating to this Contract. OPERATOR agrees to maintain these records for a period of six years from the date of termination of this Contract.

GG. **Attorney's Fees**. If any action at law or in equity shall be brought by PORT to recover possession of the Licensed Premises following termination or for or on account of any breach of this Contract by Lessee, PORT shall be entitled to recover from OPERATOR reasonable attorney's fees, the amount of which shall be fixed by the Court and shall be made a part of any judgment or decree rendered.

HH. **Subordination**. This Contract is subject and subordinate to all present or future financial encumbrances on the Port Facility, and is further subject to all present and future easements, conditions, contracts and encumbrances of record, and to all applicable laws, ordinances and governmental rules and regulations. Such subordination shall be self-executing without further act on the part of the PARTIES; provided, however, that OPERATOR shall at any time hereafter, at the request of PORT or the City or any lien holder, or any purchaser of the Licensed Premises, execute any instruments that may be required, and OPERATOR hereby irrevocably authorizes PORT or the City to execute and deliver in the name of OPERATOR any such instrument if OPERATOR fails to do so.

Remainder of page intentionally left blank.

SECTION VII –SIGNATURES

IN WITNESS WHEREOF, the PARTIES have hereunto executed this document the day and year first above written.

OPERATOR:

WABASHA TRANSPORT TERMINAL LLC

By: Stephanie Vargas Date: 10/6/2023
Stephanie Vargas, Its President

PORT:

WABASHA PORT AUTHORITY

By: John Friedmeyer Date: 10/6/2023
John Friedmeyer, Its President

By: Caroline Gregerson Date: 10/6/2023
Caroline Gregerson, Its City Administrator

EXHIBIT 1

PARCEL DESCRIPTION:

All that part of the following described parcel lying northerly and easterly of the following described line;

PARCEL DESCRIPTION:
All of Outlot 6 of Section 30-111-10, also described as follows:
Commencing at the Northwest corner of what was formerly known as Block 62 in the plat of the City of Wabasha on the Mississippi River where the Easterly line of Sanford Street on said plat touches said river; thence in a Southwesterly direction to the center of Fifth Street; thence Northwesterly along the center of Fifth Street to the Westerly line of Read Street on said plat of Wabasha; thence along the Westerly line of said Read Street in a Northeasterly direction to the Mississippi River; thence along the bank of said river in a Southeasterly line to the place of beginning, and embracing what was formerly known and platted as Blocks D, 63, 67, 68, 69, 95, 96 and 97 with that portion of Sanford, Richard, Rice, Read and other streets lying between and contiguous to said Blocks as platted and recorded in the office of the County Recorder in and for Wabasha County, containing 26 acres of land, more or less, said premises being located in Section 30-111-10.

Excepting therefrom the following:

Commencing at the Southwesterly corner of Block 87, City of Wabasha, said point being the point of intersection of the Easterly line of Campbell Street and the Northerly line of 5th Grant Boulevard; thence Northwesterly along said Northerly line 2,720 feet to the Southeasterly corner of Outlot 6; thence continue Northwesterly along said Northerly line 622.80 feet to the point of beginning of this exception; thence Northeasterly at a deflection angle of 111° 00' right with said Northerly line 930.00 feet; thence Northwesterly at a deflection angle of 122° 41' 35" left 928.77 feet to a point on the Westerly line of said Outlot 6, said point being 680.00 feet Northeasterly of the Southwesterly corner of Outlot 6; thence Southwesterly along the Westerly line of said Outlot 6, 680.00 feet to the Southwesterly corner of Outlot 6 and the Northerly line of 5th Grant Boulevard; thence Southeasterly along said Northerly line 577.20 feet to the point of beginning. Said exception containing 12.85 acres, more or less.

LINE DESCRIPTION:
Commencing at the Southwest corner of Block 94; thence North 32 degrees 32 minutes 53 seconds East, along the west boundary of Blocks Numbers 94, 70 and 62 extended, a distance of 980.10 feet to the point of beginning; thence North 41 degrees 44 minutes 27 seconds West, a distance of 145.43 feet; thence North 32 degrees 32 minutes 53 seconds East, a distance of 283.12 feet more or less to the low water mark of the Mississippi River.

SURVEYOR'S CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Janele Fowlds — 06/19/2023

Janele Fowlds
License Number 26748
Date

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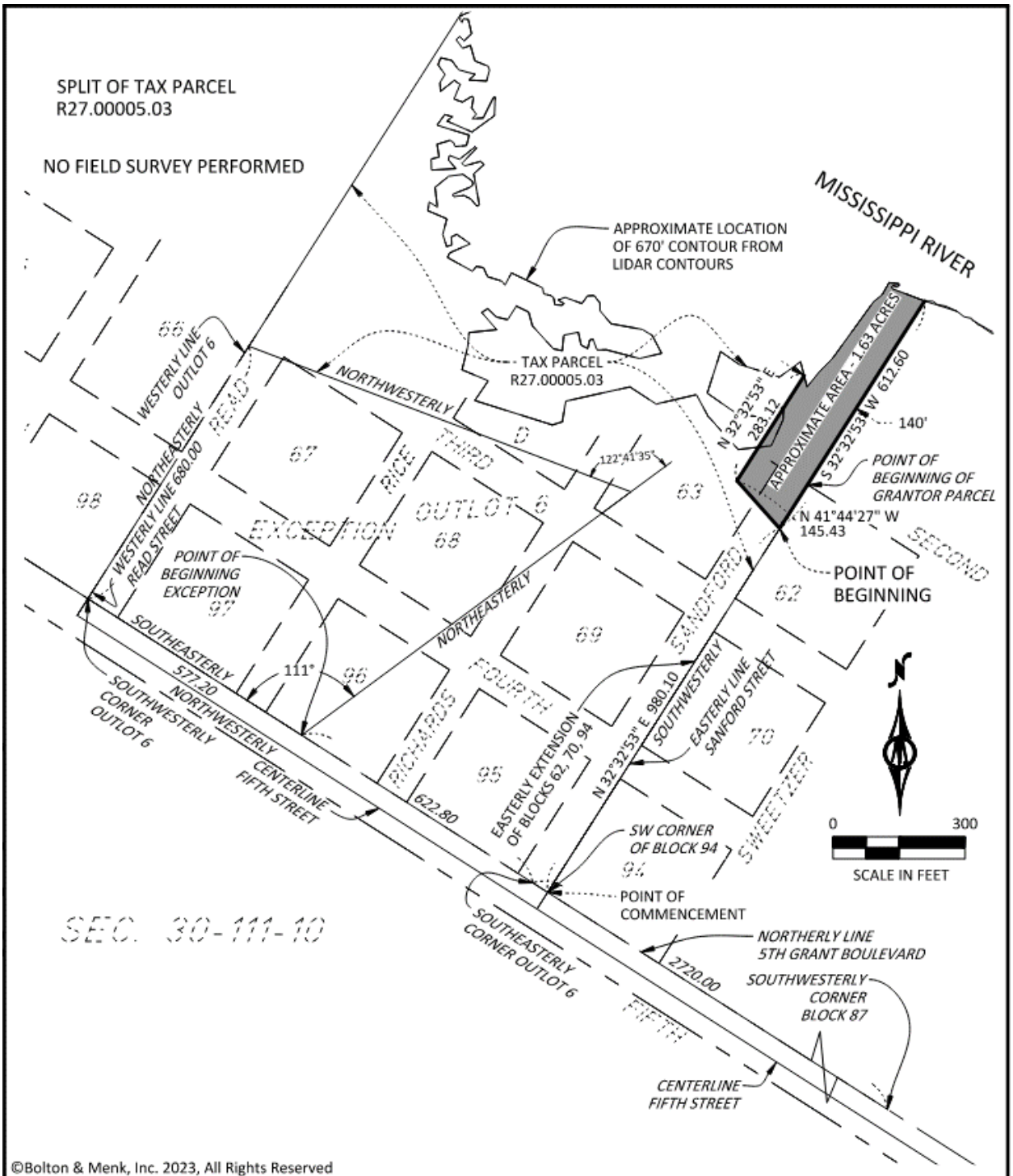
SKETCH OF DESCRIPTION
WABASHA, MINNESOTA

PART OF WABASHA PLAT AND SECTION 30, TOWNSHIP 111 NORTH, RANGE 10 WEST, WABASHA COUNTY, MINNESOTA

BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA



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2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

PARCEL DESCRIPTION

All that part of the following described parcel lying northerly and westerly of the following described line;

PARCEL DESCRIPTION:
Commencing at a point where the West boundary of Blocks Numbers Sixty-Two (62), Seventy (70), and Ninety-Four (94) extended in a Northerly direction intersects the low water mark of the South line of the Mississippi River; thence in an Easterly direction following the low water mark of the South line of the said Mississippi River to a point where the center line of Steele Street extended Northerly intersects said low water mark; thence in a Southerly direction along the center line of Steele Street to the center line of Fifth Street; thence in a Westerly direction along the center line of Fifth Street to the Easterly side of Sandford Street; thence Northerly at right angles along the Westerly boundaries of Blocks Numbers Ninety-Four (94), Seventy (70) and Sixty-Two (62) to the place of beginning; said land embracing Blocks Numbers Sixty (60), Sixty-One (61), Sixty-Two (62), Seventy (70), Seventy-One (71), Seventy-Two (72), Ninety-Two (92), Ninety-Three (93), and Ninety-Four (94) and all the streets and alleys or parts thereof lying within the above-described metes and bounds, all in accordance with the plat thereof made by Wellman & McDougal on file or of record in the office of the Wabasha County Recorder in and for said County.

LINE DESCRIPTION:
Commencing at the Southwest corner of Block 94, plat of WABASHA, according to the recorded plat thereof; thence North 32 degrees 32 minutes 53 seconds East, along the northerly extension of the west boundary of Blocks Numbers 94, 70 and 62 of said plat of WABASHA, a distance of 980.10 feet to the point of beginning; thence South 41 degrees 44 minutes 27 seconds East, a distance of 76.85 feet; thence North 64 degrees 27 minutes 24 seconds East, a distance of 389.78 feet; thence North 32 degrees 32 minutes 53 seconds East, a distance of 108.00 feet; thence North 00 degrees 10 minutes 12 seconds East, a distance of 254.91 feet more or less to the low water mark of the Mississippi River.

SURVEYOR'S CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Janele Fowlds — 09/12/2023

Janele Fowlds
License Number 26748

Date

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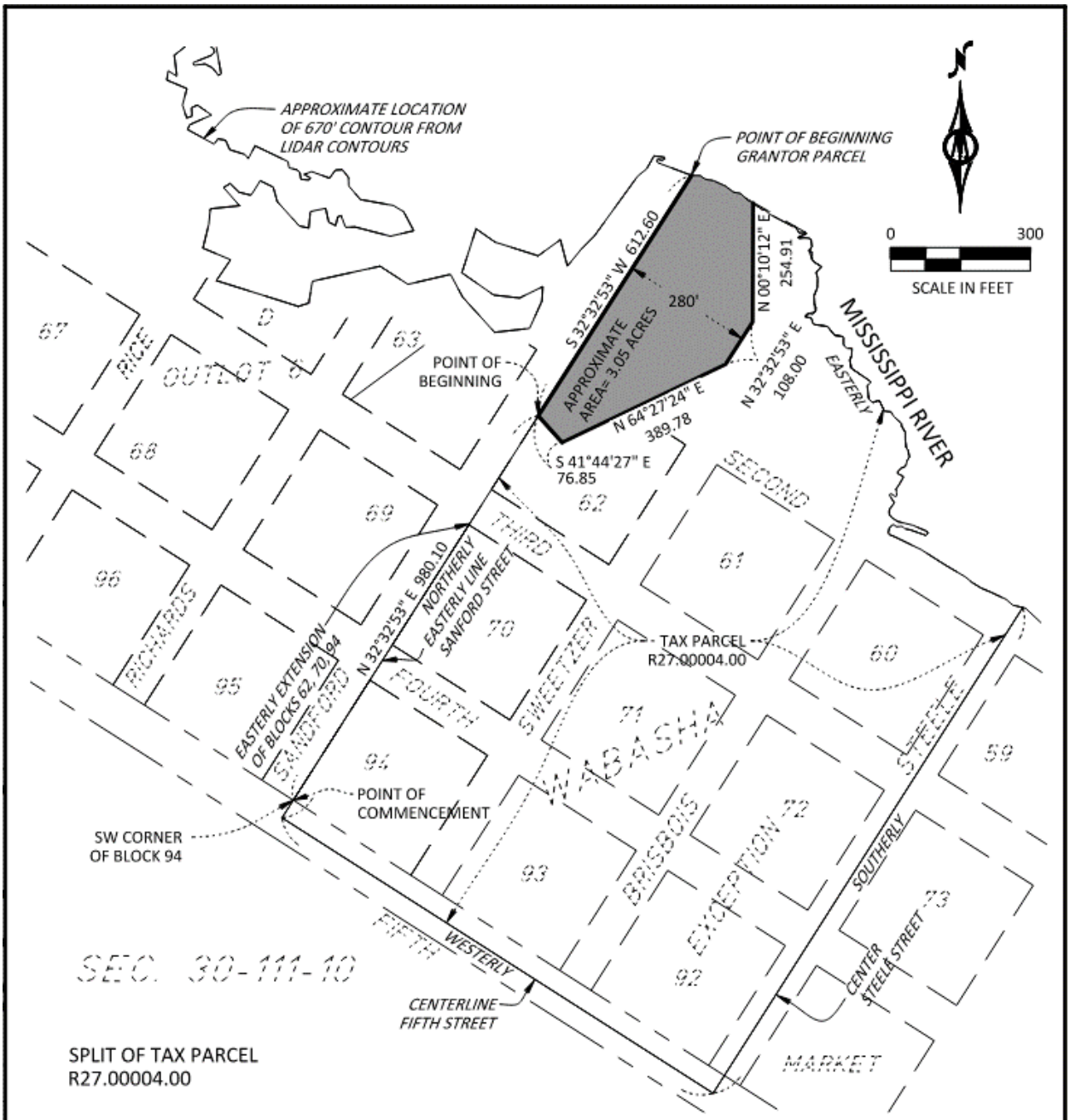
SKETCH OF DESCRIPTION
WABASHA, MINNESOTA

PART OF WABASHA PLAT AND SECTION 30, TOWNSHIP 111 NORTH, RANGE 10 WEST, WABASHA COUNTY, MINNESOTA

BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA



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BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

EXHIBIT 2

EASEMENT AREA

Only that portion of the Grantor's Property lying within the below described parcel:
A 120.00 foot strip of land, being part of Outlot 6 of Section 30 T. 111 R.10 and part of plat of Wabasha, according to the recorded plat thereof, Wabasha County, Minnesota. The centerline of said 120.00 foot strip being described as follows:

Commencing at the Southwest corner of said Block 94; thence North 57 degrees 28 minutes 33 seconds West, a distance of 465.92 feet to the point of beginning of the centerline to be described; thence North 32 degrees 44 minutes 05 seconds East, a distance of 81.12 feet; thence northerly 413.32 feet along a tangential curve concave to the southeast, having a radius of 865.93 feet, and a central angle of 27 degrees 20 minutes 54 seconds; thence North 60 degrees 04 minutes 59 seconds East, tangent to said curve, a distance of 228.21 feet; thence northerly 247.39 feet along a tangential curve concave to the south, having a radius of 691.88 feet, and a central angle of 20 degrees 29 minutes 13 seconds; thence North 80 degrees 34 minutes 12 seconds East, tangent to said curve, a distance of 54.64 feet; thence northerly 117.26 feet along a tangential curve concave to the north, having a radius of 196.93 feet, and a central angle of 34 degrees 06 minutes 56 seconds and said centerline there terminating.

SURVEYOR'S CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Janele Fowlds — 06/19/2023

Janele Fowlds
License Number 26748
Date

Premises Tax PID = 27.00005.03

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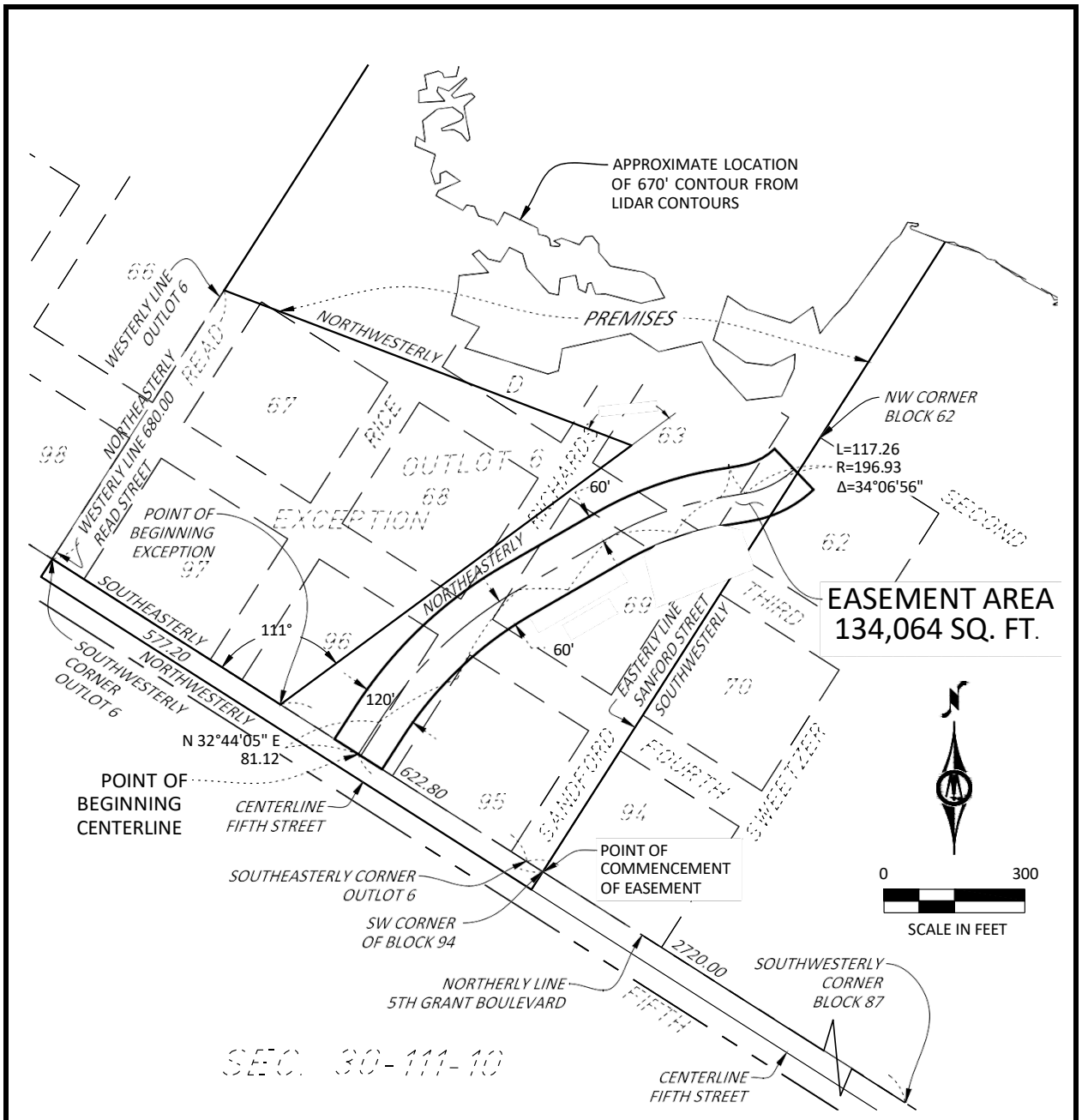
CERTIFICATE OF EASEMENT
WABASHA, MINNESOTA

PART OF WABASHA PLAT AND SECTION 30, TOWNSHIP 111 NORTH, RANGE 10 WEST, WABASHA COUNTY, MINNESOTA

BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA



LEGEND

(000 DEED) DEED DESCRIPTION

The boundary of the Premises Property shown hereon is approximate

Easement Area = 134,064 Sq. Ft.
Premises Tax PID = 27.00005.03

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CERTIFICATE OF EASEMENT
WABASHA, MINNESOTA

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BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

EASEMENT AREA

Only that portion of the Grantor's Property lying within the below described parcel:
A 120.00 foot strip of land being part of the plat of Wabasha, according to the recorded plat thereof, Wabasha County, Minnesota. The centerline of said 120.00 foot strip being described as follows:

Commencing at the Southwest corner of said Block 94; thence North 57 degrees 28 minutes 33 seconds West, along the northerly line of 5th Grand Boulevard, a distance of 465.92 feet to the point of beginning of the centerline to be described; thence North 32 degrees 44 minutes 05 seconds East, a distance of 81.12 feet; thence northerly 413.32 feet along a tangential curve concave to the southeast, having a radius of 865.93 feet, and a central angle of 27 degrees 20 minutes 54 seconds; thence North 60 degrees 04 minutes 59 seconds East, tangent to said curve, a distance of 228.21 feet; thence northerly 247.39 feet along a tangential curve concave to the south, having a radius of 691.88 feet, and a central angle of 20 degrees 29 minutes 13 seconds; thence North 80 degrees 34 minutes 12 seconds East, tangent to said curve, a distance of 54.64 feet; thence northerly 117.26 feet along a tangential curve concave to the north, having a radius of 196.93 feet, and a central angle of 34 degrees 06 minutes 56 seconds and said centerline there terminating.

SURVEYOR'S CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Janele Fowlds — 06/19/2023
Janele Fowlds — Date
License Number 26748

Premises Tax PID = 27.00004.00

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CERTIFICATE OF EASEMENT
WABASHA, MINNESOTA

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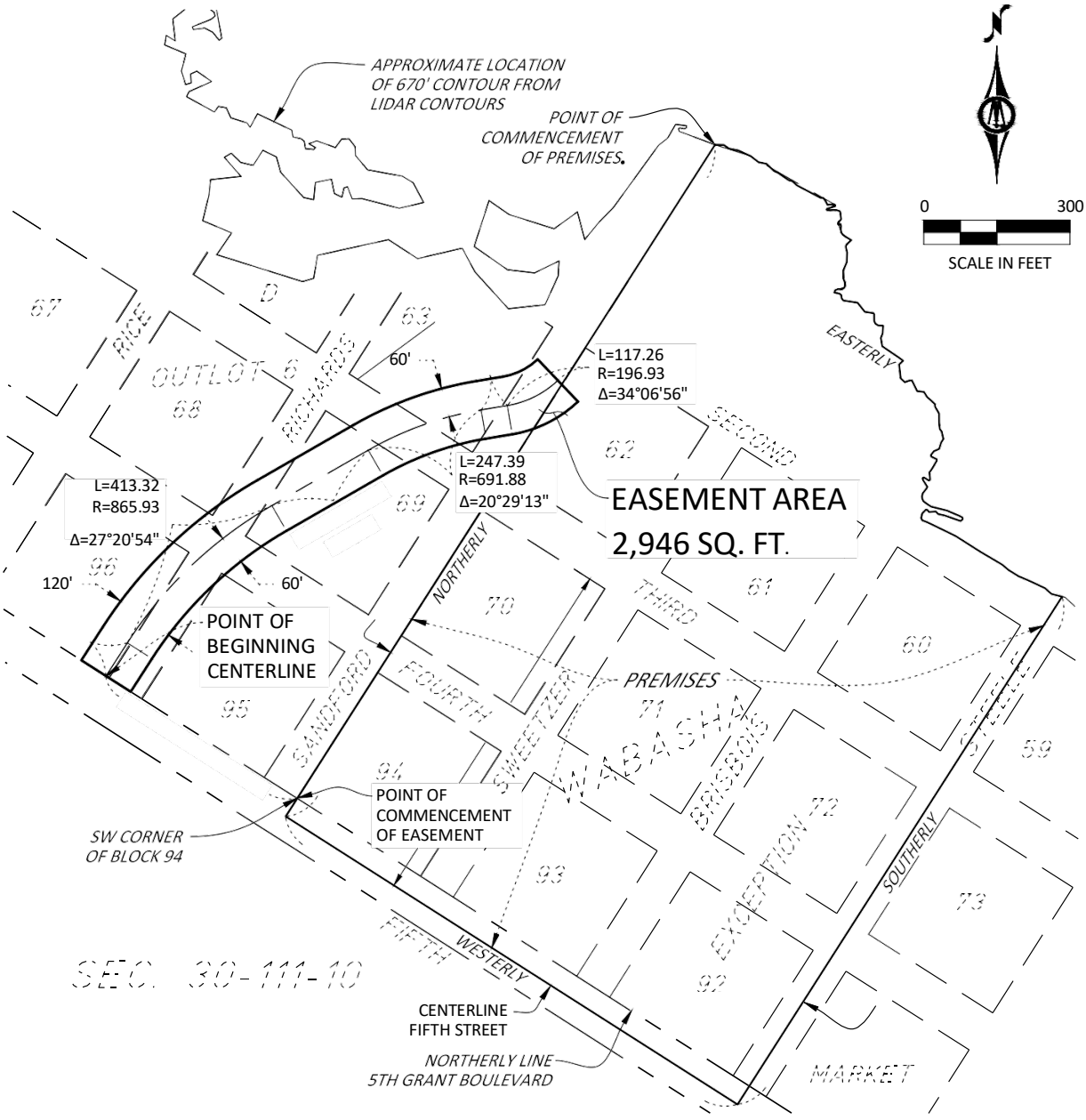
BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA



LEGEND

(000 DEED) DEED DESCRIPTION

The boundary of the Premises Property shown hereon is approximate

Easement Area = 2,946 Sq. Ft.
Premises Tax PID = 27.00004.00

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CERTIFICATE OF EASEMENT
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2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

EXHIBIT 3

CITY OF WABASHA PORT FACILITY PROJECT

Key Message

The City of Wabasha is proposing to construct a port facility to help cost-effectively manage river sand dredged by the US Army Corps of Engineers in Lower Pool 4 of the Upper Mississippi River.

Background

The U.S. Army Corps of Engineers, St. Paul District (USACE) is responsible for maintaining a navigation channel in the Upper Mississippi River to allow for cost-effective transportation along the river. To maintain the navigation channel, regular removal of river sand is required through dredging.

In May of 2017, the USACE published a draft of a proposed long-term plan for managing dredged material in Lower Pool 4 of the Upper Mississippi River adjacent to the City of Wabasha. This draft Dredged Material Management Plan (DMMP) described a Tentatively Selected Plan (TSP) that would have involved a new onshore transfer site for dredged material adjacent to a residential neighborhood in Wabasha, referred to as the Southside Fitzgerald site. The TSP also identified an agricultural site south of Wabasha, referred to as the Drysdale Farms site, as a permanent placement site for dredged material.

During the public comment period for the DMMP, the City of Wabasha identified several concerns and objections to the use of these sites. The specific impacts to the City of Wabasha included the movement of more than 226,000 cubic yards (CY) of dredged material directly through the heart of Wabasha every year for the next 40 years. This would have involved approximately 70 trucks per hour going in and out of a residential neighborhood during the annual hauling period and large piles of dredged material stockpiled between existing residences and the river.

Following the comment period for the DMMP, the City of Wabasha worked with the USACE to develop potential alternatives to the USACE TSP that would mitigate and minimize the City's concerns by finding an alternate onshore transfer site and permanent placement sites for the dredged material. These efforts resulted in a Memorandum of Understanding (MOU), signed in June 2018, between the city and the USACE to develop an agreement under Section 217(d) of the Water Resources Development Act of 1996, as amended (WRDA) under which the city would partner with the USACE for the management of a large portion of the dredged material from Lower Pool 4.

Proposed Plan

Under the currently proposed Section 217(d) agreement, the USACE would continue to dredge the navigation channel and place material on temporary island storage sites and at the Wabasha Gravel Pit, as it currently does. The City of Wabasha would then be authorized to move dredged material from the temporary island storage sites and Wabasha Gravel Pit to a mining pit facility identified by the city under the agreement. The city would be compensated by the USACE for dredged material periodically placed at the facility through the Section 217(d) agreement.

The agreement is an innovative proposal to partner local government with the USACE to keep the Mississippi River navigable, while benefiting the local economy, sustaining family-supporting jobs, and mitigating negative environmental and social impacts.

In March of 2022, the USACE released an updated draft of the DMMP for Lower Pool 4, which included the proposed Section 217(d) agreement as a part of the proposed TSP.

To fulfill its obligations under the Section 217(d) agreement, the city is proposing to construct a port facility to allow for more efficient transfer of dredged material from the river temporary island sites to land. The proposed port facility location is located away from residential neighborhoods, with close access to County and State Highways, which will mitigate trucking concerns the city had with the original USACE proposed onshore transfer site. Once placed at the port facility, material would be transferred to a mining pit facility for final placement. In addition, material would be moved from the Wabasha Gravel Pit to the mining pit facility. Dredged material from this arrangement may be beneficially used at local sand and gravel pits and development sites in Wabasha, as is the case currently with material located at the Wabasha Gravel Pit.

Although the proposed port facility is a key element in the City's plan to cost-effectively transport dredged material under the Section 217(d) agreement, the USACE is not requiring the city to construct the port and is not a direct participant in the development, construction, or management of the port facility.

Exhibit 4

MEMORANDUM OF AGREEMENT
BETWEEN
THE DEPARTMENT OF THE ARMY
AND
THE CITY OF WABASHA, MINNESOTA
FOR CALCULATION OF USER FEES FOR USE OF
DREDGED MATERIAL PLACEMENT FACILITIES IN WABASHA, MINNESOTA

THIS Memorandum of Agreement (MOA) is entered into this 24th day of July, 2023, by and between Department of the Army (hereinafter the "Government"), represented by the U.S. Army Engineer, St. Paul District (hereinafter the "District Engineer") and the City of Wabasha, Minnesota (hereinafter the "City") represented by its Mayor.

WITNESSETH, THAT:

WHEREAS, the Government has the authority for continued operation and maintenance of the Mississippi River 9-Foot Navigation Channel Project pursuant to the River and Harbor Act of 1930 and is directed by the Secretary of the Army who shall, as he determines feasible, dispose of dredged material from the Upper Mississippi River system pursuant to the recommendations of the GREAT I study as provided in Section 1103(i) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. § 652(i)); and

WHEREAS, it is the Government's policy to dispose of dredged material in the least costly way consistent with sound engineering practices and meeting the environmental standards established by the Clean Water Act Section 404(b)(1) evaluation process (hereinafter the "Federal standard"); and

WHEREAS, the Government, on or about May 11, 2017, published for notice and public comment its long-term plan for managing dredged material in Lower Pool 4 of the Upper Mississippi River entitled "Draft Feasibility Report and Integrated Environmental Assessment, Lower Pool 4 Dredged Material Management Plan" (hereinafter the "DMMP"); and

WHEREAS, the City, through a series of formal comment letters and meetings with the Government expressed what it deemed to be important concerns and objections related to the Government's identification of certain sites, such as Southside Fitzgerald, as temporary and permanent placement or transfer sites for dredged material management in the Tentatively Selected Plan (hereinafter the "TSP") within the DMMP and identifying such TSP as the Federal standard; and

WHEREAS, Section 217(d) of the Water Resources Development Act of 1996, Public Law 104-303, as amended by Section 2005 of the Water Resources Development Act of 2007, Public Law 110-300 (33 U.S.C. § 2326a(d)), provides that the Government may enter into agreements with non-Federal providers of disposal facilities and non-Federal sponsors to utilize the non-Federal public or private facility for disposal of dredged material from a Federal navigation project and to pay a user fee for placement of the material at the disposal facility in an

amount that shall be sufficient to repay funds contributed by the private entity plus a reasonable return on investment; and

WHEREAS, the City submitted a proposal to the Government on July 29, 2020 (hereinafter the "City's proposal") to partner with the Government under Section 217(d) and has identified the Carrells Facility and Wabasha Sand and Gravel Facility as disposal facilities for Government use; and

WHEREAS, in working with the Government, the City's proposal has undergone additional refinements as discussed in the City's letter of intent dated November 15, 2022 and updated on May 31, 2023 ("Letter of intent"); and

WHEREAS, the Government has determined that use of the Carrells Facility and Wabasha Sand and Gravel Facility, as identified in the City's proposal and Letter of intent is consistent with the Federal standard as explained in the Government's decision memorandum for this MOA, dated June 12, 2023; and

WHEREAS, the Government and the City have agreed upon a user fee, which may be adjusted in subsequent years, for the placement of such dredged or excavated material at the Carrells Facility and Wabasha Sand and Gravel Facility.

NOW, THEREFORE, the Government and the City agree as follows:

ARTICLE I – DEFINITIONS

A. The term "Facilities" shall mean the Carrells Facility and Wabasha Sand and Gravel Facility provided by the City for the placement of dredged or excavated material as identified in Exhibit A to this MOA.

B. The term "Island Transfer Sites" shall mean the Government owned Reads Landing, Crats Island, Teepeeota Point, and Grand Encampment temporary island dredged material placement sites as identified in Exhibit A to this MOA.

C. The term "Wabasha Gravel Pit" shall mean the Government owned dredged material placement site as identified in Exhibit A to this MOA.

D. The term "user fee" shall mean the amount to be paid per cubic yard ("CY") of dredged or excavated material placed at the Facilities. The user fee shall be sufficient to repay funds contributed by the City plus a reasonable return on investment as approved by the Government in cooperation with the City with respect to the costs of the Facilities.

E. The term "fiscal year" shall mean one fiscal year of the Government. The Government fiscal year begins on October 1 and ends on September 30.

ARTICLE II – GENERAL PROVISIONS

A. Subject to the requirements of this Article, the City may allow material dredged or excavated by the Government and located at the Wabasha Gravel Pit and Island Transfer Sites to be placed in the Facilities when sufficient capacity is available as determined by the City. The Government's use of the Facilities shall be on an as needed basis. Nothing in this MOA, however, is to be interpreted as requiring the City to accept or reserve space in the Facilities for placement of dredged or excavated material by the Government. The City may allow both private entities and other Federal and non-Federal interests to use the Facilities for placement of suitable dredged or excavated material provided that the user fee per cubic yard charged to the Government shall not be higher than the lowest user fee per cubic yard charged to any other user of the Facilities for comparable placement service.

B. The Government, on or before June 1 of each year, shall notify the City of the estimated cubic yardage of dredged or excavated material that the Government desires to place at the Facilities during the upcoming fiscal year from the Wabasha Gravel Pit and Island Transfer Sites. The estimated average annual volume is projected to be one-hundred and twenty thousand (120,000) cubic yards from the Island Transfer Sites and one-hundred and thirty-five thousand (135,000) cubic yards from the Wabasha Gravel Pit. Within sixty (60) days of such notice, the City shall provide the Government a written statement indicating availability of space to accommodate all or a portion of the estimated volume of dredged or excavated material along with the estimated user fees for the upcoming fiscal year. The Government has the right to monitor the placement of dredged or excavated material in the Facilities and to ensure the accurate determination of the amount of material placed in the Facilities.

C. At the beginning of each fiscal year by October 5, until depletion of available capacity in the Facilities, the City shall provide to the Government in writing the estimated current capacity of the Facilities; the estimated number of years that the Facilities will provide capacity; and the user fees paid by non-Federal users of the Facilities, if any.

D. Before any dredged or excavated material is accepted by the City for placement in the Facilities each fiscal year, the Government shall provide the City written notification of the maximum amount of material that the Government allows to be placed during the fiscal year, along with the maximum total amount of the user fees for which payment may be made for material placed during that fiscal year. The Government shall be responsible for payment of the applicable user fee, up to the maximum total amount allowed, for each cubic yard of dredged or excavated material placed in the Facilities from the Wabasha Gravel Pit or Island Transfer Sites during the fiscal year. Payment will be due to the City within 30 days upon Government verification of the amount of dredged or excavated material periodically placed in the Facilities in accordance with Article II.F. If at any time the Government determines that an overpayment has occurred, the City shall return the overpaid amount within sixty (60) calendar days from receipt of written notice from the Government. Nothing in this MOA, however, is to be interpreted as requiring the Government to place or authorize placement of dredged or excavated material in the Facilities.

E. The total user fee to be paid by the Government for dredged or excavated material placement, as agreed to by the City, is $24.80/CY for material contained at the Island Transfer Sites that will be initially placed at the Carrells Facility and moved to the Wabasha Sand and

Gravel Facility for final placement, and $13.70/CY for material contained at the Wabasha Gravel Pit that will be placed at the Wabasha Sand and Gravel Facility. The user fees will be adjusted annually in an amount agreed to by the parties to account for variations between actual placement amounts in the Facilities, during the prior fiscal year, and the estimated average annual volume amounts listed in Article II.B.; inflation; and any other relevant change in circumstances that the parties so deem material to the determination of user fees. Negotiations on adjusting the user fees will be initiated no later than the month of August. Both parties agree to make a good faith effort to set the adjusted user fees prior to the start of the next fiscal year. In no event shall the adjusted user fees be negotiated in an amount expected to exceed the Federal standard for Government dredged or excavated material placement.

F. The actual amount of cubic yards of dredged or excavated material placed in the Facilities and eligible for payment shall be determined from Government approved measurements at the Wabasha Gravel Pit and Island Transfer Sites. These measurements may occur periodically as dredged or excavated material is being removed for placement in the Facilities during the fiscal year.

G. The Government shall test the dredged or excavated material placed at the Wabasha Gravel Pit and Island Transfer Sites for contamination in manner consistent with applicable federal and state law, regulations, guidance, and best practices on an adequate basis and forward the test results to the City along with the written notice required by Article II.D. If the City expects to disapprove the placement of any dredged or excavated material in the Facilities for reasons of contamination, such determination shall be addressed under Article II.K. To the knowledge of the parties, the character of the dredged or excavated material placed at the Island Transfer Sites and Wabasha Gravel Pit over the past five to ten years is consistent with the most recent sample reports completed by the Government, which was provided to the City on August 26, 2021.

H. After placement of dredged or excavated material in the Facilities, the Government shall relinquish all rights, title, and interest in the material.

I. This MOA shall not be construed as authorizing the Government to assume any of the responsibilities placed on the City or another non-Federal entity.

J. Other than permission on a limited basis to access the Facilities for dredged or excavated material placement purposes, nothing contained herein, however, shall convey to the Government any interest in real property owned or controlled by the City.

K. The parties shall meet when necessary to discuss the use of the Facilities and other such matters as may be necessary such as developing an operation or coordination plan. If any disputes arise the parties shall work in good faith to attempt to resolve them at the lowest level necessary between City staff and its contractors and the Government's project management office and operations staff. If the parties cannot resolve such disputes at the staff level, disputes may be escalated for attempted resolution between the District Engineer and the Mayor and as otherwise provided for in Article III.

L. As between the Government and the City, the City shall be considered the owner and operator of the Facilities for purposes of Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA") (42 U.S.C. 9601-9675) liability or liability arising from other applicable laws and regulations pertaining to hazardous, toxic, and radioactive wastes (hereinafter "HTRW"). This does not restrict the City's right to pursue any non-Federal potential responsible party regarding any applicable liability. To the maximum extent practicable, the Government and the City shall perform their responsibilities under this MOA in a manner that will not cause liability to arise under CERCLA or other applicable law for HTRW.

M. In implementing this MOA, the City shall comply, or ensure the compliance of its agents and contractors, with all conditions and requirements of applicable Federal, State and local laws, regulations and permits including but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000D) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army"; all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)). The Government reserves the right to withhold payment under Article II.D. for noncompliance.

N. Performance by the Government of any promise, covenant, or obligation in this MOA, and the Government's liability under this MOA, is subject to and dependent on the availability of sufficient funds appropriated and allocated for that purpose. The Government will use its best efforts to prioritize appropriated funds made available for channel maintenance in order to comply with the terms of this MOA. In the event that sufficient funds are not available to liquidate a liability or undertake an obligation arising under this MOA, the Government's duties with respect to that liability or obligation shall be deferred until such time as sufficient funds are lawfully made available (appropriated and allocated) for that purpose.

O. Unless otherwise notified, this MOA shall expire 10 years after its effective date. Any revision of this MOA must be made by written mutual amendment approved and executed by both parties. Either party may terminate this MOA upon thirty days written notice.

ARTICLE III – DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this MOA, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation in accordance with Article II.K. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to both parties. The Government shall pay 50 percent and the City shall pay 50 percent of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this MOA.

ARTICLE IV – HOLD AND SAVE

The City shall hold and save the Government free from all damages arising from the implementation of this MOA, except for damages due to the fault or negligence of the Government or its contractors.

ARTICLE V - MAINTENANCE OF RECORDS AND AUDITS

A. The parties shall develop procedures for the maintenance by the City of books, records, documents, or other evidence pertaining to costs and expenses for a minimum of three years of the accounting for which such books, records, documents, or other evidence were required. The City shall assure that such materials are reasonably available for examination, audit, or reproduction by the Government.

B. The Government may conduct, or arrange for the conduct of, audits. Government audits shall be conducted in accordance with applicable Government cost principles and regulations. The Government's cost of audits shall be included in any user fee payment for use of the Carrells Facility or Wabasha Sand and Gravel Facility, as applicable.

C. To the extent permitted under applicable Federal laws and regulations, the Government shall allow the City to inspect books, records, documents, or other evidence pertaining to costs and expenses maintained by the Government, or at the City's request, provide to the City or independent auditors any such information necessary to enable an audit of the City's activities under this MOA. The cost of any non-Federal audits performed in accordance with this paragraph shall be included in any user fee payment for use of the Carrells Facility or Wabasha Sand and Gravel Facility, as applicable.

ARTICLE VI – RELATIONSHIP OF PARTIES

In the exercise of their respective rights and obligations under this MOA, the Government and the City each act in an independent capacity, and neither is to be considered the officer, agent, contractor or employee of the other. Neither party shall provide, without the consent of the other party, any contractor with a release that waives or purports to waive any rights a party may have to seek relief or redress against that contractor.

ARTICLE VII – NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this MOA shall be deemed to have been duly given if in writing and delivered personally or mailed by registered or certified mail, with return receipt, as follows:

If to the City:

Mayor
P.O. Box 268
Wabasha, MN 55981

If to the Government:

District Engineer
U.S. Army Corps of Engineers, St. Paul District
332 Minnesota Street, Suite E1500
St. Paul, MN 55101

B. A party may change the recipient or address to which such communications are to be directed by giving written notice to the other party in the manner provided in this Article.

ARTICLE VIII – CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party. The parties acknowledge that this MOA and other communications between the parties associated with the MOA, including information viewed as confidential by one or all parties, may be subject to the requirements of Minnesota's Government Data Practices Act, Minnesota Statutes, Section 13.01 et. seq., and the Freedom of Information Act, 5 U.S.C. § 552.

ARTICLE IX – THIRD PARTY RIGHTS, BENEFITS, OR LIABILITIES

Nothing in this MOA is intended, nor may be construed, to create any rights, confer any benefits, or relieve any liability, of any kind whatsoever in any third person not a party to this MOA.

ARTICLE X – OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or any resident commissioner, shall be admitted to any share or part of this MOA, or to any benefit that may arise therefrom.

IN WITNESS WHEREOF, the parties hereto have executed this MOA, which shall become effective upon the date it is signed by the District Engineer.

DEPARTMENT OF THE ARMY

BY: _____
Eric R. Swenson
COL, Corps of Engineers
District Engineer

DATE: 7-24-23

THE CITY OF WABASHA, MINNESOTA

BY: _____
Emily Durand
Mayor

DATE: 7-24-23

CERTIFICATE OF AUTHORITY

I, Michael Flaherty do hereby certify that I am the principal legal officer of the City of Wabasha, Minnesota, that the City of Wabasha, Minnesota is a legally constituted public body with full authority and legal capability to perform the terms of the MOA between the Department of the Army and the City of Wabasha, Minnesota in connection with the Calculation of User Fees for Use of Dredged Material Placement Facilities in Wabasha, Minnesota, and that the persons who have executed this MOA on behalf of the City of Wabasha, Minnesota have acted within their statutory authority.

IN WITNESS WHEREOF, I have made and executed this certification this 24th day of July 2023.

BY: _____

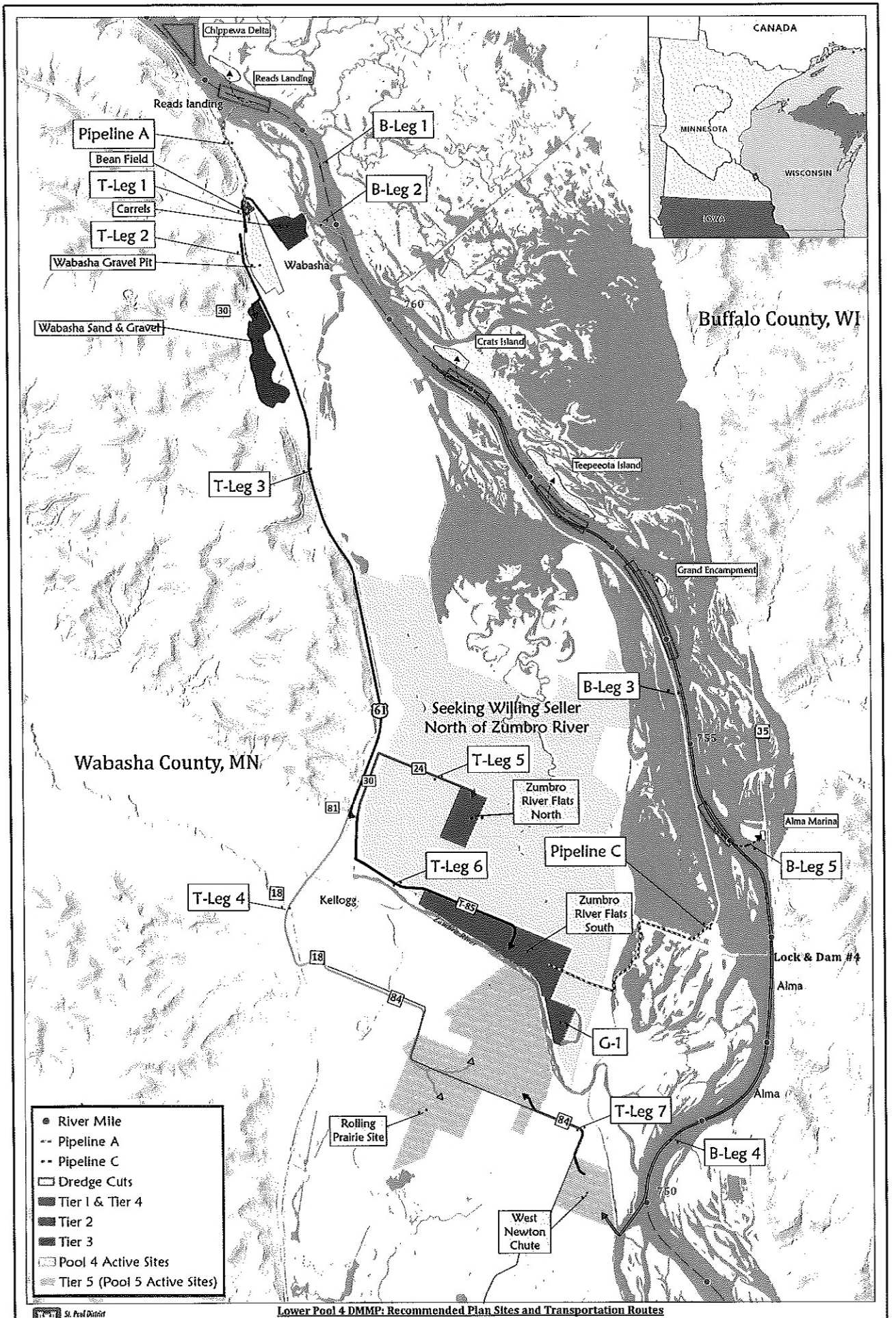
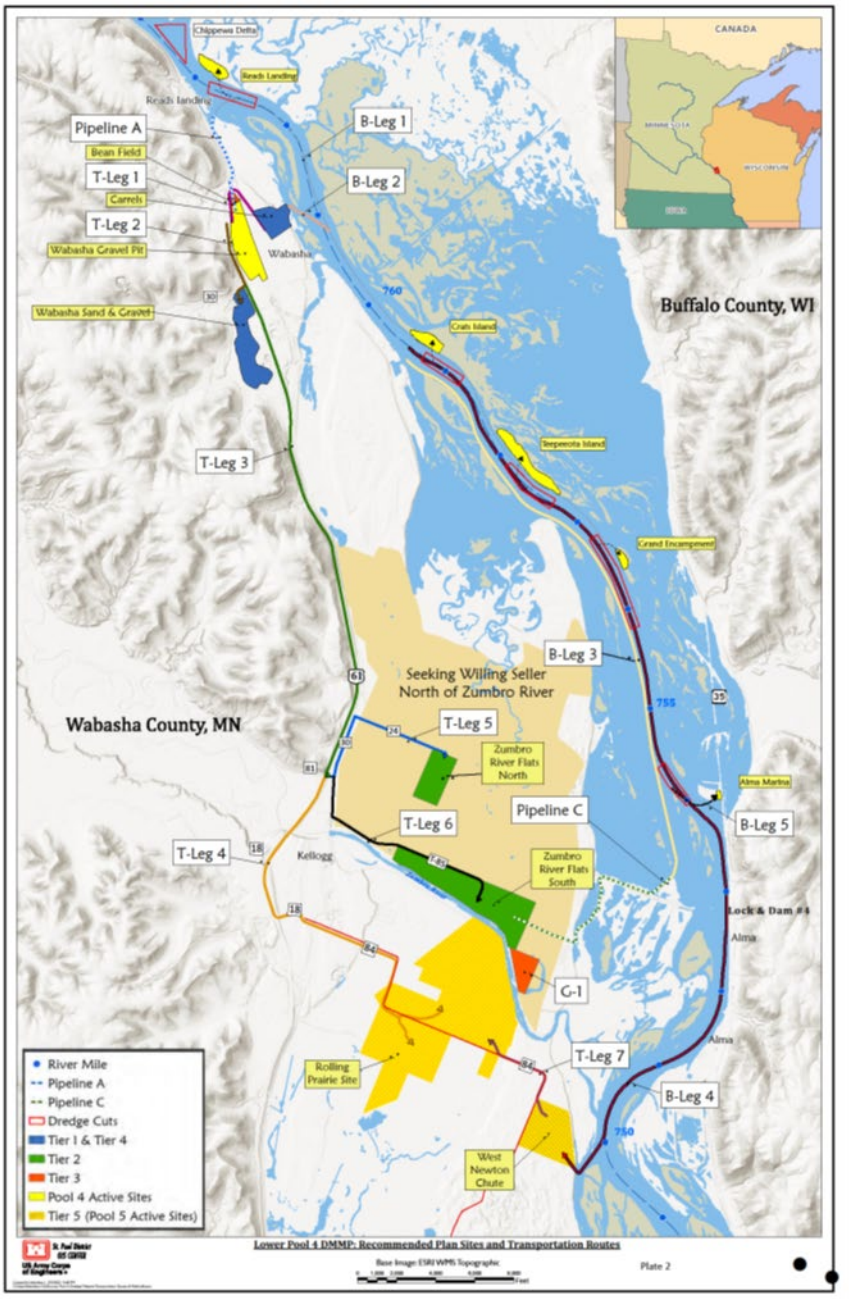

Chippewa Delta
Reads Landing
Reads landing
Pipeline A
Bean Field
T-Leg 1
Carrels
T-Leg 2
Wabasha Gravel Pit
Wabasha Sand & Gravel
B-Leg 1
B-Leg 2
Wabasha
30
60
Crats Island
Teepeeota Island
T-Leg 3
Grand Encampment
B-Leg 3
Seeking Willing Seller
North of Zumbro River
Wabasha County, MN
61
24
30
81
T-Leg 5
Zumbro River Flats North
Pipeline C
T-Leg 6
T-Leg 4
18
Kellogg
T-85
Zumbro River Flats South
Alma Marina
B-Leg 5
Lock & Dam #4
Alma
G-1
84
Rolling Prairie Site
T-Leg 7
B-Leg 4
West Newton Chute
Buffalo County, WI
CANADA
MINNESOTA
WISCONSIN
IOWA
River Mile
Pipeline A
Pipeline C
Dredge Cuts
Tier 1 & Tier 4
Tier 2
Tier 3
Pool 4 Active Sites
Tier 5 (Pool 5 Active Sites)
St. Paul District GIS CENTER
US Army Corps of Engineers
Lower Pool 4 DMMP: Recommended Plan Sites and Transportation Routes
Base Image: ESRI WMS Topographic
0 1,000 2,000 4,000 6,000 8,000 Feet
Plate 2

EXHIBIT A



Chippewa Delta
Reads Landing
Reads landing
Pipeline A
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T-Leg 1
Carrels
T-Leg 2
Wabasha Gravel Pit
Wabasha
Wabasha Sand & Gravel
B-Leg 1
B-Leg 2
760
Crats Island
Buffalo County, WI
CANADA
Teeperota Island
T-Leg 3
Grand Encampment
B-Leg 3
Seeking Willing Seller
North of Zumbro River
755
Wabasha County, MN
T-Leg 5
Zumbro
River Flats
North
Alma Marina
Pipeline C
B-Leg 5
T-Leg 6
T-Leg 4
Kellogg
Zumbro
River Flats
South
Lock & Dam #4
Alma
G-1
Alma
T-Leg 7
Rolling
Prairie Site
B-Leg 4
750
West
Newton
Chute
River Mile
Pipeline A
Pipeline C
Dredge Cuts
Tier 1 & Tier 4
Tier 2
Tier 3
Pool 4 Active Sites
Tier 5 (Pool 5 Active Sites)
Lower Pool 4 DMMP: Recommended Plan Sites and Transportation Routes
Base Image: ESRI WMS Topographic
Plate 2

EXHIBIT 5

SPECIAL CONDITIONS

SECTION I – USE AND MAINTENANCE REQUIEMENTS

A. Compliance with City Code. All applicable provisions of the Wabasha City Code, as may be amended from time to time, are incorporated herein by reference. A violation of any such code provision by OPERATOR shall constitute a violation of the terms of this Contract.

B. Dust and Debris.
   a. At all times during the terms of this Contract, OPERATOR shall remove and keep clean from sand and other debris any impervious surface or equipment at the Port Facility.
   b. All activities of OPERATOR performed under this Contract shall comply with Minnesota state statutes for particulate matter generation.
   c. OPERATOR shall perform dust control operations necessary to proactively prevent the production of dust in amounts to cause nuisance or damage to property, vegetation, animals, or persons in the vicinity of the Port Facility.
   d. The OPERATOR shall control dust emissions from the OPERATOR's activities on the Licensed Premises, including but not limited to implementing dust mitigation/control measures and best practices to limit the emissions of dust from vehicles traveling upon the Licensed Premises or any piles on the Licensed Premises from migrating off the Licensed Premises to other neighboring/adjacent properties.
   e. At no time shall dry sand be allowed to accumulate on the Licensed Premises where dust therefrom can migrate by wind or other means to other neighboring/adjacent properties.
   f. The OPERATOR shall control dust emissions from the OPERATOR's operations pursuant to City Code and requiring all sand or trucks carrying materials, before leaving the Licensed Premises, to sweep off loose sand or dredge materials outside the truck bed deposited on the trucks fenders during loading as well as requiring cleaning/sweeping of any sand track out onto the public right-of-way adjacent to the Port Facility resulting from truck egress from the Licensed Premises.
   g. It is assumed the for purposes of the services provided by OPERATOR under this Contract that most if not all sand deposited on the Port Facility is wet dredge sand that will be loaded onto trucks by the OPERATOR and removed by the OPERATOR from the Port Facility in a timely basis in order that sand piles to not accumulate on the Licensed Premises. The OPERATOR shall suspend operations when the OPERATOR cannot prevent airborne dust until such time as dust control can be re-established to the required levels. The OPERATOR shall be responsible for any damage resulting from dust originating from the Port Facility during OPERATOR's operations thereon. The OPERATOR

C. Noise. OPERATOR shall not cause noise in violation of Wabasha City Code, Chapter 91, as may be amended from time to time.

D. Odors. OPERATOR shall not cause any noxious or offensive odors to be emitted due to OPERATOR's performance of duties under this Contract.
E. Emissions. In completion of OPERATOR's duties under this agreement, OPERATOR shall comply with Federal, State, or local laws regarding air quality or prevent any noxious emissions existing at any time during the contract term. Such laws include, but are not limited to, the federal Clean Air Act, Minnesota Pollution Control permitting requirements, and the provisions of Wabasha City Code, Chapter 91, as may be amended from time to time,
F. Liquid or Solid Waste. OPERATOR shall not discharge at any point into any public sewer, private sewage disposal system or stream or into the ground, except in accord with standards approved by the department of health of the state or standards equivalent to those approved by such department for similar uses of any materials of such nature or temperature as can contaminate any water supply or otherwise cause the emission of dangerous or offensive elements.
G. Hours of Operation. OPERATOR shall only conduct operations activities at the Port Facility Monday through Friday, between 7:00 a.m. through 6:00 p.m. PORT may waive or otherwise extend these hours of operation by written notice to OPERATOR.
H. Prohibited Acts. OPERATOR shall not conduct any washing or drying of sand or other dredge materials, nor shall OPERATOR process any dredge materials at the Port Facility.
I. Temporary Storage. The PARTIES intend that the OPERATOR will transport dredge materials delivered to the Port Facility by barge on the same day that the materials arrive to the Port Facility. OPERATOR shall not store or stockpile any materials including dredge sand on the Licensed Premises during the term of this Contract unless incidental to the services and activities under this Contract; it being expressly understood by the Parties that OPERATOR dredge sand that is offloaded from OPERATOR owned or contracted barges shall be loaded onto OPERATOR owned or contracted trucks and removed from the Licensed Premises. The PARTIES acknowledge that some temporary storage of dredge materials at the Port Facility is necessary. OPERATOR shall be allowed to store dredge materials at the Port Facility only within designated areas of the Licensed Premises, as described and depicted in Exhibit 5. Any stockpiles of dredge materials may not exceed 2,000 cubic yards and may not exceed 30 feet in height, as determined by the City Engineer. Stockpiles of dredge materials left undisturbed for seven consecutive days must be covered. In the event uncovered stockpiles at the Port Facility are causing dust debris or other noxious conditions outside of the Port Facility, Operator must take remedial action to prevent such conditions, including but not limited to regularly watering the stockpiles or covering the stockpiles.
J. Contact Information. OPERATORS shall provide the PORT the current contact information for the persons operating the Port Facility to facilitate a prompt response to concerns raised by PORT or City.
K. Permits and Reports on File. Any applicable state or federal permits shall be placed on file at the City of Wabasha. Any reports generated to fulfill permit requirements shall be submitted to the City of Wabasha. Provisions of new federal, state or local permits shall become part of the obligations of this Contract without amendment hereto.
L. Limit of Use Expansion. OPERATOR shall not conduct any services or activities outside the Licensed Premises specified herein without the express prior written approval of the PORT.

M. Equipment Storage. OPERATOR may store equipment on the Licensed Premises during any period of use for the services and activities required hereunder, but shall otherwise remove and store equipment at a location off of the Licensed Premises at all times outside a period of use for the services and activities under this Contract, except that the barge docking facility equipment or barge offloading conveyor equipment can otherwise remain on the Premises during the term hereof. All sand moving and loading vehicles such as front-end loaders or bulldozers may remain on the Licensed Premises during any period of use, but shall not remain on the Licensed Premises at any times outside of a noticed period of use.

N. Security of Personal Property. At all times during the term of this Contract, OPERATOR shall be solely responsible and liable for the security of the OPERATOR's improvements, equipment or any other personal property on the Licensed Premises.

O. Damages. Neither the PORT nor the City shall be responsible for damages to property or injuries to persons which may arise from or be incident to the OPERATOR's services or activities, or for damages to the improvements or personal property of OPERATOR, or for damages to the same or injuries to the person of the OPERATOR's officers, agents, contractors or employees or others who may be on the Licensed Premises at their invitation or the invitation of any one of them, and the OPERATOR shall hold the PORT and the City harmless from any and all such claims not including damages due to the negligence or intentional misconduct of the PORT or the City.

SECTION II –EXCLUSIVE USE OF PORT FACILITY; PORT AUTHORITY ACCESS

A. Exclusive Stevedore. For the duration of this Agreement, OPERATOR shall have the exclusive right to use the Port Facility for stevedore activities, including but not limited to fulfillment of the USACE Agreement. OPERATOR shall not be allowed to use the Port Facility for non-USACE stevedore activities except by separate written agreement of the parties. PORT shall have no right to directly, or through a separate services provider, use the Port Facility for stevedore activities.

B. Shared Use of Port Facility. The PARTIES acknowledge and agree that the PORT shall have access to use the Port Facility for other non-stevedore activities, and PORT may contract with additional subcontractors for those non-stevedore activities. Non-stevedore activities shall include, but not be limited to equipment storage of PORT or City owned property. The PORT acknowledges that OPERATOR's use of the Port Facility is primary, and that PORT's use is secondary and may not interfere with OPERATOR's fulfillment of obligations under the USACE Agreement. The PORT or the City may otherwise use the Licensed Premises for PORT or City purposes in any other manner that does not interfere with the OPERATOR's services or activities under this Agreement.

SECTION III – TRUCKING AND BARGING REQUIREMENTS

A. Truck Routes. Pursuant to the USACE Agreement, OPERATOR shall be responsible for loading dredge materials at and trucking from the Port Facility and the Wabasha Gravel Pit to the site owned and operated by OPERATOR, which is referred to in the USACE

Agreement as the Wabasha Sand and Gravel Facility. The following truck routes shall be used by OPERATOR for all OPERATOR services and activities under this Contract:

a. Port Facility. 5th Grant Boulevard W (CSAH 59) to the intersection of TH 61/CSAH 10, then TH 61 to the intersection of Shields Avenue, then Shields Avenue to the Wabasha Sand and Gravel Facility entrance, as depicted in Attachment A hereto.
b. Wabasha Gravel Pit. Wabasha Gravel Pit entrance road to the intersection of Phelps Avenue, then Phelps Avenue to the intersection of Hiawatha Drive (CSAH 30), then Hiawatha Drive (CSAH 30) to the intersection of TH 61, then TH 61 to the intersection of Shields Avenue, then Shields Avenue to the Wabasha Sand and Gravel Facility entrance, as depicted in Attachment A hereto.

B. Emergency or Alternate Routes. In case of environmental or weather emergency, road construction, road closures, or any other unforeseen and temporary condition that prevents OPERATOR access to the truck routes described in Paragraph A above, PORT shall provide approved temporary truck routes to OPERATOR upon PORT's own initiative or at the request of OPERATOR.
C. Barging Routes. OPERATOR shall barge dredge materials from the USACE controlled island sites to the Port Facility using the route required by USACE, which is depicted on Attachment B hereto.
D. Hours of Operation. Trucking activities performed by the OPERATOR shall be coextensive with Section I, Paragraph G of this Exhibit.
E. Mandatory Street Cleaning/Sweeping. In the event barge materials, including but not limited to sand, or any other particulate matter is deposited on any of the Port Facility roads or public right-of-way or street, OPERATOR shall immediately remove the materials after receiving notice from the City of Wabasha or PORT. OPERATOR shall employ a street cleaning/sweeping service acceptable to the City to accomplish this task. In the event the streets are not cleaned/swept within five (5) days of a demand by the City of Wabasha or PORT, the PORT or City shall cause to have the streets be swept to remove dredge materials therefrom and shall deduct an amount equal to the cost of such sweeping from the compensation paid to OPERATOR.
F. Truck Requirements.
    a. All trucks controlled by OPERATOR or OPERATOR's subcontractors must be covered or protected in a manner to prevent dredge materials from blowing off of the trucks, causing traffic hazards or dust generation or otherwise being deposited on the public right-of-way.
    b. The OPERATOR shall control dust emissions from the OPERATOR's operations pursuant to City Code and requiring all sand trucks, before leaving the Licensed Premises, to sweep off loose sand outside the truck bed deposited on the trucks fenders during loading as well as requiring cleaning/sweeping of any sand track out onto the public right-of-way adjacent to the Port Facility resulting from truck egress from the Licensed Premises.

SECTION IV – NOTICE AND REMEDIATION

A. Verbal Notice. In the event of a violation of these Special Conditions, PORT or PORT's authorized representative identified above in this Exhibit 5 may verbally notify the OPERATOR's contact person identified above in this Exhibit. The OPERATOR shall cause the violation to cease without delay. No verbal notice is required to be given by this paragraph.
B. Written Notice. In the event written notice of a violation of these Special Conditions is delivered to OPERATOR pursuant to this Section, OPERATOR shall have seven days to correct the condition that is the cause of the violation. After seven days, PORT shall be allowed to correct the condition and to reduce OPERATOR's compensation by the amount equal to the cost of correction.
C. Repeated Violations. Repeated violation are grounds to require OPERATOR to immediately cease the violating operation until adjustments in operating procedures are made to eliminate the causes needing remediation. Any costs or delays associated with disruption of operations and remediation would be at OPERATOR's sole expense.

SECTION V – CONDITIONS NOT WARRANTED

A. Condition of Licensed Premises Not Warranted. OPERATOR acknowledges that it has inspected the Licensed Premises and accepts the same in an "as is" condition. The PORT and City do not warrant that the Port Facility is suitable for the purposes for which it is permitted to be used under this Contract. The PORT and City shall have no responsibility with regard to any failure of or damage to OPERATOR's improvements, operations, equipment or personal property within the Licensed Premises. OPERATOR understands and acknowledges that this Contract grants it only a terminable license to use the Port Facility for the purposes stated herein, and does not confer any permanent property rights with respect to the Port Facility.

SECTION V – ENVIRONMENTAL CONDITIONS

A. Hazardous Materials and Substances. OPERATOR shall not at any time during the term of this Contract deposit or store any hazardous materials or substances, except for consumer products used to maintain and operate equipment required to perform the work under this Agreement, on the Licensed Premises.
B. Environmental Contamination. To the extent consistent with federal law and the terms of this Contract, as between OPERATOR and the PORT and City, if the OPERATOR becomes liable for the placement of hazardous material on the Licensed Premises, under or through the provisions of the Resource Conservation and Recovery Act, as amended, the Comprehensive Environmental Response Compensation and Liability Act, as amended, or any other federal, state or local environmental statute or regulation (collectively referred to as "Environmental Laws"), arising from the services or activities conducted by the OPERATOR during the term of this Contract, the OPERATOR shall be responsible for conducting any response action required under such Environmental Laws and, for purposes of liability, shall be considered the operator of the Licensed Premises to the extent liability arising under such Environmental Law results from the OPERATOR's actions pursuant to this Contract. This paragraph shall survive termination of this Contract.

ATTACHMENT A TO EXHIBIT 5

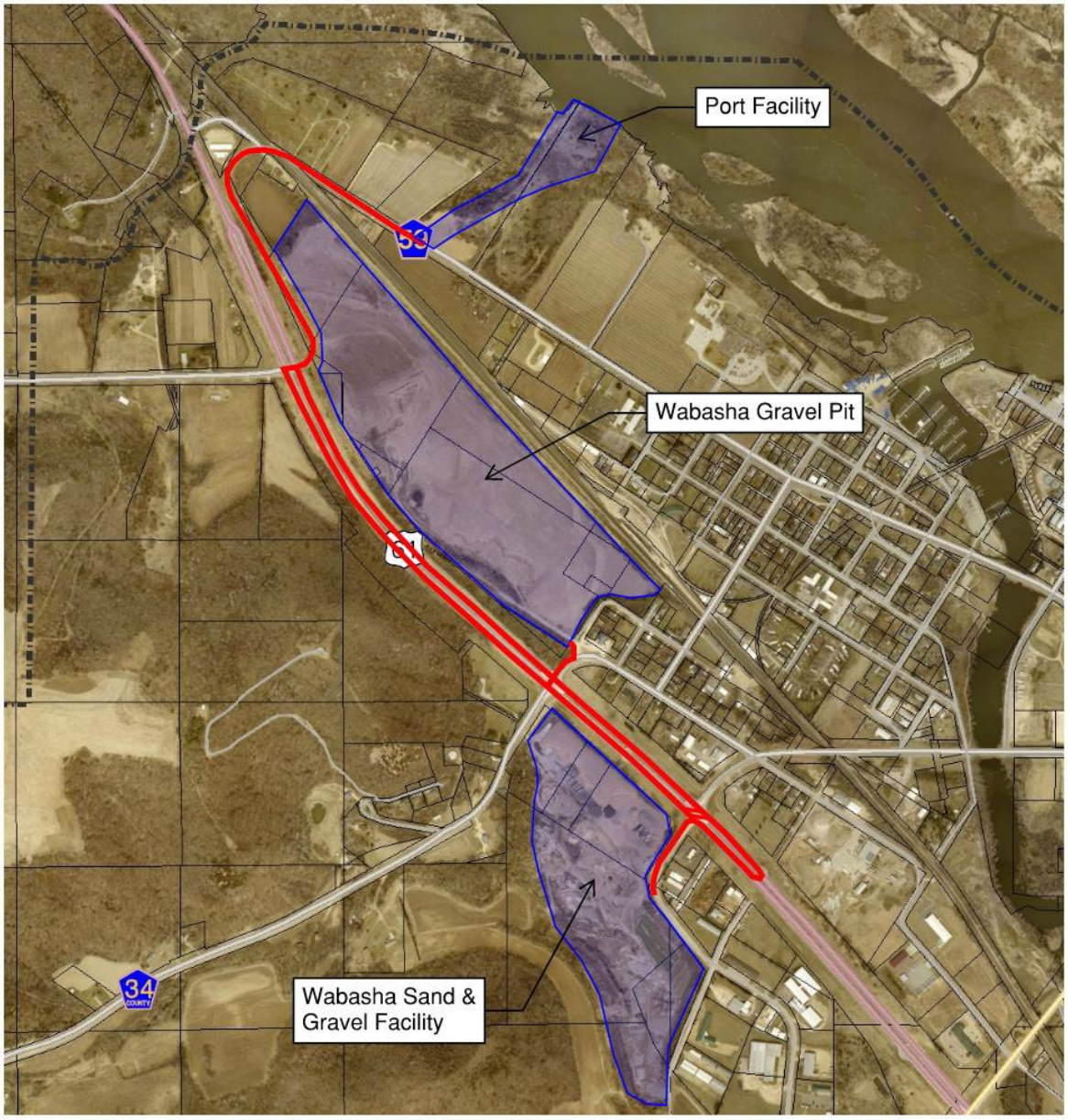


EXHIBIT 6

CERTIFICATES OF REQUIRED INSURANCE COVERAGES

[*Certificates of Insurance attached hereto*]

EXHIBIT 7

COMPENSATION

Subject to the limitations set forth in this Exhibit, PORT will compensate OPERATOR in accordance with the process outlined below, and the compensation referenced in this Exhibit 7 shall be the sole form of compensation provided to OPERATOR in exchange for the performance of the obligations outlined in this Contract.

SECTION I – BASIS OF OPERATOR COMPENSATION

The PARTIES acknowledge and agree that the compensation provided from PORT to OPERATOR is primarily contingent on the volume of dredge materials transported by OPERATOR during each year of this Contract and the PORT's ongoing costs as described herein. The PARTIES further acknowledge and agree that the quantity of dredge materials will be determined by USACE pursuant to the terms of the USACE Agreement. The PARTIES further acknowledge that the per cubic yard fee paid by USACE to the City must meet the government's standard of being the least cost alternative to complete the tasks required under the USACE Agreement, and that USACE may not pay to the City fees sufficient to repay the PORT and OPERATOR respectively for their costs as described below.

OPERATOR acknowledges that PORT will incur costs associated with constructing and maintaining the Port Facility, which include but are not necessarily limited to debt service payments on the loans taken to construct the Port Facility, professional services contract costs to maintain the Port Facility for the duration of the Contract term, operation of the Port Facility unrelated to the performance of duties by OPERATOR pursuant to the USACE Agreement, and the reasonable profit the PARTIES acknowledge and agree PORT is entitled related to their agreement with USACE, as described in the USACE Agreement hereto (hereinafter "Port Costs").

PORT acknowledges and agrees that OPERATOR's costs to perform its duties under the USACE Agreement and this Contract will include but are not necessarily limited to installing necessary OPERATOR owned infrastructure at the Port Facility, paying subcontractors, labor costs, ongoing materials costs such as fuel, maintenance costs of the licensed premises depicted and described in Exhibit 5 hereto, and a reasonable profit the PARTIES acknowledge and agree OPERATOR is entitled to (hereinafter "Port Costs").

The PARTIES jointly acknowledge that many of the costs each respective PARTY will incur are not fixed costs and will require reassessment on an annual basis. Therefore, the fees paid to the OPERATOR will not be fixed at the time this Contract is signed, nor at the time the contract commences. The PARTIES agree to follow the terms of this document to establish the OPERATOR's fees on an annual basis.

SECTION II – DEFINITIONS

The following definitions apply to the terms contained in this Exhibit 7:

C. Fiscal Year. The term "Fiscal Year" has the meaning contained in Section I(E) of the USACE Agreement.
D. Island Transfer Sites. The phrase "Island Transfer Sites" has the meaning contained in Section I(B) of the USACE Agreement.
E. Island Transfer Fee. The fee paid to the City, to be transferred to the PORT by agreement, per cubic yard of dredge materials transferred from the Island Transfer Sites by the OPERATOR.
F. Operations Plan. The plan provided by the USACE, on an annual basis, indicating the actual volume of material to be moved from the Island Transfer Sites and the Wabasha Gravel Pit for the coming Fiscal Year.
G. Operator Fee. The total value of the proposed Island Transfer Fee and Wabasha Gravel Pit Fee, which shall be the fees necessary to reimburse the OPERATOR for the Operator Costs.
H. Port Fee. The portion of the User Fee determined by the PORT that is necessary to reimburse the PORT For the Port Costs.
I. User Fee. The phrase "User Fee" has the meaning contained is Section I(D) of the USACE Agreement.
J. Wabasha Gravel Pit. The phrase "Wabasha Gravel Pit" has the meaning contained in Section 1 (C) of the USACE Agreement.
K. Wabasha Gravel Pit Fee. The fee paid to the City, to be transferred from the City to PORT by agreement, per cubic yards of dredge materials transferred from the Wabasha Gravel Pit by the OPERATOR.
L. Wabasha Sand and Gravel Facility. The sand and gravel mining facility owned and operated by OPERATOR, designated as a disposal facility in the USACE Agreement.

SECTION III – ESTABLISHMENT OF OPERATOR'S FEES

A. Each fiscal year, upon receipt from the USACE, PORT shall deliver to OPERATOR the Operations Plan. The Operations Plan must detail the quantity of dredge materials, measure in cubic yards, that USACE is requesting the City to accept from the Island Transfer Sites and separately from the Wabasha Gravel Pit. Notwithstanding the forgoing, PORT has no obligation to transmit the Operations Plan until the same is received from USACE.
B. No later than 14 days after PORT delivers the Operations Plan to OPERATOR, OPERATOR shall deliver written notice to the PORT of the Operator Fee. The Operator Fee must be separated into an Island Transfer Fee and a Wabasha Gravel Pit Fee, broken down as follows:
    a. Island Transfer Fee
    b. Wabasha Gravel Pit Fee
C. Upon receipt of written notice of the Operator Costs, PORT shall deliver a proposed User Fee to the City, which will include the Operator Fee and the Port Fee, pursuant to an agreement with the City. The User Fee must be separated into an Island Transfer Fee and a Wabasha Gravel Pit Fee. Upon agreement from the City, the PORT shall deliver a proposed User Fee to USACE and schedule negotiations with USACE no later than August of each year of the Contract pursuant to the terms of the USACE Agreement.

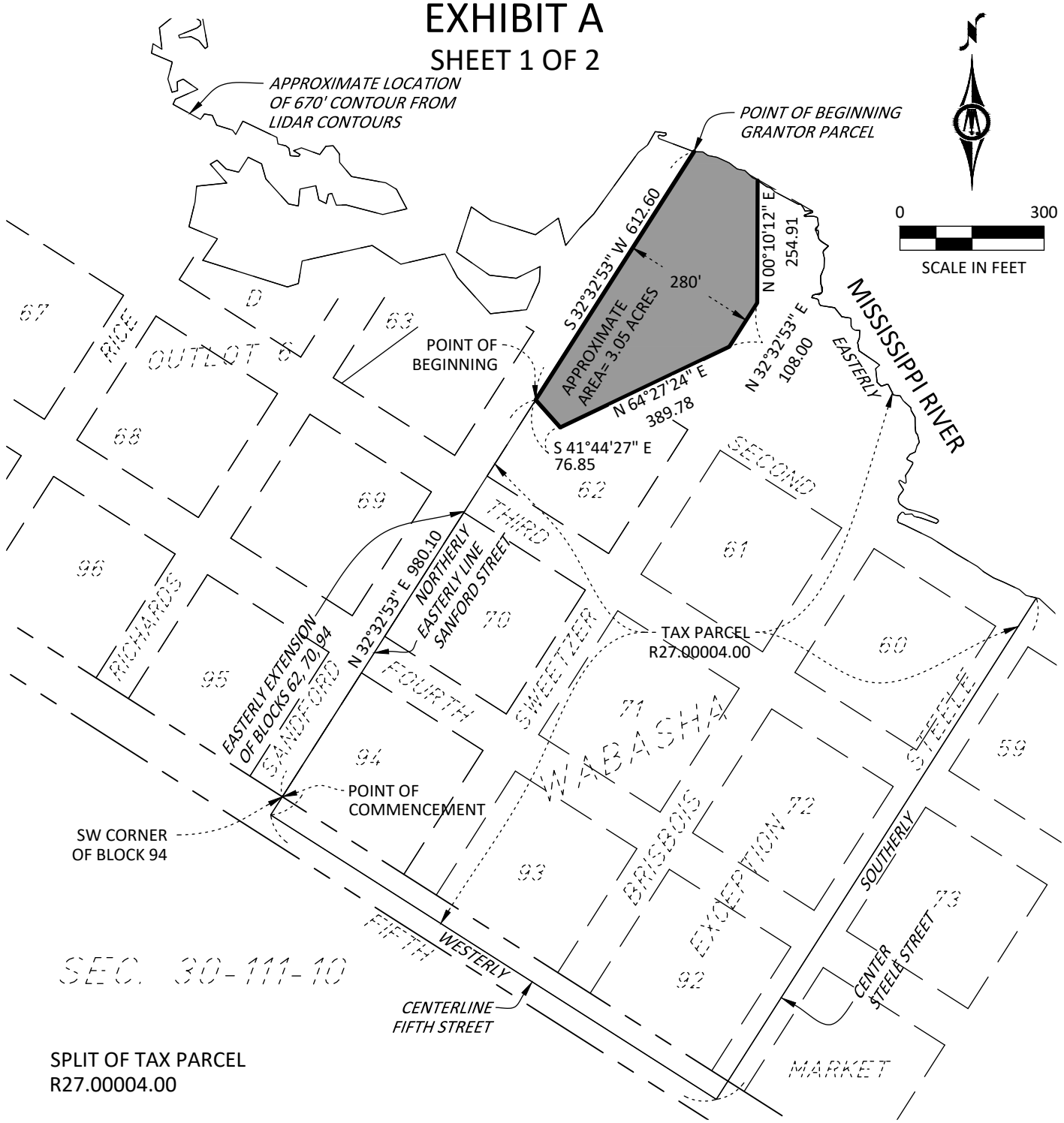
D. Upon agreement between PORT and USACE of the User Fee, PORT shall make written notice to OPERATOR of the same.
E. In the event USACE does not accept the User Fee proposed in Section III – Paragraph D above, PORT shall immediately notify OPERATOR and the PARTIES shall negotiate in good faith reductions in the Operator Costs and Port Costs and agree on transmittal of an amended proposed User Fee to USACE. PORT shall notify OPERATOR of the results of the negotiations with USACE.

SECTION IV – METHOD AND TIMING OF PAYMENT

A. Payment of the User Fee from USACE to the City will be made pursuant to Article II(D) and Article II(F) of the USACE Agreement. Upon payment to the City, the City will transfer to PORT, pursuant to separate agreement between the City and PORT, at least a portion of the User Fee equal to the OPERATOR's fees as determined in Section III above.
B. No later than 7 days after PORT receives payment from the City under Section IV, Paragraph A above, PORT shall pay the OPERATOR their fees in a method agreed to by the PARTIES.

EXHIBIT A

SHEET 1 OF 2



SPLIT OF TAX PARCEL
R27.00004.00

NO FIELD SURVEY PERFORMED

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SKETCH OF DESCRIPTION
WABASHA, MINNESOTA

PART OF WABASHA PLAT AND SECTION 30, TOWNSHIP 111 NORTH, RANGE 10 WEST, WABASHA COUNTY, MINNESOTA

BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

JOB NUMBER: H19.114396 FIELD BOOK: DRAWN BY: JPB

H:\WABASHA_CI_MN\H19114396\CAD\C3D\114396_V_MISC_PROP_ACQUISITION_1 (PID-R27.00004.00).dwg 9/19/2023 7:46 AM

71.0 S30-T111N-R10W

EXHIBIT A
SHEET 2 OF 2

PARCEL DESCRIPTION

All that part of the following described parcel lying northerly and westerly of the following described line;

PARCEL DESCRIPTION:
Commencing at a point where the West boundary of Blocks Numbers Sixty-Two (62), Seventy (70), and Ninety-Four (94) extended in a Northerly direction intersects the low water mark of the South line of the Mississippi River; thence in an Easterly direction following the low water mark of the South line of the said Mississippi River to a point where the center line of Steele Street extended Northerly intersects said low water mark; thence in a Southerly direction along the center line of Steele Street to the center line of Fifth Street; thence in a Westerly direction along the center line of Fifth Street to the Easterly side of Sandford Street; thence Northerly at right angles along the Westerly boundaries of Blocks Numbers Ninety-Four (94), Seventy (70) and Sixty-Two (62) to the place of beginning; said land embracing Blocks Numbers Sixty (60), Sixty-One (61), Sixty-Two (62), Seventy (70), Seventy-One (71), Seventy-Two (72), Ninety-Two (92), Ninety-Three (93), and Ninety-Four (94) and all the streets and alleys or parts thereof lying within the above-described metes and bounds, all in accordance with the plat thereof made by Wellman & McDougal on file or of record in the office of the Wabasha County Recorder in and for said County.

LINE DESCRIPTION:
Commencing at the Southwest corner of Block 94, plat of WABASHA, according to the recorded plat thereof; thence North 32 degrees 32 minutes 53 seconds East, along the northerly extension of the west boundary of Blocks Numbers 94, 70 and 62 of said plat of WABASHA, a distance of 980.10 feet to the point of beginning; thence South 41 degrees 44 minutes 27 seconds East, a distance of 76.85 feet; thence North 64 degrees 27 minutes 24 seconds East, a distance of 389.78 feet; thence North 32 degrees 32 minutes 53 seconds East, a distance of 108.00 feet; thence North 00 degrees 10 minutes 12 seconds East, a distance of 254.91 feet more or less to the low water mark of the Mississippi River.

SURVEYOR'S CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Janele Fowlds — 09/12/2023

Janele Fowlds
License Number 26748
Date

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SKETCH OF DESCRIPTION
WABASHA, MINNESOTA

PART OF WABASHA PLAT AND SECTION 30, TOWNSHIP 111 NORTH, RANGE 10 WEST, WABASHA COUNTY, MINNESOTA

BOLTON & MENK
2900 43RD STREET NW, SUITE 100
ROCHESTER, MINNESOTA 55901
(507) 208-4332

FOR: CITY OF WABASHA

JOB NUMBER: H19.114396 FIELD BOOK: DRAWN BY: JPB

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71.0 S30-T111N-R10W

APPENDIX N

Detailed Cost Estimate

PRELIMINARY ENGINEER'S ESTIMATE (2024 COSTS)

BOLTON & MENK

WABASHA BARGE TERMINAL
CITY OF WABASHA, MN
BMI PROJECT NO.: H19.114396

Updated: 8/14/24

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL ESTIMATED COSTS
LAND ACQUISITION					
1	LAND ACQUISITION	1	LS	$120,750.00	$120,750.00
				SUBTOTAL:	**$120,750.00**
CIVIL SITE WORK					
2	MOBILIZATION	1	LS	$131,250.00	$131,250.00
3	CLEARING	6.2	ACRE	$6,300.00	$39,060.00
4	GRUBBING	6.2	ACRE	$6,300.00	$39,060.00
5	COMMON EXCAVATION	12000	CY	$8.40	$100,800.00
6	SITE GRADING	1	LS	$42,000.00	$42,000.00
7	SELECT GRANULAR BORROW (CV)	18000	CY	$12.60	$226,800.00
8	AGGREGATE SURFACING (CV) CLASS 2	4822	CY	$36.75	$177,208.50
9	RANDOM RIPRAP CLASS V	400	CY	$84.00	$33,600.00
10	GRANULAR FILTER	80	CY	$73.50	$5,880.00
11	TRAFFIC CONTROL	1	LS	$5,250.00	$5,250.00
12	STORM DRAIN INLET PROTECTION	6	EA	$210.00	$1,260.00
13	SILT FENCE, TYPE MS	4000	LF	$3.15	$12,600.00
14	FLOTATION SILT CURTAIN TYPE MOVING WATER	1140	LF	$26.25	$29,925.00
15	COMMON TOPSOIL BORROW	3172	CY	$21.00	$66,612.00
16	SEEDING	3.9	ACRE	$787.50	$3,071.25
17	RAPID STABILIZATION METHOD 2	2.0	ACRE	$1,837.50	$3,675.00
18	SEED MIXTURE 25-141	231	LB	$6.83	$1,576.58
19	HYDRAULIC MULCH MATRIX	13650	LB	$1.05	$14,332.50
20	ROLLED EROSION PREVENTION CATEGORY 25	1805	SY	$2.10	$3,790.50
21	ELECTRICAL SERVICE	1	LS	$10,500.00	$10,500.00
#REF!	EQUIPMENT FOUNDATIONS (EXCLUDING WINCH)	1	LS	$199,500.00	$199,500.00
				SUBTOTAL:	**$1,147,751.33**
ACCESS CHANNEL DREDGING					
22	DREDGING AND HAULING (TO ELEV=656.5')	37000	CY	$15.75	$582,750.00
				SUBTOTAL:	**$582,750.00**
SHEET PILE DOCK WALL					
23	3/4" COMPACTED CRUSHED STONE DOCK SURFACING	600	CY	$63.00	$37,800.00
24	GRANULAR FILL BELOW DOCK SURFACING	1050	CY	$63.00	$66,150.00
25	STEEL SHEET PILE DOCK WALL - PZC 26 @ 45' LONG	7200	SF	$57.75	$415,800.00
26	STEEL SHEET PILE TIE BACK WALL - PZC 26 @ 20' LONG	1120	SF	$57.75	$64,680.00
27	TIE RODS & HARDWARE - 1-3/4" DIA 150 KSI	200	LF	$73.50	$14,700.00
28	W12 CORNER BRACING	76	LF	$241.50	$18,354.00
29	DOUBLE C15X33.9 WALE @ DOCK WALL, SPLICES INCIDENTAL	160	LF	$346.50	$55,440.00
30	DOUBLE C15X33.9 WALE @ TIE BACK WALL, SPLICES INCIDENTAL	56	LF	$346.50	$19,404.00
31	BENT PLATE STEEL SHEET PILE CAP	160	LF	$183.75	$29,400.00
32	TIMBER RUB RAIL - 12" OAK	240	LF	$157.50	$37,800.00
33	SAFETY LADDERS	1	EA	$3,150.00	$3,150.00
34	SCOUR STONE - CLASS 5 RIP-RAP	600	TN	$136.50	$81,900.00
35	NONWOVEN GEOTEXTILE FABRIC	960	SY	$6.30	$6,048.00
36	GEOGRID	430	SY	$10.50	$4,515.00
				SUBTOTAL:	**$855,141.00**

PRELIMINARY ENGINEER'S ESTIMATE (2024 COSTS)

BOLTON & MENK

WABASHA BARGE TERMINAL
CITY OF WABASHA, MN
BMI PROJECT NO.: H19.114396

Updated: 8/14/24

ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL ESTIMATED COSTS
GUIDE PILES & MOORING					
37	24" OD X 1/2" A252 GR 2 STEEL PIPE PILE, 80' LONG	160	LF	$367.50	$58,800.00
38	PILE CONCRETE FILL	10	CY	$682.50	$6,825.00
39	PILE WRAP FENDER	2	EA	$12,600.00	$25,200.00
40	WINCH SYSTEM - (2) 15 HP HAULING WINCHES WITH CONTROLS	1	LS	$126,000.00	$126,000.00
41	RIGGING-3/4" GALVANIZED STEEL ROPE W/LINKS, SHACKLES, ETC.	1	LS	$21,000.00	$21,000.00
42	HAULING WINCH REINFORCED CONCRETE FOUNDATIONS	1	LS	$26,250.00	$26,250.00
				SUBTOTAL:	**$264,075.00**

SUBTOTAL:	$2,970,467.33
CONSTRUCTION CONTINGENCIES (15%):	$445,600.00
TOTAL ESTIMATED CONSTRUCTION COST:	**$3,416,067.33**
PRELIMINARY DESIGN AND STATE ENVIRONMENTAL REVIEW:	$498,320.00
FINAL DESIGN AND FEDERAL ENVIRONMENTAL REVIEW:	$583,313.00
CONSTRUCTION ENGINEERING AND CONTRACT ADMIN:	$120,000.00
ADMIN & LEGAL:	$10,000.00
TOTAL ESTIMATED PROJECT COST:	**$4,627,700.33**

APPENDIX O

Draft EIS Update May 2024 (Agency Review) and Public Engagement

Service information

Transaction ID:	79524
Service name:	Draft EIS
Submitted on:	09/26/2023 04:01:28 PM

Project details

Project title:	Wabasha Barge Facility
Project summary:	The proposed barge facility in Wabasha, MN will serve to transport sand from Mississippi River navigation channel dredging operations from the river to offsite locations for beneficial re-use. The project area encompasses 54.0 acres and will include infrastructure construction, including access channel dredging, a sheet pile dock wall, barge mooring and maneuvering facilities, conveyors and hoppers for material management, temporary storage area for transported dredge material, sewer and water utilities, internal access road, a weighing station, and a small operations structure. Facility operations will involve the transfer of sand from river barges to trucks for transport to off-site facilities for use as reclamation material for existing sand and gravel mines or other potential beneficial reuse.
Does the RGU have a consultant?	N

Contacts

RGU name:	Caroline Gregerson
RGU organization:	Wabasha Port Authority
RGU title:	Administrator
RGU username:	CityOfWabasha
RGU address:	900 Hiawatha Drive E, Wabasha MN 55981
RGU email:	cityadmin@wabasha.org
RGU phone:	651-565-4568

Project proposer name:	Caroline Gregerson
Project proposer organization:	Wabasha Port Authority
Project proposer title:	Administrator
Project proposer address:	900 Hiawatha Drive E, Wabasha MN 55981
Project proposer email:	cityadmin@wabasha.org
Project proposer phone:	651-565-4568

RGU consultant name:	Lucas Bulger
RGU consultant organization:	Bolton & Menk, Inc.
RGU consultant title:	
RGU consultant address:	111 Washington Ave S Ste 650, Minneapolis MN 55401-2255
RGU consultant email:	lucas.bulger@bolton-menk.com
RGU consultant phone:	612-270-0928

Draft EIS

Was the EIS scoping decision amended?	N	
Attached document(s):	File name	Attachment type
	Wabasha Barge Facility Draft EIS_09262023.pdf	Draft EIS
Link to public documents:		
Location of public documents:	Wabasha City Hall 900 Hiawatha Drive East Wabasha MN 55981	

Public meetings

Public meeting date:	10/17/2023
Public meeting time:	5:30 PM
Public meeting location:	Wabasha City Hall
Public meeting address:	900 Hiawatha Drive East Wabasha MN 55981
Link to virtual meeting:	
Additional directions:	

BOLTON & MENK

Real People. Real Solutions.

2900 43rd Street NW
Suite 100
Rochester, MN 55901

Ph: (507) 208-4332
Bolton-Menk.com

October 4, 2023

Wabasha County Herald
200 Industrial Court
PO Box 109
Wabasha, MN 55981
wheraldads@gmdmedia.net

RE: Wabasha Draft EIS
City of Wabasha, MN
BMI Project No: T61.115593

Dear Tracy:

Please publish the enclosed Notice of Hearing regarding the above referenced project on the following dates:

Tuesday, October 10, 2023

Please send the City of Wabasha two copies of the Affidavit of Publication and bill the City of Wabasha for the same at:

City of Wabasha
Attn: Wendy Busch, City Clerk
900 Hiawatha Drive East
PO Box 268
Wabasha, MN 55981
Phone: 651-565-4568

Also, please send Bolton & Menk, Inc. one copy of the Affidavit of Publication.

Bolton & Menk, Inc.
2900 43rd Street NW, Suite 100
Rochester, MN 55901
Heather.hanson@bolton-menk.com

Please acknowledge this email with a reply for proof of receipt.

Bolton & Menk is an equal opportunity employer.

Draft Environmental Impact Statement of Wabasha Barge Facility Project now available for review

Comments on the DEIS will be accepted October 2 through November 1, 2023.

The City of Wabasha invites the public to review the Draft Environmental Impact Statement (DEIS) regarding the proposed Mississippi River Barge Facility Project located in the City of Wabasha, Wabasha County. MN. The project will include dredging a side access from the main Mississippi River navigation channel and constructing a truck access road, barge dock, and loading/unloading infrastructure.

The DEIS, which documents the purpose and need for the project, along with the anticipated social, economic, and environmental impacts, is available for the public beginning October 2, 2023, at the following locations:

- (Digital) City of Wabasha website: https://www.wabasha.org/
- (Digital) Environmental Quality Board website: https://www.eqb.state.mn.us/eqb-monitor
- (Hard Copy) Wabasha City Hall, 900 Hiawatha Drive E, Wabasha, MN 55981

A public meeting will be held on Thursday, October 17, 2023, at 5:30 p.m. at City Hall. Written comments will be accepted through November 1, 2023. Comments should be submitted to Caroline Gergerson, City Administrator, 900 Hiawatha Drive E, Wabasha, MN 55981, (651) 565-4568, or cityadmin@wabasha.org.

NOTICE OF MORTGAGE FORECLOSURE SALE

NOTICE IS HEREBY GIVEN that default has occurred in the conditions of the following described mortgage:

DATE OF MORTGAGE: June 6, 2019

ORIGINAL PRINCIPAL AMOUNT OF MORTGAGE: $122,735.00

MORTGAGOR(S): Christopher Wilde and Jennifer Wilde, spouses married to each other, as joint tenants

MORTGAGEE: Mortgage Electronic Registration Systems, Inc., as mortgagee, as nominee for Primary Residential Mortgage, Inc., its successors and assigns

DATE AND PLACE OF RECORDING:

Recorded: June 7, 2019 Wabasha County Recorder

Document Number: 334959

LOAN MODIFICATION:

Dated: April 7, 2022

Recorded: April 22, 2022

Document Number: 348797

ASSIGNMENTS OF MORTGAGE:

And assigned to: Primary Residential Mortgage, Inc.

Dated: August 14, 2023

Recorded: August 17, 2023 Wabasha County Recorder

Document Number: 353429

Transaction Agent: Mortgage Electronic Registration Systems, Inc.

Transaction Agent Mortgage Identification Number: 1001464-6000463175-9

Lender/Broker/Mortgage Originator: Primary Residential Mortgage, Inc.

Residential Mortgage Servicer: Primary Residential Mortgage, Inc.

COUNTY IN WHICH PROPERTY IS LOCATED: Wabasha

Property Address: 736 Jefferson Avenue, Wabasha, MN 55981

Tax Parcel ID Number: 27.00685.00

LEGAL DESCRIPTION OF PROPERTY: Lot 10 in Block 19 in that part of the City of Wabasha known as South Wabasha according to the plat thereof on file and of record in the Office of the Wabasha County Recorder in and for said County and State

AMOUNT DUE AND CLAIMED TO BE DUE AS OF DATE OF NOTICE: $116,623.61

THAT all pre-foreclosure requirements have been complied with; that no action or proceeding has been instituted at law or otherwise to recover the debt secured by said mortgage, or any part thereof; that this is registered property;

PURSUANT to the power of sale contained in said mortgage, the above-described property will be sold by the Sheriff of said county as follows:

DATE AND TIME OF SALE: October 26, 2023 at 10:00 AM

PLACE OF SALE: County Sheriff`s office, 848 17th Street East, Wabasha, Minnesota

to pay the debt secured by said mortgage and taxes, if any, on said premises and the costs and disbursements, including attorney fees allowed by law, subject to redemption within six (6) months from the date of said sale by the mortgagor(s), their personal representatives or assigns.

If the Mortgage is not reinstated under Minn. Stat. §580.30 or the property is not redeemed under Minn. Stat. §580.23, the Mortgagor must vacate the property on or before 11:59 p.m. on April 26, 2024, or the next business day if April 26, 2024 falls on a Saturday, Sunday or legal holiday.

Mortgagor(s) released from financial obligation: NONE

THIS COMMUNICATION IS FROM A DEBT COLLECTOR ATTEMPTING TO COLLECT A DEBT. ANY INFORMATION OBTAINED WILL BE USED FOR THAT PURPOSE.

THE RIGHT TO VERIFICATION OF THE DEBT AND IDENTITY OF THE ORIGINAL CREDITOR WITHIN THE TIME PROVIDED BY LAW IS NOT AFFECTED BY THIS ACTION.

THE TIME ALLOWED BY LAW FOR REDEMPTION BY THE MORTGAGOR, THE MORTGAGOR'S PERSONAL REPRESENTATIVES OR ASSIGNS, MAY BE REDUCED TO FIVE WEEKS IF A JUDICIAL ORDER IS ENTERED UNDER MINNESOTA STATUTES, SECTION 582.032, DETERMINING, AMONG OTHER THINGS, THAT THE MORTGAGED PREMISES ARE IMPROVED WITH A RESIDENTIAL DWELLING OF LESS THAN FIVE UNITS, ARE NOT PROPERTY USED IN AGRICULTURAL PRODUCTION, AND ARE ABANDONED.

DATED: September 5, 2023

MORTGAGEE: Primary Residential Mortgage, Inc.

Wilford, Geske & Cook, P.A.

Attorneys for Mortgagee

7616 Currell Boulevard, Suite 200

Woodbury, MN 55125

(651) 209-3300

File Number: 053400-F1

September 12, 19, 26, October 3, 10, 17, 2023

STATE OF MINNESOTA COUNTY OF WABASHA THIRD JUDICIAL DISTRICT DISTRICT COURT PROBATE DIVISION NOTICE OF INFORMAL APPOINTMENT OF PERSONAL REPRESENTATIVE AND NOTICE TO CREDITORS (INTESTATE)

Barbara Marie Packer, Decedent

Court File No. 79-PR-23-637

Notice is given that an application for informal appointment of personal representative has been filed with the Registrar. No will has been presented for probate. The application has been granted.

Notice is also given that the Registrar has informally appointed Erin M. Packer, whose address is 317 West 3rd Street, Wabasha, MN 55981, as personal representative of the Estate of the Decedent. Any heir or other interested person may be entitled to appointment as personal representative or may object to the appointment of the personal representative. Unless objections are filed with the Court (pursuant to Minnesota Statutes section 524.3-607) and the Court otherwise orders, the personal representative has full power to administer the Estate including, after 28 days for the date of issuance of letters, the power to sell, encumber, lease or distribute real estate.

Any objections to the appointment of the Personal Representative must be filed with this Court and will be heard by the Court after the filing of an appropriate petition and proper notice of hearing.

Notice is also given that (subject to Minnesota Statutes section 524.3-801) all creditors having claims against the Estate are required to present the claims to the personal representative or to the Court Administrator within four months after the date of this Notice or the claims will be barred.

/s/ Deanna Verdick, Deputy Probate Registrar

/s/ Abigail Gilmore, Court Administrator

Attorney for Applicant

Name: Bruce A. Nelson

Firm: Nelson Law Office

Street: 64 West 3rd Street

City, State, ZIP: Winona, MN 55987

Attorney License No: 194827

Telephone: (507) 474-9155

Email: bruce@brucenelsonlawoffice.com

October 3, 10, 2023

NOTICE OF MORTGAGE FORECLOSURE SALE

THE RIGHT TO VERIFICATION OF THE DEBT AND IDENTITY OF THE ORIGINAL CREDITOR WITHIN THE TIME PROVIDED BY LAW IS NOT AFFECTED BY THIS ACTION.

NOTICE IS HEREBY GIVEN: That default has occurred in the conditions of the following described mortgage:

DATE OF MORTGAGE: August 26, 2019

ORIGINAL PRINCIPAL AMOUNT OF MORTGAGE: $143,075.00

MORTGAGOR(S): Zachery Welch and Jordan Grinhaug, both single people

MORTGAGEE: Mortgage Electronic Registration Systems, Inc., as nominee for PrimeSource Funding, Inc.

DATE AND PLACE OF FILING: Recorded on September 6, 2019 as Document Number 335988 in the Office of the County Recorder of Wabasha County, Minnesota.

ASSIGNMENTS OF MORTGAGE: Assigned to: Mortgage Electronic Registration Systems, Inc., as nominee for United Wholesale Mortgage, LLC by assignment recorded on June 5, 2023 as Document Number 352668 in the Office of the County Recorder of Wabasha County, Minnesota; thereafter assigned to Lakeview Loan Servicing, LLC by assignment recorded on June 16, 2023 as Document Number 352819; as corrected of record by document recorded on September 18, 2023 as Document Number 353711 in the Office of the County Recorder of Wabasha County, Minnesota.

LEGAL DESCRIPTION OF PROPERTY: Lot 2, Block 31, Original Plat of the City of Plainview, Wabasha County, Minnesota.

STREET ADDRESS OF PROPERTY: 640 2ND AVE NW, PLAINVIEW, MN 55964

COUNTY IN WHICH PROPERTY IS LOCATED: Wabasha County, Minnesota.

THE AMOUNT CLAIMED TO BE DUE ON THE MORTGAGE ON THE DATE OF THE NOTICE: $144,520.14

TRANSACTION AGENT: Mortgage Electronic Registration Systems, Inc.

NAME OF MORTGAGE ORIGINATOR: Mortgage Electronic Registration Systems, Inc., as nominee for PrimeSource Funding, Inc.

RESIDENTIAL SERVICER: Flagstar Bank, N.A.

TAX PARCEL IDENTIFICATION NUMBER: 26.00383.00

TRANSACTION AGENT'S MORTGAGE IDENTIFICATION NUMBER: 100427500000162190

THAT no action or proceeding has been instituted at law to recover the debt then remaining secured by such mortgage, or any part thereof, or, if the action or proceeding has been instituted, that the same has been discontinued, or that an execution upon the judgment rendered therein has been returned unsatisfied, in whole or in part.

PURSUANT, to the power of sale contained in said mortgage, the above described property will be sold by the Sheriff of said county as follows:

DATE AND TIME OF SALE: November 22, 2023 at 10:00 AM.

PLACE OF SALE: Wabasha County Sheriff's Office, 848 17th Street East, Wabasha, MN 55981.

to pay the debt then secured by said mortgage and taxes, if any actually paid by the mortgagee, on the premises and the costs and disbursements allowed by law. The time allowed by law for redemption by said mortgagor(s), their personal representatives or assigns is six (6) months from the date of sale.

TIME AND DATE TO VACATE PROPERTY: Unless said mortgage is reinstated or the property redeemed, or unless the time for redemption is reduced by judicial order, you must vacate the premises by 11:59 p.m. on May 22, 2024.

THE TIME ALLOWED BY LAW FOR REDEMPTION BY THE MORTGAGOR, THE MORTGAGOR'S PERSONAL REPRESENTATIVES OR ASSIGNS, MAY BE REDUCED TO FIVE WEEKS IF A JUDICIAL ORDER IS ENTERED UNDER MINNESOTA STATUTES, SECTION 582.032, DETERMINING, AMONG OTHER THINGS, THAT THE MORTGAGED PREMISES ARE IMPROVED WITH A RESIDENTIAL DWELLING OF LESS THAN FIVE UNITS, ARE NOT PROPERTY USED IN AGRICULTURAL PRODUCTION, AND ARE ABANDONED.

MORTGAGOR(S) RELEASED FROM FINANCIAL OBLIGATION ON MORTGAGE: None

Dated: September 27, 2023

LAKEVIEW LOAN SERVICING, LLC

Mortgagee

TROTT LAW, P.C.

By: /s/N. Kibongni Fondungallah, Esq.

Samuel R. Coleman, Esq.

Sung Woo Hong, Esq.

Attorneys for Mortgagee

25 Dale Street North

St. Paul, MN 55102

(651) 209-9760

(23-0879-FC01)

THIS IS A COMMUNICATION FROM A DEBT COLLECTOR.

October 3, 10, 17, 24, 31, November 7, 2023

Public Notice
Notice of Public Sale

NOTICE IS HEREBY GIVEN that on October 31, 2023 at 11:00 am at 909 West Lakewood Ave, site #7, Lake City, MN 55041, the following manufactured home will be sold by public auction by the Sheriff of Wabasha County: 1971 UNIV/TRLR 14x80, serial # 18949891-2. Located at 909 West Lakeland, site #7, Maplewood MN MHC, LLC, Lake City, MN 55041. This sale will be held to satisfy a claim held by Maplewood MN MHC, LLC, upon the above-described property and owned Bricio Donaldo Cuaquehua Sanchez with no known lien holders. The property has been abandoned in Maplewood MN MHC, LLC. The amount of the claim against the above referenced property is $2,346.60 computed to the date of sale, exclusive of expenses of said sale, and the advertising thereof.

Maplewood MN MHC, LLC

(by)Anna Noble

909 West Lakewood Ave #76

Lake City, MN 55041

(651) 345-5591

October 3, 10, 17, 2023

PUBLIC HEARING
Draft Environmental Impact Statement of Wabasha Barge Facility Project now available for review

Comments on the DEIS will be accepted October 2 through November 1, 2023.

The City of Wabasha invites the public to review the Draft Environmental Impact Statement (DEIS) regarding the proposed Mississippi River Barge Facility Project located in the City of Wabasha, Wabasha County. MN. The project will include dredging a side access from the main Mississippi River navigation channel and constructing a truck access road, barge dock, and loading/unloading infrastructure.

The DEIS, which documents the purpose and need for the project, along with the anticipated social, economic, and environmental impacts, is available for the public beginning October 2, 2023, at the following locations:

(Digital) City of Wabasha website: https://www.wabasha.org/

(Digital) Environmental Quality Board website: https://www.eqb.state.mn.us/eqb-monitor

(Hard Copy) Wabasha City Hall, 900 Hiawatha Drive E, Wabasha, MN 55981

A public meeting will be held on Thursday, October 19, 2023, at 5:30 p.m. at City Hall. Written comments will be accepted through November 1, 2023. Comments should be submitted to Caroline Gergerson, City Administrator, 900 Hiawatha Drive E, Wabasha, MN 55981, (651) 565-4568, or cityadmin@wabasha.org.

October 10, 2023

PUBLIC HEARING

The Wabasha County Planning Commission will conduct a public hearing starting at 7:00 p.m. on October 23rd, 2023, for the purpose of hearing any testimony regarding the following requests:

1) Public hearing on the Final Plat application of Johnson Acres submitted by Daniel & Doreen Johnson for a land division involving the creation of more than three new and residual parcels. The subject property is described as parcels R12.00229.00, R12.00281.03, and R12.00281.00 located in Sections 21 and 28, Township 109 North, Range 12 West of Oakwood Township on approximately 141.98, 80, and 40.09 acres, respectively.

2) Public hearing on the Preliminary Plat application of Cornerstone Acres submitted by Brent Beck for a land division involving the creation of more than three new and residual parcels. The subject property is described as parcels R16.00250.09 and R16.00252.03 located in Section 31, Township 110 North, Range 12 West of West Albany Township on 97.32 and 39.35 acres, respectively; and parcels R12.00056.00 and R12.00055.00 located in Section 6, Township 109 North, Range 12 West of Oakwood Township on 159.15 and 149.32 acres, respectively.

3) Public hearing for the Conditional Use Permit application submitted by Courtney O'Connor on behalf of DIVOCSG 14 LLC - Gordian Energy Systems requesting an amendment to an existing Conditional Use Permit in the A-2 zoning district. The subject property is described as parcel R05.00064.00 located in Section 10, Township 110 North, Range 10 West, in Greenfield Township (66094 E COUNTY ROAD 30) on approximately 6 acres of a 92.05 acre parcel.

The public hearing will take place in the County Board Room, Courthouse Annex, 625 Jefferson Avenue, Wabasha, Minnesota. Any interested person may provide testimony whether in person or by way of written comment submitted to the Wabasha Zoning Department. Written comments will be read into the record during the respective public hearing.

Any questions regarding this matter should be directed to the Wabasha County Zoning Department. You can contact the Zoning Department by phone at 651-565-3062, or by email at jkaltenbach@co.wabasha.mn.us.

Respectfully,

Wabasha County Planning Commission

October 10, 2023

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DEADLINE NOTICE

ATTENTION Wabasha Herald Customers:
OUR DEADLINE HAS CHANGED

the deadline for The *Wabasha County Herald* will be:

THURSDAYS at 12:00 Noon

Normal Business Hours are Monday-Thursday 8am-5pm. Closed Fridays.

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52660

The City of Wabasha invites public review of the Draft Environmental Impact Statement (DEIS) regarding the proposed Mississippi River Barge Facility Project located in the City of Wabasha, Wabasha County, MN. The project will include dredging a side access channel from the main Mississippi River navigation channel and constructing a truck access road, barge dock, and loading/unloading infrastructure.

The DEIS, which documents the purpose and need for the project, along with the anticipated social, economic, and environmental impacts, is available for review, at the following locations:

- (Digital) on this page, linked below
- (Digital) Environmental Quality Board website: https://www.eqb.state.mn.us/eqb-monitor
- (Hard Copy) Wabasha City Hall, 900 Hiawatha Drive E, Wabasha, MN 55981

A public meeting will be held on **Thursday, October 19, 2023, at 5:30 p.m. at Wabasha City Hall**. Written comments will be accepted through November 1, 2023, and should be submitted to Caroline Gergerson, City Administrator, 900 Hiawatha Drive E, Wabasha, MN 55981, or cityadmin@wabasha.org.

Click here to see a copy of the Environmental Impact Statement.



Click on image to link to study

October 2nd, 2023

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News & Updates

- City of Wabasha Celebrates Wabasha Dog Park Grand Opening
- Flood Update 07/30/2024
- Riverboat Days Parade Route
- Flags of Valor
- Pool Closed July 20th
- Flood Update 07/15/2024
- Street paving to begin Friday downtown
- Water Inspection Survey Visits
- Flood Update 07/09/2024
- Water Service Inspection Notice
- Flood Assessment for City
- Flood Update 07/03/2024

Community Calendar

Monday, August 19
9:00am Historic Preservation Con
4:00pm Library Board Meeting
Tuesday, August 20
1:00pm Ambulance Commission

Calendar

Return

WABASHA PORT AUTHORITY AND DEVELOPMENT AGENCY

Wabasha City Hall
https://us02web.zoom.us/j/82539841446
Meeting ID 825 3984 1446
Thursday, October 19, 2023
5:30 PM

Present: Dave Wodele; Vice President Michael Walters; Robin Gwaltney; Jeff Sulla

Absent: President John Friedmeyer; Treasurer Cory Loechler; Craig Falkum

1. Call to Order -

2. Roll Call -

3. Consent Agenda -

Moved by Jeff Sulla, seconded by Robin Gwaltney to approve the Consent Agenda.

Vote: 4 - 0 Adopted - Unanimously

Other: President John Friedmeyer (ABSENT)
Craig Falkum (ABSENT)
Treasurer Cory Loechler (ABSENT)

1. September 19, 2023 Port Authority Meeting Minutes
2. September 2023 Port Authority Financials
3. CEDA 4th Quarter 2023 Invoice

4. Bolton & Menk Invoice 0322232

4. **Old Business -**

5. **New Business -**

1. Public Hearing Draft Environmental Impact Statement (DEIS) regarding the proposed Mississippi River Barge Facility Project

   The public hearing was led by Bolton & Menk staff, City Engineer Brian Malm and Senior Environmental Planner Angie Smith. Malm began with an overview of the project. Malm also presented a map of the site layout. Project history was provided as well as alternatives that were researched.

   Smith presented the potential impacts and mitigation as they relate to parks and recreation, soils and topography, water resources, wetlands, and natural resources. A list of permits and approvals the project would require was also discussed. Public comments will be accepted through November 2, 2023

   Comments from the public were accepted.

   The Public Hearing was closed at 6:30PM.

2. Authorize Bolton Menk to begin applying for necessary permits for dredging and associated costs.

   City Engineer, Brian Malm, explained that an approval was needed for Bolton & Menk to start work on permit application for dredging. Malm stated that starting this permit application process now will speed up the process.

Moved by Robin Gwaltney, seconded by Dave Wodele to approve Bolton & Menk to start working on the permit application process for dredging.

Vote: 4 - 0 Adopted - Unanimously

Other: President John Friedmeyer (ABSENT)
Craig Falkum (ABSENT)
Treasurer Cory Loechler (ABSENT)

3. Housing Update

   Robin Gwaltney and Jeff Sulla provided Housing Commitee updates. The October WATCH meeting was held on October 4th.

4. Blandin Grant Applications

   Finance Director, Tyler, Grabau, introduced three Blandin Boost Grant Applications

from Wabasha-Kellogg Age Friendly Initiative, Wabasha Area Community Resource Center, and Senior Health Action Team.

Moved by Dave Wodele, seconded by Robin Gwaltney to approve three Blandin Boost Grants: Wabasha-Kellogg Age Friendly Initiative ($5,000), Wabasha Area Community Resource Center ($2,015), and Senior Health Action Team ($1,100).

Vote: 4 - 0 Adopted - Unanimously

Other: President John Friedmeyer (ABSENT)
Craig Falkum (ABSENT)
Treasurer Cory Loechler (ABSENT)

5. 2024 CEDA Contract

Finance Director, Tyler Grabau, explained that the 2024 CEDA contract is $42,129.

Moved by Jeff Sulla, seconded by Robin Gwaltney to approve the 2024 CEDA contract of $42,129.

Vote: 4 - 0 Adopted - Unanimously

Other: President John Friedmeyer (ABSENT)
Craig Falkum (ABSENT)
Treasurer Cory Loechler (ABSENT)

6. **Directors Report -**

7. **Other -**

1. Wabasha Kellogg Area Community Foundation Letter and Newsletter

Finance Director, Tyler Grabau, stated that the Port Authority had received an annual newsletter from the Wabasha-Kellogg Area Community Foundation.

8. Next Meeting - Tuesday, November 21, 2023

9. Adjourn -

Moved by Dave Wodele, seconded by Jeff Sulla to adjourn the October 19, 2023 Port Authority meeting.

Vote: 4 - 0 Adopted - Unanimously

Other: President John Friedmeyer (ABSENT)
Craig Falkum (ABSENT)
Treasurer Cory Loechler (ABSENT)

WABASHA BARGE FACILITY

State of Minnesota

Draft Environmental Impact Statement

Wabasha Port Authority, City of Wabasha, Minnesota

Updated May 2024

Real People. Real Solutions.

DRAFT ENVIRONMENTAL IMPACT STATEMENT

For

WABASHA BARGE FACILITY

Wabasha Port Authority

City of Wabasha, Minnesota

RGU: Wabasha Port Authority

RGU Contact: Caroline Gregerson

900 Hiawatha Drive E

Wabasha, MN 55981

651-565-4568

Proposer: Wabasha Port Authority

Proposer's Representative: Caroline Gregerson, City Administrator

900 Hiawatha Drive E

Wabasha, MN 55981

651-565-4568

cityadmin@wabasha.org

Abstract: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the City of Wabasha, Minnesota. The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract out the port operations and transportation of materials.

Draft EIS Publication Date: October 2, 2023

Draft EIS Public Meeting Date: Tuesday, October 17, 2023

Draft EIS Public Meeting Time: 5:30 pm -7:30 pm

Draft EIS Public Meeting Location: 900 Hiawatha Dr E, Wabasha, MN 55981

Draft EIS Comment Deadline: November 1, 2023

Draft EIS Comment Response and Update – Agency Review: May 30, 2024

Final EIS Publication Date: *Anticipated July 2, 2024*

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List of Preparers

Lucas Bulger, Environmental Planner, Bolton & Menk, Inc.

Brian Malm, Principal Engineer, Bolton & Menk, Inc.

Chad Ponce, Senior Natural Resources Specialist, Bolton & Menk, Inc.

Angie Smith, Senior Environmental Planner, Bolton & Menk, Inc.

Kristi Trisko, Senior Planner, Bolton & Menk, Inc.

List of Acronyms

ACHP – Advisory Council on Historic Preservation

AADT – Annual Average Daily Traffic

ADT – Average Daily Traffic

APE – Area of Potential Effect

AST – Aboveground Storage Tank

B/C – Benefit-Cost

BMPs – Best Management Practices

CAAA – Clean Air Act Amendments

CCC – Civilian Conservation Corps

CEQ – Council on Environmental Quality

CO – Carbon Monoxide

CR – County Road

CRP – Conservation Reserve Program

CSAH – County and State Aid Highway
CWA – Clean Water Act
dBA – A-weighted Decibel
EAW – Environmental Assessment Worksheet
EIS – Environmental Impact Statement
EPA – Environmental Protection Agency
ESA – Environmental Site Assessment
EQB – Environmental Quality Board
FEMA – Federal Emergency Management Agency
FHWA – Federal Highway Administration
FIRM – Flood Insurance Rate Map
FSA – Farm Service Agency
GIS – Geographic Information System
HCADT – Heavy Commercial Average Daily Traffic
HCM – Highway Capacity Manual
JD – Jurisdiction Determination
LAWCON – Land and Water Conservation
LGU – Local Government Unit
LOS – Level of Service
LUST – Leaking Underground Storage Tank
MARAD – Maritime Administration
MDA – Minnesota Department of Agriculture
MDH – Minnesota Department of Health
MEPA – Minnesota Environmental Policy Act
Mn/DOT – Minnesota Department of Transportation
MNDNR – Minnesota Department of Natural Resources
MOA – Memorandum of Agreement
MPCA – Minnesota Pollution Control Agency
MSL – Mean Sea Level
MSAT – Mobile Source Air Toxics
MVM – Million Vehicle Miles
NAAQS – National Ambient Air Quality Standard
NATA – National Air Toxics Assessment
NEPA – National Environmental Policy Act
NHPA – National Historic Preservation Act
NHIS – Natural Heritage Information System
NHS – National Highway System
NPDES – National Pollutant Discharge Elimination System
NRCS – Natural Resource Conservation Service
NRHP – National Register of Historic Places
NWI – National Wetland Inventory
OHW – Ordinary High Water
OMLS – Online Multiple Listing Service
PA – Participating Agencies
PAC – Project Advisory Committee
RCV – Remaining Capital Value
RGU – Responsible Governmental Unit
ROD – Record of Decision
ROW – Right-of-Way
SD – Scoping Document
SDD – Scoping Decision Document
SHPO – State Historic Preservation Office
SWPPP – Storm Water Pollution Prevention Plan
SQG – Small Quantity Generator
T & E – Threatened & Endangered
THPO – Tribal Historic Preservation Officer
TMDL – Total Maximum Daily Load
UP – Union Pacific
USACE – United States Army Corps of Engineers
USDOT – United States Department of Transportation
USFWS – United States Fish and Wildlife Service
USGS – United States Geological Service
UST – Underground Storage Tank
VHT – Vehicle Hours Traveled
VMT – Vehicle Miles Traveled
VPD – Vehicles Per Day
WCA – Wetland Conservation Act
WMA – Wildlife Management Area
WPA – Waterfowl Production Area
WSD – Watershed District

1. EXECUTIVE SUMMARY

1.1 Purpose of the Draft Environmental Impact Statement

The construction of the Proposed Barge Facility site would involve dredging an access channel from the main navigation channel to the Barge Facility with an estimated total of 37,000 cubic yards (CY) of material removed. This exceeds the threshold of dredging 1,000 CY outlined in Minnesota Rules, 4410.4400, Subpart 17, thus requiring the preparation of an environmental impact statement.

1.2 Project Description

The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the City of Wabasha, Minnesota. The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract the port operations and transportation of materials.

After construction, it is anticipated that the City of Wabasha would partner with the United States Army Corps of Engineers ("USACE," "the Corps") for the initial 10-year operational period to transfer material that is annually dredged from the Upper Mississippi River 9-foot navigation channel through the Wabasha Barge Facility for transport to off-site facilities.

Navigational channel dredging, and all other activities performed by the USACE related to the maintenance of the Mississippi River navigation channel, are federal actions, considered separate from the proposed project, and are addressed in the 2023 Lower Pool 4 Dredged Material Management Plan (DMMP)[1] and integrated Environmental Assessment.

1.3 Purpose and Need for the Proposed Action

The Project Site is located within Lower Pool 4, a portion of the Upper Mississippi River (UMR), which is a vital component of the United States' inland navigation system. Periodic removal (dredging) of sediment material deposited within the Lower Pool 4 navigation channel and placement of the material on temporary upland locations is necessary to maintain the navigation channel requirements for commercial vessels. The proposed project is to construct a barge terminal to facilitate the transport of this dredged material from the Mississippi River temporary holding sites to final locations for beneficial uses, such as construction and mining reclamation material. Following an initial 10-year period where the focus is solely on dredged material movement, the city may decide to move other dry commodities, such as grain and cement.

The proposed project is intended to achieve the city's goals of prioritizing safety, environmental protection, and economic development for this small riverfront community. The project prioritizes safety by locating the facility away from residential areas and minimizing truck traffic through city streets. It emphasizes environmental stewardship through sustainable design and construction practices

[1] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

to minimize impacts on wetlands, wildlife, and recreation. The project also aims to achieve economic development by attracting new industries and creating jobs within the community.

1.4 Alternatives

The Wabasha Barge Facility project proposes a solution for the efficient transport of dredged material from the Mississippi River, prioritizing safety, environmental stewardship, and economic development. This EIS comprehensively evaluates the potential impacts of the project alongside a range of alternatives to ensure informed decision-making.

- *No-Build Alternative:* This scenario explores the continued reliance on existing USACE dredged material placement sites. The potential for exceeding existing site capacity and resorting to non-designated placement locations with potentially higher environmental risks is investigated.
- *Preferred Alternative (Carrels Property):* This alternative proposes the construction of a barge facility at the Carrels property. A thorough assessment details potential impacts on the surrounding community infrastructure, transportation routes, and natural resources among other factors.
- *Alternate Locations:* Several alternative locations were evaluated using criteria including site size, river access, zoning compatibility, safety considerations, noise and visual impacts, proximity to transportation routes, and potential infrastructure and recreational impacts. This evaluation will inform the final decision on the most suitable location for the project.
- *Alternate Design and Magnitude:* The evaluation considers variations in the design and magnitude of the proposed barge facility to optimize functionality while minimizing environmental and resource impacts. This includes exploring options for minimizing the project design and required channel access to accommodate the minimum requirements for one to two barges per day during the operational season.

This assessment employs a comprehensive approach to evaluate each alternative. Detailed analyses will assess potential impacts on social, economic, and environmental resources. Public input and agency collaboration was integral to this process. Following a thorough review of all alternatives, a final decision will be made, ensuring the selected solution best meets the project's goals while minimizing environmental and community impacts.

1.5 Potential Environmental Effects

Anticipated environmental effects for the Preferred Alternative include: increase in barge traffic to and from the proposed barge facility site; temporary impacts to aquatic organisms during access channel dredging; change in site flood elevations from site regrading; tree clearing and ground disturbance; one permanently-impacted 0.40-acre wetland; increase in impervious surface; increase in truck traffic during construction and operation; disturbance of and minor reduction in terrestrial organism habitat; altered visual aesthetic of the project site; and temporary noise effects during construction and operation. As proposed, all potential environmental effects from the construction and operation of the Proposed Project would be mitigated to the fullest possible extent through ongoing coordination between the City of Wabasha and applicable local, State, and Federal agencies.

1.6 Project Cost and Funding Source

The estimated total cost of the project is $4.6 million (2024 dollars). This cost includes construction, contingency, engineering, administrative, and legal costs. Funding for the project currently includes a Port Development Assistance Program (PDAP) grant from the Minnesota Department of Transportation in the amount of $754,876. Remaining project funding is anticipated to come from potential additional MnDOT PDAP grant funding, potential US Department of Transportation Maritime Administration (MARAD) Port Infrastructure Development Program (PIDP) grant funding[2], and Wabasha Port Authority and/or City of Wabasha bond sales.

1.7 Permits and Approvals

Government Agency	Type of Application/Permit	Status*
Federal Agencies		
U.S. Army Corps of Engineers (USACE)	Clean Water Act (CWA) Notification	To be updated
	No Rise Certification	To be completed
	Section 10 Rivers & Harbors Appropriation Act	To be updated
State Agencies		
Minnesota Department of Natural Resources (MNDNR)	Permit to Take	To be applied for, if necessary
	Public Waters Work Permit	To be updated
	Water Appropriations Permit	To be applied for, if necessary
Minnesota Board of Water and Soil Resources (BWSR)	Minnesota Wetland Conservation Act (WCA) Notification	To be updated
Minnesota Pollution Control Agency (MPCA)	National Pollutant Discharge Elimination System (NPDES) Construction General Storm Water Permit	To be updated
MPCA	Industrial Stormwater Permit	To be updated
Local Agencies		
City of Wabasha	Conditional Use Permit	To be updated
	Floodplain Permit / No Rise Certification	To be updated
	Rezone to be compliant with Land Use	To be updated

[2] The City is aware that MARAD PIDP funding requires additional Federal environmental review.

* All permit requirements will be applied for prior to project or specific phase commencing.

1.9 Project Schedule

- Final Design – April 2024 – July 2024
- Permitting – April 2024 – May 2025
- Tree Removal Contract Bidding – February 2025
- Tree Removal – March 2025
- Site, Dock, and Dredging Contract Bidding – May 2025
- Site, Dock, and Dredging Construction – July 2025 – November 2025

2. PROJECT DESCRIPTION

2.1 Project Description

The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility ("Wabasha Barge Facility") at Upper Mississippi River mile 760 in Wabasha, Minnesota. The project site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha, Wabasha County, Minnesota (Section 30, Township 111N, Range 010W). These parcels are presently privately owned, and the city anticipates purchasing the requisite area to house the facility from a willing seller prior to construction activities.

The 26.8-acre site ("Study Area," "Project Site") would house the Wabasha Barge Facility on approximately 8.2 acres ("Proposed Barge Facility," "Proposed Project") and would facilitate the transfer of materials, including dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the barge facility site and contract out the port operations and transportation of materials. The city does not currently anticipate expanding the project beyond the proposed 8.2 acres, although that decision will be revisited at a future time if warranted.

Upon environmental clearance and acquisition of all required permits, the work elements to be completed as part of the proposed project include:

- Dredging an access channel from the main Mississippi River navigation channel to the proposed dock area. This will be performed by either hydraulic or mechanical dredging techniques and include deepening the side channel to enable barge traffic to access the proposed fleeting area for loading and unloading material.
- Dredging an area to accommodate barge maneuvering and docking. This will be performed by either hydraulic or mechanical dredging techniques and include widening the area immediately adjacent to the proposed fleeting area for improved barge maneuverability.
- The dredged material would be used as fill material on the barge terminal site to raise the site above the 100-year flood elevation. Initial dredge material offloaded at the site will be used, in addition to regrading the proposed area, to ensure the access road and temporary storage locations are removed from the 100-year floodplain.
- Construct the barge terminal pad and access road. This will include constructing a sheet pile dock face and upstream/downstream steel pipe pile clusters for barge mooring and maneuvering system. Additionally, the access road off of 5th Grant Boulevard West will be improved for truck and vehicle traffic hauling material to and from the proposed barge mooring site.
- Construct footings for conveyors and hoppers for material handling and loadout. These will be located immediately adjacent to the barge terminal pad to enable loading and unloading material from moored barges.
- Install electric, sewer and water utilities to the project site.
- Install a loading scale and construct a scale house/field office building (proposed future action).

The City of Wabasha has prepared this draft Environmental Impact Statement (DEIS) in accordance with Minnesota Rules 4410.4400, Subpart 17, "Barge Fleeting Facilities." This DEIS assesses the potential for the Proposed Project—i.e., the above-listed work elements related to the construction of, and operations within, the Wabasha Barge Facility—to result in significant adverse environmental impacts.

Following Wabasha Barge Facility construction completion, it is anticipated that the City of Wabasha would partner with the United States Army Corps of Engineers ("USACE" or "the Corps"), pursuant to Section 217(d) of the Water Resources Development Act of 1996, to transfer material that is annually dredged from the Upper Mississippi River 9-foot navigation channel through the Wabasha Barge Facility for transport to off-site facilities. Navigational channel dredging and all other activities performed by the USACE under the Section 217(d) agreement related to the maintenance of the Mississippi River navigation channel are federal actions, considered separate from the proposed project, and are addressed in the 2023 Lower Pool 4 Dredged Material Management Plan (DMMP)[3] and integrated Environmental Assessment.

The Wabasha Barge Facility would facilitate the transfer of dredged material from river barges to trucks for transport to off-site facilities for use as reclamation material for existing sand and gravel mines, local construction material, or other potential beneficial reuse options.

While detailed construction plans have not been completed, conceptual site design plans are provided in Figure 4, "Site Layout." Site design documents are anticipated to be completed in early 2024. The proposed letting date for construction is late Summer 2024. Construction is proposed to be completed with site operations commencing in Summer 2025, pending receipt of all permits and approvals.

2.2 Responsible Governmental Unit

The Wabasha Port Authority is the Responsible Governmental Unit (RGU) and the Proposer for the Wabasha Barge Facility project.

Organization:	Wabasha Port Authority
Contact Person:	Caroline Gregerson
Title:	City Administrator
Address:	900 Hiawatha Drive East
City, State, ZIP:	Wabasha, MN 55981
Phone:	651-565-4568
Email:	cityadmin@wabasha.org

[3] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

2.3 Purpose of Draft Environmental Impact Statement

Minnesota Rules, 4410.4400, Subpart 17, "Barge Fleeting Facilities," states that an Environmental Impact Statement (EIS) is required for projects involving the construction of a barge fleeting facility at a new off-channel location that involves the dredging of 1,000 or more cubic yards.

The Proposed Project would facilitate dredging an access channel from the main navigation channel to the Barge Facility with an estimated total of 37,000 cubic yards (CY) of material removed. This exceeds the threshold of dredging 1,000 CY outlined in Minnesota Rules, 4410.4400, Subpart 17, thus requiring the preparation of this EIS document.

2.4 Purpose and Need for the Proposed Action

The proposed Wabasha Barge Facility project aims to address pressing river shipping needs, prioritizing economic growth, environmental stewardship, and public safety.

The City has recognized the necessity of establishing a small barge facility to facilitate the efficient transportation of dredged material and support infrastructure and economic development projects. Situated in the middle of Lower Pool 4, the City's strategic location provides convenient access to the main Mississippi River navigation channel, bridging a crucial service gap in the region.

2.4.1. Project Goals

The following goals were identified as key evaluation areas to identify reasonable and feasible alternatives for the proposed barge facility.

Safety: The City's top priority is ensuring the safety of Wabasha residents. The proposed barge terminal location will allow for the truck transport of dredged material directly to County and MnDOT highway truck routes, avoiding significant truck traffic through residential areas of the city, and minimizing the safety concerns of Wabasha residents.

Strategic Location: The proposed location for the barge facility offers a strategic advantage. It is located in the heart of the Mississippi River Lower Pool 4 and in close proximity to existing County and MnDOT highway truck routes. This allows for efficient transfer of dredged material to final resting places, minimizing traffic impacts within the city, and avoiding residential areas and streets.

Environmental Stewardship: The City is committed to minimizing environmental impacts throughout the project lifecycle. A permanent and well-designed barge facility will reduce noise and visual disruptions for residents. The project will be designed and constructed through a sustainable development approach to minimize impacts to wetlands, wildlife, and recreation, ensuring compliance with all pertinent regulations.

Balancing Needs with Opportunities: While environmental protection is a top priority, the project also presents increased economic development opportunities for this small Class 4 Minnesota city. The barge facility has the potential to attract new industries and create jobs, boosting the local economy and diversifying its base. By balancing economic growth with environmental stewardship, the City can create a vibrant future for residents while protecting the natural beauty that defines this river community.

The City's primary project objectives emphasize safety, environmental stewardship, economic development, and efficient transportation. The city acknowledges the importance of regulations and

reviews to avoid, minimize, and/or mitigate anticipated environmental impacts, and will continue coordinating with regulatory authorities throughout this project.

2.4.2. Coordination with USACE

The City of Wabasha has entered into agreement with the U.S. Army Corps of Engineers (USACE) under Section 217(d) of the Water Resources Development Act of 2007 to provide facilities for the management of dredged material generated from the USACE's continued operation and maintenance of the 9-foot Navigation Channel in Lower Pool 4 of the Upper Mississippi River (UMR).

The USACE's plan for the management of dredged material in Lower Pool 4 is fully described in the Final Lower Pool 4 Dredged Material Management Plan (DMMP), published by the USACE in November 2022.[4] The DMMP is the USACE's integrated feasibility report and National Environmental Policy Act (NEPA) document, completed in accordance with USACE regulations.

While the Recommended Plan described in the DMMP represents the federal standard for Lower Pool 4 and complies with USACE policy for managing dredged material pursuant to the Federal standard (33 CFR 335.7) for dredged material placement sites, this is but one justification for the City's decision to facilitate this facility development process. The DMMP has gone through federal environmental review with the outcome of the City's proposed project site identified as the preferred alternative for the USACE dredged material management. The USACE standard is defined as, "the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process…"

The following is a general description of dredged material management in Lower Pool 4 and the tiered implementation plan described in the DMMP. The purpose of providing this general background information is to allow for a better understanding of the purpose and need for the Wabasha Barge Facility project.

Purpose and Need for Barge Facility under Section 217(d) Agreement

The Wabasha Port Authority proposes to create a barge facility that would allow for the onshore transfer of dredged material to fulfill the City of Wabasha's obligations under its Section 217(d) Agreement with the USACE. The construction of a barge facility is necessary for the City to be able to cost-effectively facilitate the onshore transfer of dredged material over the 10-year period of its agreement with the USACE. Cost-effectiveness is a key component due to the fact that the USACE can only use the Section 217(d) Agreement with the City as the priority approach if it is the most economical and sustainable alternative in the tiered Recommended Plan.

The USACE states in Section 8.2 of the DMMP that the "….city is contemplating the development of a modern commercial port at the Carrels Site. While such a port would facilitate its use for dredged material management, the existence of a commercial port is not necessary for this purpose, which can be conducted as described in 6.3.3." The referenced section of the DMMP (6.3.3) describes the use of the Carrels Site (proposed barge facility location) for onshore transfer of dredged material either by the City through the Section 217(d) agreement or by the USACE under Tier 4 of the Recommended Plan. This section also describes the use of temporary structures to facilitate the onshore transfer of dredged

[4] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

materials from barges to trucks and the dredging of channel for barge access to the Carrels Site. While temporary features could be used to facilitate onshore transfer of dredged material, it would not be cost-effective over a 10-year period to use such temporary features. The cost of constructing temporary features to facilitate onshore transfer at the proposed project site over the 10-year Section 217(d) agreement period would amount to approximately $1.8 million. This is more than the estimated construction cost of the permanent dock proposed as a part of the barge facility, which is approximately $980,000. Following is a detailed breakdown of the temporary facility costs:

Cost for Temporary Dock Facility				
Item	**Quantity**	**Unit**	**Unit Price**	**Amount**
Mobilization	1	LS	$20,000	$20,000
Common Borrow	700	CY	$25	$17,500
Aggregate Base	120	CY	$32	$3,840
Temporary Dock/Spud Barge	1	LS	$72,500	$72,500
Erosion Control BMP's	1	LS	$15,000	$15,000
Demobilization	1	LS	$29,600	$29,600
Subtotal				$158,440
15% Contingency				$23,766
Total Annual Cost				**$182,206**
Total 10-yr Agreement Cost				**$1,822,060**

Additionally, requiring an annual establishment of temporary structures to facilitate material transfer would likely increase cumulative impacts over time due to heavy equipment maneuvering on the site. The City of Wabasha anticipates, and the Corps recognizes that dredging will be a long-term solution to the 9-foot Navigation Channel maintenance operations. This is not a 10-year fix, but a longer maintenance need that will require a more permanent solution for Minnesota shippers and receivers. With the construction of the barge terminal, the City of Wabasha can prioritize the sustainable development option that will facilitate this consistent transfer of dredged materials, reduce impacts to adjacent landowners and the river shoreline, and ensure transportation networks are sufficient for material transfer operations for the foreseeable future.

Alternative locations for the onshore transfer of dredged material were considered and discarded as a part of the USACE DMMP due to traffic and noise concerns given their proximity to residential neighborhoods, distance to final placement sites, and other concerns. Additional alternate locations for the barge terminal are presented and evaluated in the Alternate Locations section.

Other Products

Although the barge facility could be used in the future for the transfer of other products such as agricultural and commercial commodities, the City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time. The 10-year agreement the Wabasha Port Authority has with the operator of the barge facility specifically precludes the use of the barge facility for other products.

Additionally, the proposed barge terminal is designed and sized to allow only one 195'x35' hopper barge (1,000 CY capacity) at a time to maneuver through the channel and the dredged maneuvering area adjacent to the dock. The proposed mooring system for the dock is designed and sized to allow for two loaded hopper barges to be moored abreast of each other at the dock, with only a single hopper barge being unloaded at any given time. The mooring system will also allow for one empty hopper barge to be

moored to the side of the dock, while it waits to be removed. The port operator estimates that it will take the proposed material handler approximately 4 hours to unload a 1,000 CY hopper barge. Therefore, the proposed barge facility is designed and sized to accommodate a maximum of two loaded 195'x35', 1,000 CY hopper barges in an 8-hour working day. To transport 2,000 CY of dredged material in a day will take approximately 100 trucks with a single hopper belly dump trailer. Therefore, the expected total truck traffic from the facility in a typical working day is approximately 100 trucks in and out of the facility per day.

Should the City of Wabasha and Wabasha Port Authority choose, in the future, to pursue other products, the most likely products would be other dry commodities, such as grain, cement, or gravel. The port operator estimates that it would take more than 4 hours to load or unload a 1,000 CY hopper barge of grain. This means that expected barge and truck traffic from other dry products, like grain, would result in less barge and truck traffic than dredged material. In addition, the proposed facility is not designed to accommodate the transport of and will not have the facilities to deal with bulk liquid products, so that specific type of commodity transfer is not anticipated at this facility in the future.

Based on this information, the design and size of the facility are the most limiting factors for the proposed project, and the transfer of dredged material represents the highest expected level of barge and truck traffic from the facility. Therefore, the use of the port facility in this EIS will focus on the transfer of dredged material under the Section 217(d) Agreement which anticipates a total of two (2) barges a day and approximately 100 truck trips in and out of the facility per day, representing the maximum threshold from barge and truck traffic from the site for any likely commodity to be considered at the facility in the future.

2.4.3. Economic Impact

The proposed Wabasha Barge Facility offers a strategic opportunity to unlock economic development potential for the City of Wabasha and the surrounding region. The City has entered into a 10-year agreement with the USACE to take responsibility for a part of the dredged material management activities as described above. The estimated gross annual revenue for the City, as compensation from the USACE for taking on these activities, is approximately $4.8 million. After accounting for expenses related to the operation of the barge facility, the annual net revenue for the City is estimated at a minimum of $200,000. This revenue will provide the City with a dedicated revenue stream to fund additional economic development initiatives.

Opportunities to transfer agricultural and commercial commodities may be evaluated in the future, but as noted above, the 10-year agreement the Wabasha Port Authority has with the operator of the barge facility specifically precludes the use of the barge facility for other products. If additional products are pursued, after the 10-year contract with USACE, the facility could continue to transport up to two (2) hopper barges a day becoming a key logistics hub on the Upper Mississippi River, opening opportunities to boost and diversify the local economy by creating jobs and attracting new industries that rely on a key connection to river transport.

2.5 Project Cost, Funding, and Schedule

The estimated total cost of the Proposed Project is $4.6 million (2024 dollars). This cost includes construction, contingency, engineering, administrative, and legal costs. Funding for the project currently includes a Port Development Assistance Program (PDAP) grant from the Minnesota Department of Transportation in the amount of $754,876. Remaining project funding is anticipated to come from potential additional MnDOT PDAP grant funding, potential US Department of Transportation Maritime

Administration (MARAD) Port Infrastructure Development Program (PIDP) grant funding[5], and Wabasha Port Authority and/or City of Wabasha bond sales. The addition of MARAD funding will trigger a federal Environmental Assessment review process, which will commence following completion of the state EIS process.

The current schedule for the project is as follows:

- Final Design – April 2024 – July 2024
- Permitting – April 2024 – May 2025
- Tree Removal Contract Bidding – February 2025
- Tree Removal – March 2025
- Site, Dock, and Dredging Contract Bidding – May 2025
- Site, Dock, and Dredging Construction – July 2025 – November 2025

Following completion of the site access, dock, and side channel access dredging, the agreement between the Corps and the City of Wabasha is anticipated to go into effect. This would initiate operations of offloading dredge material at the proposed project location, dewatering, and hauling to follow-on sites for potential construction, fill, and other uses based on the material quality.

[5] The City is aware that MARAD PIDP funding will require additional Federal environmental review.

3. ALTERNATIVES

This EIS document assesses the potential for the proposed project to result in significant adverse impacts by comparing conditions anticipated during the construction and operation of the Proposed Project ("Preferred Alternative") to conditions otherwise expected without the Proposed Project ("No-Build Alternative").

3.1 No-Build Alternative

3.1.1. Description

In the absence of the Proposed Project, the City or Wabasha Port Authority does not anticipate any development on the Project Site. Therefore, this EIS assumes that the physical condition of the Project Site without the Proposed Project generally would resemble existing conditions and remain vacant until the USACE requires access to additional upland storage locations for dredge-material storage. Under this scenario, responsibility for transporting dredged material from island transfer sites would revert to the USACE, following their tiered system outlined in the USACE's 2022 Final Lower Pool 4 Dredge Material Management Plan (DMMP), although no dock facility would be constructed, thereby limiting the City's authority over dredged material use and potential economic compensation for site access.

As described in the no-build alternative in the DMMP, if the tiered system in the Recommended Plan is not pursued, currently approved and available sites in Lower Pool 4 project area would not be expected to accommodate dredge material placement needs for the next 20 years. If approved DMMP sites are not available when dredging is required in Lower Pool 4 due to navigation emergency situations, dredged material may need to be placed at non-DMMP designated placement locations. Non-designated placement sites would likely include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). The use of non-designated placement sites may result in higher costs and greater environmental or social impacts. Presumably, these instances would be short-term, and USACE would initiate a new planning effort to identify the most acceptable dredged material management methods for the pool.

The use of DMMP-identified sites that would continue under the no-action alternative would be dredged material placement in the Read's Landing, Crats Island, Teepeeota Point, and Grand Encampment transfer sites, and in the Wabasha Gravel Pit and Alma Marina upland transfer sites. Also, as happens currently, material would be moved hydraulically to the Wabasha Gravel Pit. The use of the preferred location, which is identified in the DMMP, is possible but would require the acquisition of a real estate interest in the site because it is privately owned. Similarly, the Wabasha Sand and Gravel Pit was identified in the DMMP as an upland placement site but is also privately owned. Because these sites are in private ownership, their use is uncertain and cannot be relied upon. Additional details outlining the USACE alternatives are provided in the following section.

3.1.2. Dredged Material Management and the USACE DMMP Recommended Plan

The USACE DMMP was initiated due to uncertainty of the future availability of dredged material placement sites in the area of Lower Pool 4 and a need to identify the best strategy for the long-term management of dredged material within the pool.

According to the DMMP, to maintain the 9-foot Navigation Channel in Lower Pool 4, the USACE projects approximately 5.3 million cubic yards (CY) of dredged material will be generated over the next 20 years. Dredging is accomplished using either hydraulic or mechanical dredging methods. Once dredged, the material is moved either directly to an onshore transfer site or to an island transfer site, depending on location and dredging method.

From the onshore transfer sites, the dredged material is then trucked to permanent placement sites for beneficial re-use or permanent upland placement.

From the island transfer sites, the material is moved through either hydraulic or mechanical methods from the island sites to an onshore transfer site, where it is trucked to permanent placement sites for beneficial re-use or permanent upland placement. If moved through mechanical methods from the island transfer sites, the dredged material is loaded onto barges to be moved to the onshore transfer sites. If moved through hydraulic methods no barges are necessary to move the material to the onshore transfer sites.

Exhibit 1, taken from the DMMP, shows the dredge cut sites in the channel where the dredged material originates as well as the currently active island and onshore transfer sites. The island transfer sites are identified as Reads Landing, Crats Island, Teepeota Point, and Grand Encampment. The onshore transfer sites are identified as Wabasha Gravel Pit and Alma Marina.

Some of these areas within the City of Wabasha were further evaluated as alternate locations for the City's proposed project.

Exhibit 1 – Dredge Cuts and Transfer Sites
(Figure 1 from the USACE 2022 DMMP)

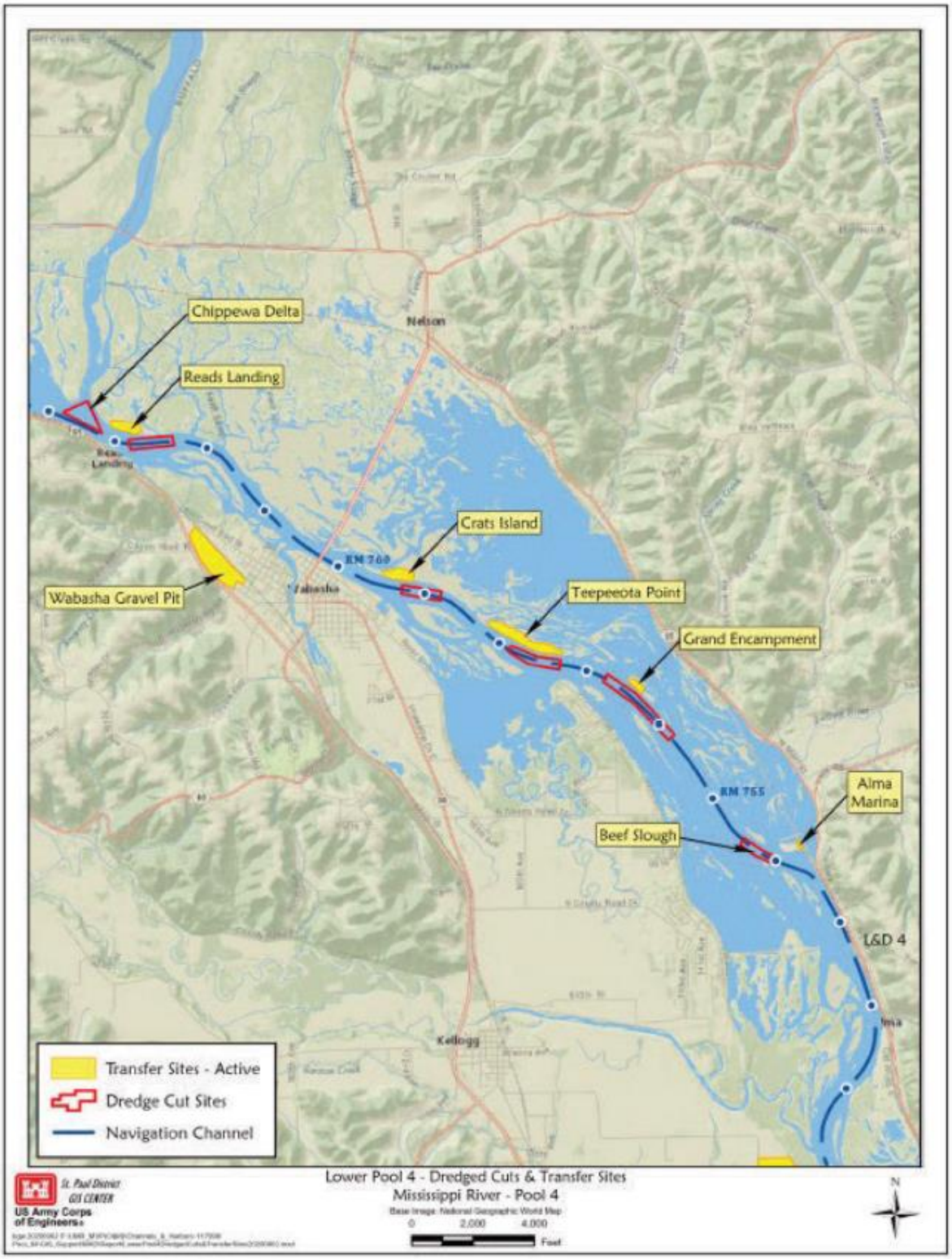
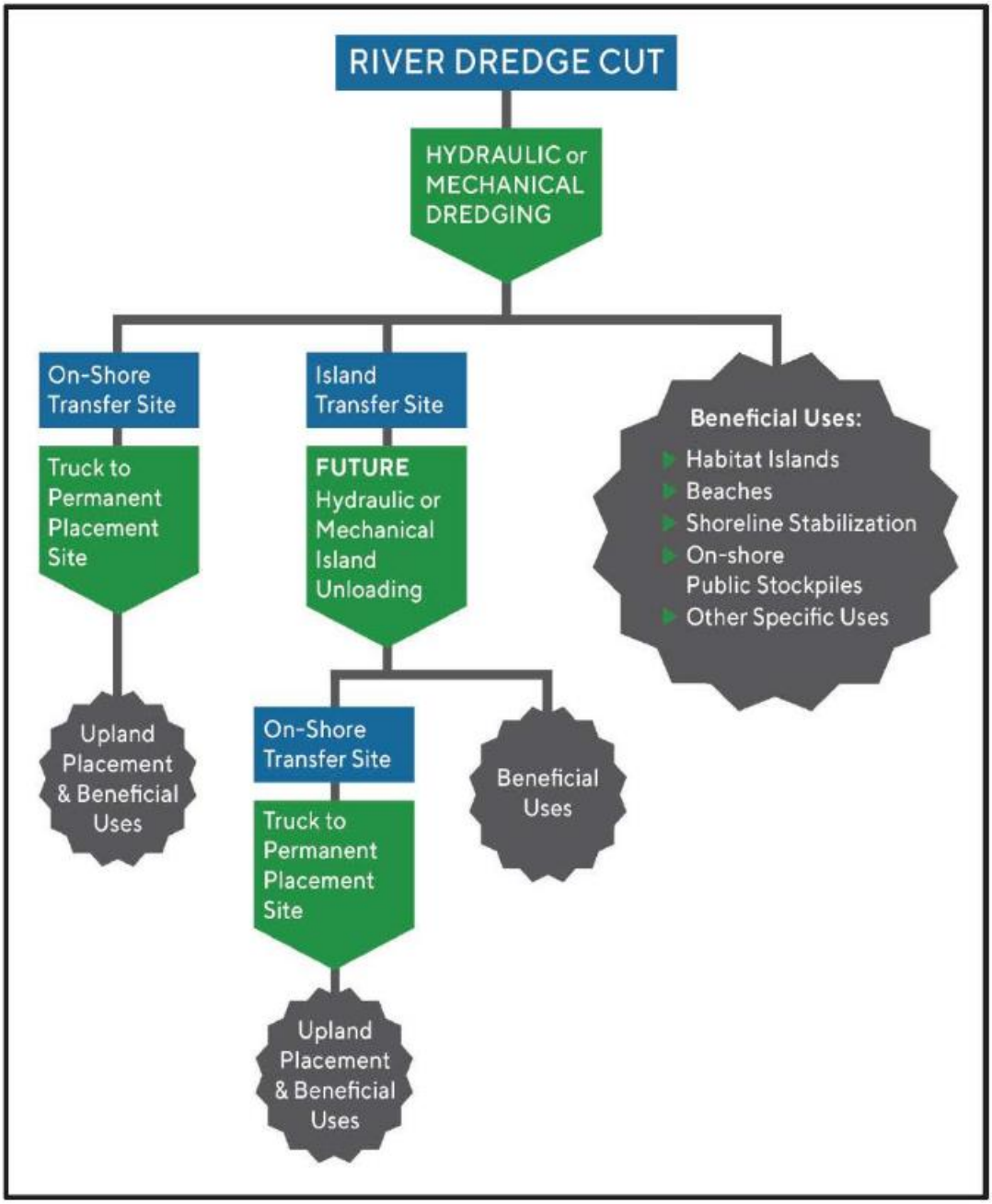


Exhibit 2, taken from the DMMP, is a flow chart showing the movement of dredged material from the river dredge cuts through the onshore or island transfer sites, to permanent placement or beneficial re-use sites.

Exhibit 2 – Movement and Uses of Dredged Material
(Figure 6 from the USACE 2022 DMMP)



The DMMP included several alternatives related to inland and onshore transfer sites, upland placement sites, transportation modes and routes, and other measures for dredged material management. Because the DMMP is a NEPA document, the environmental impacts of these alternatives were evaluated in the DMMP. One of the alternatives included in the Section 217(d) Agreement is with the City of Wabasha.

The Recommended Plan in the DMMP is an implementation plan that includes five (5) tiers, each using different combinations of island or onshore transfer sites, upland placement sites and transportation modes. The DMMP notes that the Recommended Plan will use the sites identified in the five tiers "in the most efficient way that is practicable at any given time" and that the tiers are ordered from the USACE's most preferred to least preferred. The Section 217(d) Agreement with the City of Wabasha is identified as the Tier 1 option, making it the most preferred option in the Recommended Plan.

Under the Section 217(d) Agreement, the USACE would dredge material from the Crats Island, Teepeota Point, and Grand Encampment dredge cuts and place that material on the island transfer sites. From that point, the City of Wabasha would be responsible for transferring the material from the island sites to the onshore transfer site, identified as the Carrels Site in the DMMP, where it would then be transferred to trucks for transportation to an upland placement site, identified as the Wabasha Sand and Gravel Facility in the DMMP. In taking on these responsibilities, the City of Wabasha will be reimbursed by the USACE through a user fee for its operation and maintenance costs, and a reasonable return on investment.

In explaining the rationale for including the Section 217(d) Agreement with the City in the Recommended Plan, the DMMP states, "The proposed potential Section 217(d) Agreement with the city of Wabasha would be the Corps' priority approach as long as it is determined by the Corps to be in accordance with the Federal standard." The DMMP also explains that to meet the Federal standard the Section 217(d) Agreement must represent the least cost alternative and must meet environmental standards. Related to environmental effects, it states that "The proposed facilities, the Carrels and Wabasha Sand and Gravel Pit facilities, are existing industrial sites that have been used for dredged material management before, and their use presents no significant environmental impacts…." It is noted that although the USACE DMMP determined that the use of the Carrels site would have no significant environmental effects, the purpose of this EIS is to make a separate and independent evaluation of the environmental impacts of the use of the Carrels site as an onshore transfer facility, which will involve the construction of a barge facility, as proposed by the Wabasha Port Authority.

If it is determined at some point that the Section 217d Agreement is no longer in accordance with the Federal standard, or if the two parties to the agreement (City or USACE) decide to terminate the agreement, the USACE would utilize one of the other tiered options for managing dredged material.

3.1.3. Existing Conditions

The proposed project site is the location of a former gravel pit. Based on historic aerial photographs, the site was active as late as 1949 and was abandoned prior to 1973. The site currently includes an access road with several cubic yards of debris, including old equipment, vehicles, barrels, and other construction waste.

Pending EIS approval, the city intends to purchase a portion of the existing parcels to facilitate construction of the barge facility. As part of the purchase agreement, the City anticipates coordinating with the current property owner to remove existing waste from the site and ensure a clean space for the proposed development.

Existing conditions will be further evaluated in **Chapter 4: SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS**.

Existing Conditions and Relationship to USACE

Should this site not be developed for the proposed barge facility, the Corps will continue to conduct dredging activities proactively to prevent Mississippi River navigation channel closures. Material dredged from the navigation channel will be temporarily placed on island transfer sites adjacent to the dredge locations. When island sites are nearly full, the Corps moves the dredged material to upland placement sites to restore island capacity. The Wabasha Gravel Pit is currently the only available site in Pool 4 for upland placement, and it is nearing capacity. The recently acquired Rolling Prairie site in Pool 5 could be used for upland placement, as it has ample capacity, but its distance would make it costly and difficult to efficiently access.

In the best case where placement sites are full, dredging could be temporarily deferred, and the navigation channel would remain functional for a while. This situation has the potential to occur for short periods (e.g., one dredging season at a minimum), but is extremely unlikely to persist based on known dredging requirements in this stretch of river.

Switching to a scenario of dredging only when necessary, would increase the likelihood of experiencing imminent or emergency dredging conditions as described above, as was experienced at Grand Encampment in 2014.

3.1.4. Limitations

- Does not grant the City control over the truck routes or final resting places of the USACE-dredged material.
- Higher potential for adverse impacts from truck traffic through Wabasha if USACE moves to the identified Tier 4 scenario due to lack of City control over truck hauling routes.
- Does not meet the project purpose and need, as the City would not have a location to provide efficient river access for material shipments.
- Reduces future economic development opportunities for the City.

3.2 Alternatives Considered

The Wabasha Port Authority and City of Wabasha conducted a thorough examination of various alternatives during the initial stages of exploring options for the proposed project, ensuring a comprehensive assessment of potential impacts and benefits.

3.2.1 Alternate Locations

This section evaluates alternate locations for the proposed barge facility project. The City used the following criteria to assess these locations to identify a preferred location:

- Within the city limits
- Site size and access to the Mississippi River main navigation channel
- Zoning and Land Use compatibility
- Safety considerations for residents and visitors
- Noise and visual impact on residential areas

- Proximity to highway transportation routes
- Infrastructure potential and impacts
- Recreation impacts
- Natural resources impacts

A summary of these details can be found in **Table 1** and **Exhibits 3.A** through **3.D**. Additional assessment information is also available in **Chapter 4**.

Preferred Location: Carrels Property

Owner: Kohner Sand & Gravel Company

Size: Approximately 26.75 Acres

Zoning: RC (Residential Conservancy) and R1 (Low Density Residential)

Land Use: Industrial

Process to allow Barge Use: Rezone to comply with the industrial land use

Shoreland Overlay Zone: S1 and S2

Proximity to Residential: There are minimal residential homes around the site or along the haul route. Adjacent property is primarily industrial or public cemetery use.

Haul Route: Through the site and northward on 5th Grant to Highway 61. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: None. Carrels property is near the northern edge of the City of Wabasha and on 5th Grant Boulevard, which is a designated truck route.

Recreational Issues: None. The site is vacant.

Natural Resources

- Wetlands: 16.38 acres; Approximately 0.4 acres wetland impacts
- Stream Impacts: 1,880 linear feet of river
- Protected Species: Anticipate “May affect, not likely to adversely affect” determination
- Less Tree Clearing
- # T&E species impacted:

Summary:

- No residential impacts on surrounding property or haul route
- Short haul route to the 5th Grant – a designated truck route
- Vacant property, privately owned
- Wetland impacts can be largely avoided with a minimized project footprint and best management practices

Alternate Location 1: Mississippi Parkside Marina

Owner: City of Wabasha

Size: Approximately 16.88 acres

Zoning: RC (Residential Conservancy) and R2 (Medium Density Residential)

Land Use: Open Space and General Commercial

Process to allow Barge Use: Rezone and Land Use Plan Amendment

Shoreland Overlay Zone: S1 and S3

Impacts to Residential Neighborhoods Noise Impacts: Campbell Avenue is the most likely route due to less residential lots but is within 300' of St. Elizabeth's Hospital. This route would affect two blocks, ten homes along 3rd Street and Campbell Street, and an additional seven homes on 5th Grant Boulevard. If Gambia Avenue were used to reduce the impacts to the Hospital, the residential impacts would increase to 30 homes.

Safety Issue – proximity to Saint Elizabeth's Hospital of Wabasha: The haul route along Campbell Avenue turning west on 5th Grant Boulevard would pass both accesses to the Hospital including the designated emergency entrance. Purposefully planning a haul route that must cross the only two entrances and exits including the emergency entrance/exit to the hospital, is not an acceptable alternative location for this project. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Campbell Road is a 30-foot-wide local road with no on-street parking and limited R-O-W. These roads (approximately 1,480 feet) would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the two blocks of homes.

Recreational Issues: This site is adjacent to two parks, Rotary Beach Park and City Campground, with more than 100 boat slips, campground sites, and established park facilities on over 10 acres of property. These sites are used for multiple annual events for recreation and community activities. The number of heavy industrial trucks in and out of this area would damage not only the recreational uses but the community open space.

Natural Resources

- Wetlands: Approximately 8.15 acres
- Stream Impacts: 3,400 linear feet of river access
- Protected Species: Anticipate either "No effect" or "May affect, not likely to adversely affect" determination

Summary

- Directly affects 30 residential homes during roadway construction and long-term haul route noise and safety
- Haul route adjacent to hospital entrances
- Zoning, land use, and surrounding uses are not compatible with the project.
- High cost of roadway improvements along local road routes.

Alternate Location 2: Izaak Walton Park

Owner: City of Wabasha

Size: Approximately 5.5 Acres

Zoning: R2 (Medium Density Residential)

Land Use: Open Space, Institutional, and Medium Density Residential

Process to allow Barge Use: Rezone and Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: Maiden Avenue is the most likely haul route and would affect three residential homes until reaching 5th Grant Boulevard. Between Maiden Avenue and the last residential home on 5th Grant Boulevard, the haul route would affect 39 homes.

Haul Route and Saint Elizabeth's Hospital of Wabasha: The haul route from Maiden Road would likely turn northward on 5th Grant Boulevard to take the heavy vehicles away from Wabasha's main downtown area towards Highway 61 requiring that all trucks pass St. Elizabeth's Hospital's emergency entrance/exit route. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Maiden Road is a 30-foot-wide local road with no on-street parking and limited R-O-W. that is approximately 396 feet in length that would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the adjacent homes.

Recreational Issues: This site is currently used as Izaak Walton Park but is also part of the Mississippi Parkside Marina and Beach Park. It has parking, boat launches, restrooms, and green space for Izaak Walton Park is used for multiple annual events for recreation and community activities. The number of heavy industrial trucks in and out of this area would damage not only the recreational uses, but the central community open space that is part of the main recreational area for the City of Wabasha.

Natural Resources

- Wetlands: Approximately 2.42 acres; No anticipated impacts
- Steam Impacts: 1,200 linear feet along the Zumbro Slough with no barge access.
- Protected Species Impacts: No anticipated impacts
- Less Tree Clearing

Summary

- Property size is restrictive to fully support project goals
- Directly affects 39 homes
- Haul path through residential area and may impact the emergency entrance at hospital
- High infrastructure costs to update and maintain haul route
- Barge access limited
- Recreational use impacts
- Zoning, land use, and surrounding uses are not compatible with the project.

Alternate Location 3: Wabasha Municipal Dock

Owner: City of Wabasha

Size: Approximately 7.03 Acres

Zoning: R2 (Medium Density Residential)

Land Use: Open Space and Institutional

Process to allow Barge Use: Rezone, Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: The sand haul route would affect **s**even blocks of residential neighborhood traveling eastward on Main Street West to Bridge Avenue turning southward to 4th Grant Boulevard, affecting approximately 33 homes/townhomes, and multiple smaller businesses relying on local residentially scaled traffic. See **Exhibit 3C. Northern Haul Routes**.

Infrastructure Issues: Main Street West is a 40-foot-wide local road with no on-street parking and limited ROW, while Bridge Avenue is a 30-foot-wide road with limited parallel parking. The haul route would likely continue on Bridge Avenue and turn north on Hiawatha Drive West to Highway 61. Main Street West and Bridge Avenue (approximately 2,300 feet) would have to be improved to allow heavy trucks and implementing these improvements would be costly and have a major impact on the seven blocks of homes (33) homes and small businesses.

In addition, Bridge Avenue from 4th Grant Boulevard to Hiawatha Drive is part of a potential City planning project that will convert the roadway to a more locally used road with views along the Zumbo Slough and access to residential apartments and park land. If this project moves forward, the truck hauling route would be diverted either southward into the City, affecting more residential homes and commercial properties or northward crossing St. Elizabeth's Hospital's emergency entrance/exit route.

Recreational Issues: This site is currently used as the Wabasha Municipal Dock and Beach Park. Both the docks and Beach Park are fully developed with boat access, parking, trails, two shelters, tot lot, picnic tables, and grills, including views of the river and slough as well as beach access and access to the campground access road for seasonal RV's. Residents and visitors use these sites year-round and heavily used from spring to summer hosting multiple annual events for recreational and community activities. Given the required number of heavy industrial trucks needed to move materials in and out of this area would impact recreational use, community open space, and put pedestrians near truck traffic.

Natural Resources

- Wetlands: Less wetland impacts, approximately 476 sq. ft.
- Stream Impacts: Less Stream impacts, approximately 1,600 linear feet
- Protected Species Impacts: Anticipate either "No effect" or "May affect, not likely to adversely affect" determination

Summary

- Property size is restrictive to fully support project goals
- Directly affects 33 homes
- Haul path through residential area and impacts at emergency entrance at St. Elizabeth's Hospital

- High infrastructure costs to update and maintain haul route
- Recreational use impacted
- Zoning, land use, and surrounding uses are not compatible with the project

Alternate Location 4: Wabasha Marina

Owner: CERVIDAE LLC

Size: Approximately 15.84 Acres

Zoning: GC (General Commercial)

Land Use: General Commercial

Process to allow Barge Use: Rezone, Land Use Plan amendment

Shoreland Overlay Zone: S3

Proximity to Residential: Nineteen (19) homes surrounding the Wabasha Marina parcel and an additional 65 homes along the most likely haul route. Total housing impact is 84 homes.

Haul Route: The most likely haul route from this site would be to improve Angelique Avenue travelling westward on 12th Avenue turning south on Pembroke Avenue (MN60) and meeting up with Highway 61. This route would be approximately 1.21 miles in length. See **Exhibit 3D. Southern Haul Routes**.

Infrastructure Issues: Angelique Avenue does not connect to the site and would require a significant amount of fill to complete the connection between the site and River Drive. As neither Angelique Avenue nor 12th Street are truck routes with approximately 32 feet of constructed roadway, significant cost in infrastructure will be needed to improve the roadway for heavy truck traffic.

Recreational Issues: This site is currently used for a commercial boat dock and storage facility as well as maintaining 23 seasonal homes with on-site boat docks. The owner, Jennifer Millemon, is currently working on a conditional use permit submittal to extend the seasonal residential use with an additional 45 home sites for a total of 68 residential units.

Natural Resources

- Wetlands: No on-site wetlands
- Steam Impacts: Less Stream impacts, approximately 1,110 feet of river edge
- Protected Species: Anticipate “No effect” or “May affect, not likely to adversely affect” result
- Less Tree Clearing

Summary

- Directly affecting 19 homes surrounding the site
- Haul route affects 65 homes along 1.21 miles to highway access
- Anticipate impacts to recreational boat dock and residential areas
- Potential future expansion for residential use for 68 homes
- Privately owned property
- Limited roadway network increases cost to update and maintain adequate haul routes
- Zoning, land use, and surrounding uses are not compatible with the project

Alternate Location 5: South Fitzgerald (behind River Drive)

Owners: Fredrick M and Alice Fay Passe, Riverview Terrace Property Owners Inc., The United States of America, and Edward G and Jolene A. Greenheck

Zoning: RC (Residential Conservancy, RRGT (Rural Residential Growth Transitional)

Land Use: Water and Low-Density Residential

Process to allow Barge Use: Rezone and Land Use Plan amendment

Shoreland Overlay Zone: S1 and S2

Proximity to Residential: Seventeen (17) homes surround the South Fitzgerald parcel and an additional 95 homes along the most likely haul. See **Exhibit 3D. Southern Haul Routes**.

Haul Route: The most likely haul route from this site would be to improve Dugan Avenue travelling south along River Drive turning eastward on Angelique Avenue and connecting up to 12th Avenue turning south on Pembroke Avenue (MN60) and meeting up with Highway 61. This route would be approximately 1.31 miles in length.

Infrastructure Issues: Dugan Avenue is only constructed to the east alley on River Street, approximately 156'. The rest of the right-of-way to the South Fitzgerald site would have to be constructed to allow for heavy trucks. As neither Dugan Avenue, Angelique Avenue or 12th Street are truck routes with approximately 32 feet of constructed roadway, significant cost in infrastructure will be needed to improve the roadway for this haul route.

Future Uses: This site is owned by two private owners, the Homeowners Association of River Drive, and the Federal Government. Both the River Drive HOA and the private owners have approached the City of Wabasha with residential development questions. The City has reviewed several low-density residential options for a portion of the site but has not moved forward due to high construction costs to improve the site and the infrastructure surrounding the site. In addition, the homeowners along River Drive are very opposed to site development expressing concerns with their views, grading and drainage concerns, and destruction of wetlands and animal habitat.

Natural Resources

- Wetlands: Approximately 14 acres of wetlands
- Steam Impacts: Approximately .12 linear feet of river frontage
- Protected Species: Anticipate "No effect" or "May affect, not likely to adversely affect" result
- Less Tree Clearing

Summary

- Adjacent to a low-density residential area. Directly affecting 17 homes
- Hauling route affecting 95 existing homes along a 1.31-mile section of homes
- Privately and federally owned property
- Limited roadway network to the site creates large construction cost for adequate haul routes
- Zoning, land use, and surrounding uses are not compatible with the project

Table 1 – Alternate Sites Assessment

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Property Ownership	Kohner Sand & Gravel Company	City of Wabasha	City of Wabasha	City of Wabasha	CERVIDAE LLC.	Private owners, Riverview Terrace. HOA, & Federal Govt.
Property Size (Ac)	26.75	5.5	7.03	16.88	15.84	30.5
Adequate Acreage/Access for the project	Yes	No access	No, limited acreage	Yes	Yes	Yes
Zoning	RC & R1 – Res. Conservancy & Low-Density Residential	R2 -Medium Density Residential	R2 -Medium Density Residential	RC and R2 – Res. Conservancy & Medium Residential	GC – General Commercial	RC & RRGT – Res. Conservancy
Shoreland Overlay Zone	S1 & S2	S3	S3	S1 & S3	S3	S1 & S2
Land Use	Industrial	Open Space, Institutional & Med. Density Residential	Open Space	Open Space & General Commercial	General Commercial	Low Density Residential
Existing Land Use Compatibility	Vacant & Institutional Compatible	Park & Low-Density Residential Not compatible	Park & Low-Density Residential Not compatible	Park & Low-Density Residential Not compatible	Low Density Residential Not compatible	Low Density Residential Not compatible
Zoning Process for Project	Rezoned & CUP	Rezone, LUPA* & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP	Rezone, LUPA & CUP

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Wetland Impacts (acres)	0.40	0.05	0.17	0.3	0	0.17
Recreational Uses	Vacant **Summary:** No in-site land use issues as the site is vacant.	Site includes Izaak Walton Park and Mississippi Parkside Marina. Facilities include parking, boat launches, restrooms, green space, picnic areas, and the area holds city-wide events. **Summary:** Loss of park area, existing city docks, and trail connection due to removal of bridge to widen channel.	Site includes Rotary Beach Park. Facilities include boat docks, parking, trails, two shelters, tot lot, picnic areas, beach area, campground and the area holds city-wide events. **Summary:** Loss of city park and campground area, total take of existing Mississippi Parkside Marina, and loss of existing city docks.	Adjacent to Rotary Beach Park and City Campground. Facilities include more than 100 boat slips, campground sites, and hosts city-wide events. **Summary:** Total take of the existing marina business as well as loss of city dock in this location.	Commercial boat docks with over 100 slips, storage, & 23 seasonal residential homes with 45 future seasonal residential uses proposed for the site. **Summary:** Total take of the existing marina business and homes.	Vacant **Summary:** No in-site land use issues as the site is vacant.
Residential Impacts						
Surrounding Homes	0	3	6	10	19	17
Homes along Haul Route	0	36	27	7	65	78
Total Residential Impacts	0	39	33	17	85	95

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Infrastructure Issues	None	Maiden Avenue is undersized, and the haul route would cross St. Elizabeth Hospital's emergency entrance.	Main St and Bridge Ave are not truck routes.	Campbell Ave is undersized and not a truck route; haul route would cross St. Elizabeth Hospital's emergency entrance.	Angelique Ave, not constructed to the site and 12th St. not a truck route. Approx. 1.21 miles	Dugan Ave. not constructed, Angelique Ave and 12th St. not a truck route. Approx. 1.31 miles
Shoreline/Stream Impacts (LF)	130	130	130	130	130	130
Tree Clearing (Acres)	2.7	0.25	0.49	0.42	0	0
Species of Concern (1-Mile Radius)						
Threatened Species	8	7	7	7	7	6
Endangered Species	7	3	3	3	5	5
Species of Special Concern	13	8	8	10	8	6
Total Listed Species	28	18	18	20	20	17
Dredging Impacts to River (4 Feet average depth)						
Area (Acres)	10.2	7.39	0.49	7.65	4.42	13.02

Assessment Factor	Preferred Alternative: Carrels Site	Alternate Location 1: Izaak Walton Park	Alternate Location 2: Wabasha Municipal Dock	Alternate Location 3: Mississippi Parkside Marina	Alternate Location 4: Wabasha Marina	Alternate Location 5: South Fitzgerald
Volume (Cubic Yards)	37,000	48,194	48,389	48,389	31,580	79,284

Exhibit 3A. Alternate Site Locations in Wabasha

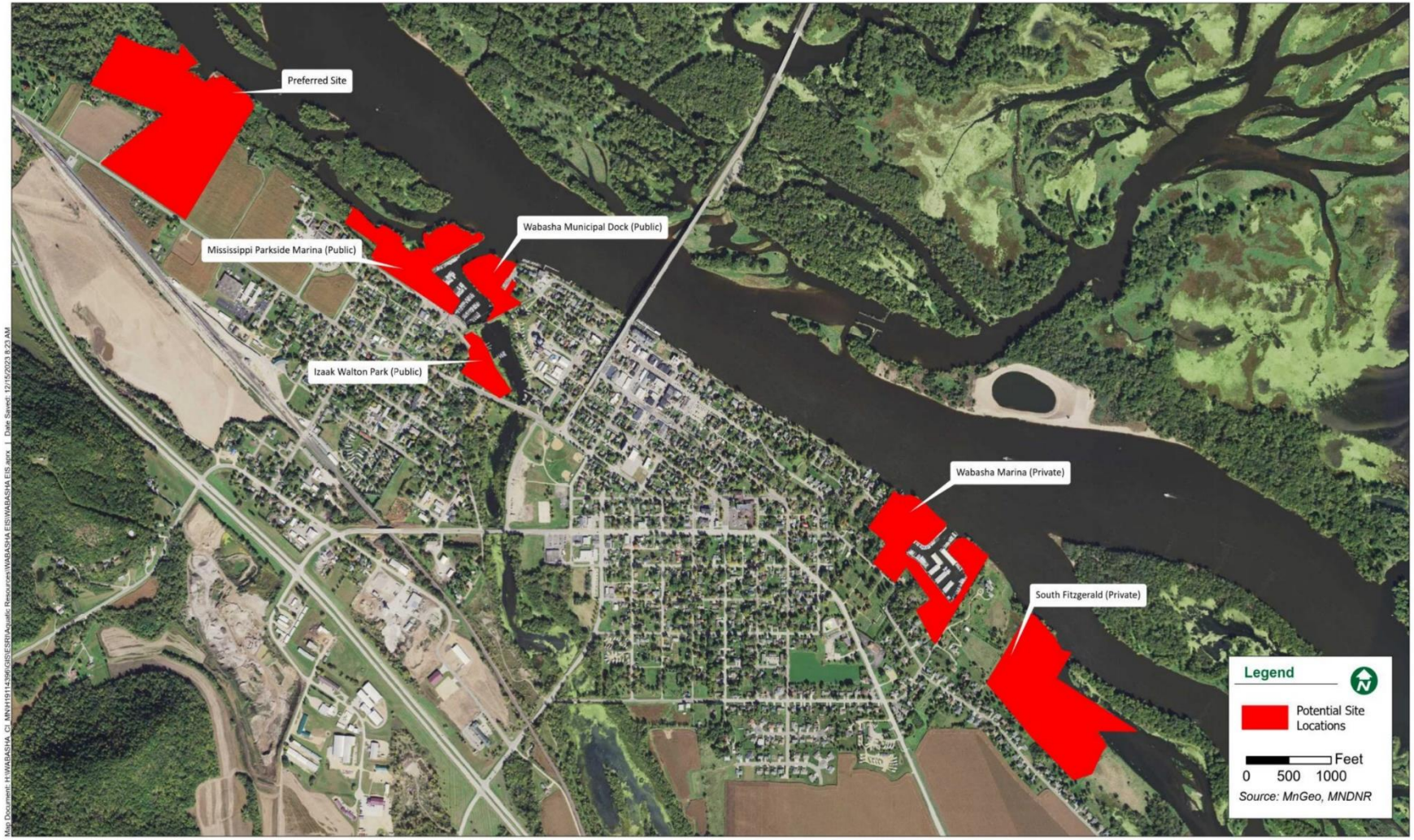


Exhibit 3B. Alternate Location 5: South Fitzgerald



Exhibit 3C. Northern Alternate Location Haul Routes

Wabasha Barge Facility
City of Wabasha, MN

Exhibit: Northern Haul Routes
April 2024

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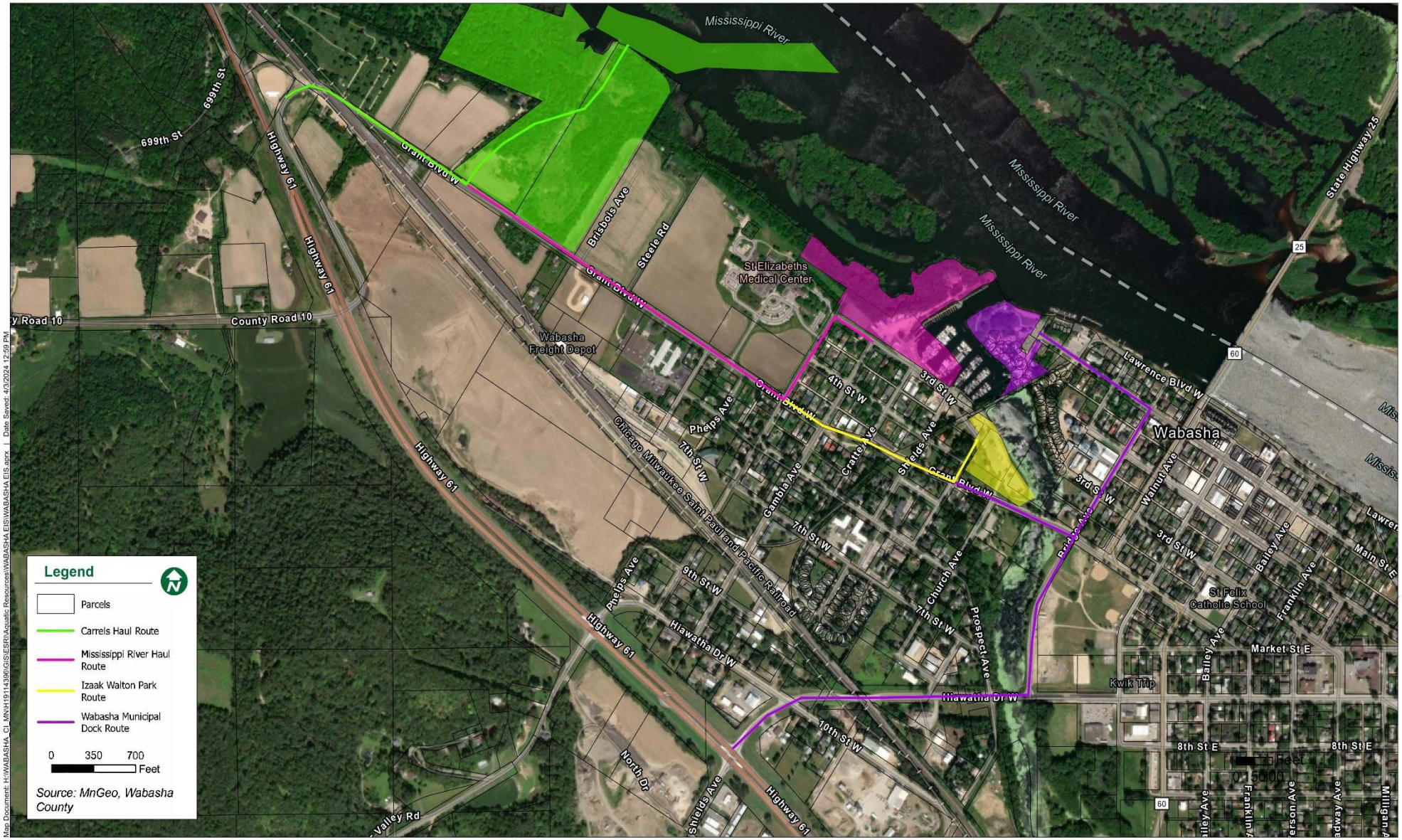

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Exhibit 3D. Southern Alternate Location Haul Routes

Wabasha Barge Facility
City of Wabasha, MN

Exhibit: Southern Haul Routes
April 2024

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3.2.2 Modified Design/Layout and Scale/Magnitude

The preliminary planning phases for the proposed project involved the exploration of various design and layout options. Adjustments, including the realignment of the access road and modifications to the dock infrastructure, were considered to optimize functionality and environmental compatibility.

The original project design envisioned the acquisition of the entire parcel, a larger dredging area, and an extensive dock structure to facilitate the handling of larger and/or multiple barges. Conceptual plans for this larger-scaled project can be found in **Exhibits 4A-4C.**

Onsite Alternative 1 – Alternate Material Storage (Exhibit 4A)

It was considered to build a holding area that could be used to store materials on-site prior to loading on trucks for off-site transport. This alternative may allow quicker offloading of materials from barges and decouple barge arrival from truck availability.

Compared to the preferred alternative, this alternative would require additional land acquisition and site improvements. Additional impacts would include increased permanent wetland impacts, habitat loss, and indirect air quality impacts due to increased tree removals. While wetland impacts and habitat loss are city priority areas, potential benefits for this alternative would include operational efficiency by separating barge and truck loading, and possible reduce truck congestion during loading operations.

- *Impacts:*
    - Additional 0.94 acres of wetland impacts.
    - Additional 4 acres of tree clearing

Onsite Alternative 2 – Alternate Dredging Area (Exhibit 4B)

Original project considerations included an expanded dredging area to increase side channel capacity for larger vessels and to allow greater maneuverability of barges entering and leaving the facility. Compared to the preferred alternative, this would increase the total dredging area and the potential need for greater maintenance dredging requirements. This would additionally increase impacts to aquatic habitat, Refuge lands, and adjacent shoreline areas.

- *Impacts:*
    - Additional 2.4 acres of impacts to the Mississippi River.
    - Increased impacts adjacent to USFWS refuge property.
    - Increased shoreline erosion

Onsite Alternative 3 – Alternate Site Layout (Exhibit 4C)

Early iterations for the proposed site layout and design included additional infrastructure, and expansion of the existing maintenance trail for truck access. Additional infrastructure considerations included additional buildings and utilities entering along the existing maintenance trail.

There is an existing dirt road at the site from the Mississippi River to 5th Grant Boulevard West. It was originally considered to improve this road and use it for truck transport. The current property owner has expressed their desire to maintain the southeast portion of the property for future development potential, thereby requesting the city reconsider where the access road and other infrastructure would be located. The previous access layout would reduce tree clearing by 0.9 acres, but would result in bisecting the property and delaying or eliminating future development potential.

- *Impacts:*

- Bisect current property parcel and reduce future development potential.
- Safety concern for the residence directly across 5th Grant Boulevard West from the site ingress/egress.

Onsite Alternative 4 – Use of Smaller Barges

The alternative of using smaller barges to minimize access channel dredging was reviewed. The options of using either 120-foot by 30-foot material barges (as the USACE and its contractors generally use to accommodate shallow water situations), as well as the preferred 195-foot by 35-foot deck material or open hopper barges were considered. The material capacity of the smaller barges is approximately 250 cubic yards, and the larger barge capacity is approximately 1,000 cubic yards. This would result in increased trips (double or more) to and from the temporary storage sites and would require the use of 6 barges instead of two.

- *Impacts:*
  - Increased barge traffic may lead to a higher risk of recreation impacts, collisions and other safety concerns.
  - Increased operational cost.
  - Increased fuel consumption.
  - Increase in carbon emissions due to increased trips.

Exhibit 4A: Alternate Material Storage Area

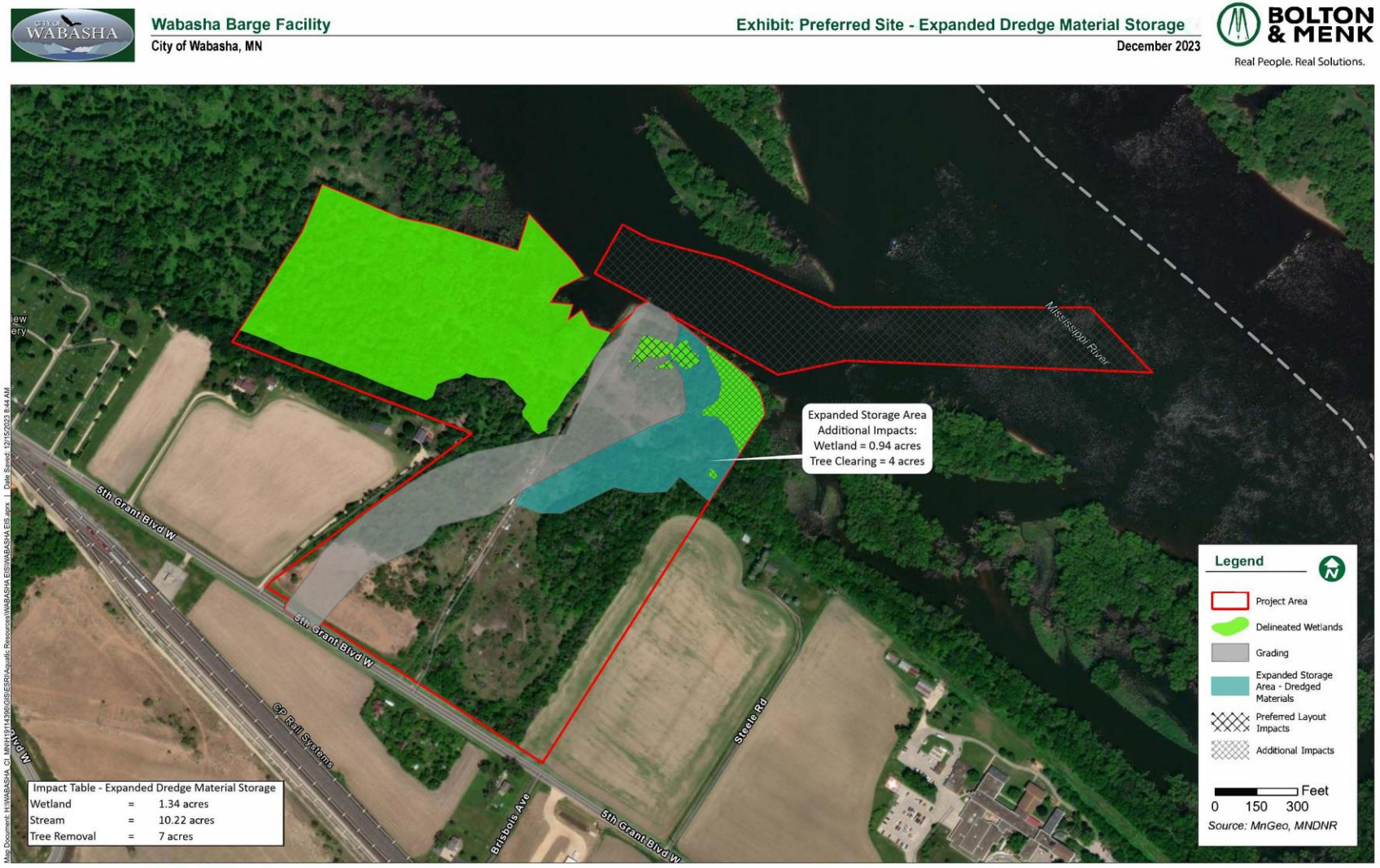


Exhibit 4B: Alternate Dredge Area



Exhibit 4C: Alternate Site Layout



3.2.3 Additional Considerations

Hydraulic pumping of sand material from temporary island sites was evaluated and eliminated based on the need for semi-permanent or permanent pumping and pipeline infrastructure requirements necessary to facilitate this process, additional area required at the proposed facility to decant the sand/water slurry, and annual costs that exceed the cost to move the material by mechanical methods as proposed.

Hydraulic pumping of sand requires conversion of the sand to a sand/water slurry consisting of 75% water and 25% sand. Converting the required 135,000 CY of sand that needs to be moved on an annual basis into a slurry would require 109 million gallons of water and a total volume of 136 million gallons of sand/water slurry. Pumping sand from the temporary island sites to the Carrels site would require pipelines ranging in diameter from 16-inches to 24-inches, with lengths ranging from 10,400-ft to 25,400-ft, depending on which island site is being unloaded. To avoid impacts to navigation, the pipelines would need to be submerged and anchored to the riverbed and would likely need to be removed and reinstalled on an annual basis. The estimated cost of the pumping operation is estimated to range from $3.8 to $9.0 million on an annual basis, depending on which island is being pumped in a given year, and an approximate cost of $63.3 million over a 10-year period. This cost is based on:

Island	Annual Volume (KCY)	Assumed Max Pipeline Length (ft)	Initial Mob.	Cost Per CY to get to Carrels facility	Demob Final	Total Cost Each Area Independently
Crats	135	10,500	$400,000	$23.94	$264,000	$3,895,900
Teepeeota	135	19,500	$400,000	$50.70	$264,000	$7,508,500
Grand Enc	135	24,000	$400,000	$62.40	$264,000	$9,088,000

This is compared to an annual operations cost of $2.8 million and $28 million over 10 years for the preferred alternative.

After pumping to shore, the sand/water slurry would need to be decanted onshore prior to loading it onto trucks. To avoid erosion and sediment issues at the decanting site, the most feasible way to decant the slurry is through infiltration. As noted above, the volume of water to be infiltrated from the sand/slurry mix is 109 million gallons. Using a design infiltration rate of 0.45 in/hr, based on soil types found at the proposed facility site (hydrologic soil group B), and an expected annual operating period of 6 months (May-October), the required infiltration area would be approximately 9.3 acres. Accounting for the required access road, truck loading and turnaround area, and drainage and stormwater treatment facilities, the total footprint of the facility would be approximately 17 acres, which is double the footprint of the proposed facility at approximately 8.5 acres. The feasibility of this alternative assumes that local groundwater tables are at a level such that groundwater mounding cause by such a large volume of infiltration on an annual basis would not reduce the assumed design infiltration rate at the site, which may not be the case. It also assumes that such groundwater mounding would not affect any adjacent private drinking water wells, which also may not be the case.

Overall, this alternative was rejected due to the questionable feasibility of infiltration at the site combined with costs exceeding 225% of the preferred alternative.

3.3 Description of Preferred Alternative

The Preferred Alternative includes dredging an access channel from the Mississippi River main channel, creating a barge docking facility and area for material off-loading, and hauling all materials off-site for use in construction-type activities or to storage sites. Work elements associated with the Preferred Alternative include:

- Dredging an access channel from the main Mississippi River navigation channel to the proposed dock area. This will be performed by either hydraulic or mechanical dredging techniques and include deepening the side channel to enable barge traffic to access the proposed fleeting area for loading and unloading material.
- Dredging an area to accommodate barge maneuvering and docking. This will be performed by either hydraulic or mechanical dredging techniques and include widening the area immediately adjacent to the proposed fleeting area for improved barge maneuverability.
- Initial dredge material offloaded at the site will be used to regrade the proposed area and to ensure the access road and temporary storage locations are removed from the 100-year floodplain.
- Construct the barge terminal pad and access road. This will include constructing a sheet pile dock face and upstream/downstream steel pipe pile clusters for barge mooring and maneuvering system. Additionally, the access road off of County Road 59 (5th Grant Boulevard West) will be improved for truck and vehicle traffic hauling material to and from the proposed barge mooring site.
- Construct footings for conveyors and hoppers for material handling and loadout. These will be located immediately adjacent to the barge terminal pad to enable loading and unloading material from moored barges.
- Install electric, sewer, and water utilities to the project site. Extend city utilities to the project site to ensure adequate operations for the proposed project.
- Install a loading scale and construct a scale house/field office building (proposed future action).

Final design and construction plans will be completed following environmental review and incorporation of any identified avoidance, minimization, or mitigation measures required.

EIS analyses herein are performed to assess the potential for the construction and operation of the Proposed Project (“Preferred Alternative”) to result in significant adverse impacts.

As discussed in Section 2.1, “Project Description,” dredging of the main navigation channel and all other activities performed by USACE under the Section 217(d) agreement related to the maintenance of the Mississippi River navigation channel are federal actions, considered separate from the proposed project.

4. SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPACTS

4.1 SEE Assessment

This section provides a comprehensive assessment of the potential social, economic, and environmental (SEE) impacts associated with the proposed Wabasha Barge Facility project and adheres to the content requirements outlined in Minnesota Rules 4410.2300.

A systematic evaluation process ensures informed decision-making and analyzes impacts for the following scenarios:

Existing Conditions: This establishes the environmental, social, and economic baseline for the project site and surrounding areas.

No-Build Alternative: This explores the continuation of current practices, evaluating the consequences of not constructing the barge facility.

Preferred Alternative: The environmental impacts associated with the proposed project, including construction, operation, and maintenance activities will be addressed for the preferred alternative.

Preferred Alternative Mitigation Measures: Based on the impacts addressed for the preferred alternative, this subsection will identify potential mitigation requirements and opportunities to reduce significant impacts.

Alternate Sites: Several alternative locations were evaluated to identify potential impacts to compare with the Preferred Alternative. This comparative analysis informs the decision on the most suitable location.

Alternate Design/Magnitude (if applicable): This review may not apply to all the SEE factors and will be addressed when the project design or magnitude causes analysis is warranted.

The EIS provides a succinct discussion of potentially significant adverse or beneficial effects for each identified alternative, considering the importance of the impact and its relevance to decision-making. Data and analyses are commensurate with this approach.

While this section identifies reasonable mitigation measures for the preferred alternative, Chapter 6 is dedicated to providing this information in table format and presented in a clear and concise manner.

4.2 Cover Types

The following cover types were identified relevant to the preferred alternative.

Table 2: Cover Types – Proposed Barge Facility Site

Cover Type	Before (acres)	After (acres)
Wetlands	0.4	0.0
Deep Water/Streams	0.0	0.0

Cover Type	Before (acres)	After (acres)
Wooded/Forest	2.7	0.0
Brush/Grassland	0.4	0.0
Cropland	0.0	0.0
Lawn/Landscaping	0.0	0.0
Impervious Surface	4.7	8.0
Stormwater Pond/Ditch	0.0	0.1
Other (Barge Docking Area)	0.0	0.1
TOTAL	**8.2**	**8.2**

Existing and proposed cover type acreage estimates for the 8.2-acre Proposed Barge Facility site are based on the National Land Cover Database (NLCD), aerial photo interpretation, wetland delineations, and the conceptual site layout. Changes to land cover will only occur within the 8.2-acre Proposed Barge Facility site, and the remaining portions of tax parcels R27.00004.00 and R27.00005.03 would maintain their existing condition. Acreages are estimates and subject to change based on further site planning and project development.

The existing gravel driveway, which is classified as "Developed" in the NLCD, was considered an impervious surface. The proposed condition assumed the aggregate surfaces associated shown on the proposed site plan along with the remaining portions of the existing gravel driveway are considered impervious for the "After" condition.

4.2.1 Green Infrastructure and Trees

4.2.1.1 Existing Conditions

The existing 8.2-acre Proposed Barge Facility site includes approximately 2.7 acres of tree cover, 0.4 acres of wetlands, 0.4 acres of pervious brush/grassland areas, and 4.7 acres of impervious surfaces within the proposed project area.

4.2.1.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the Proposed Barge Facility site land cover as indicated in Table 2, "Cover Types – Proposed Barge Facility Site." However, if the preferred alternative is not used, the USACE will focus on their other tier project sites, one of which is Tier 4, the use of this site as a temporary off-load site creating the same level of tree loss as described in the preferred analysis.

4.2.1.3 Preferred Alternative Assessment

The City intends to purchase only the 8.2-acre portion of the Study Area that is necessary for the Proposed Barge Facility. The remaining areas would continue under private ownership. In order to construct the barge terminal, tree coverage within the proposed 8.2-acre barge facility site would be reduced from 2.7 acres to 0.0 acres. Additional brush/grassland areas would be removed and soils compacted. Dredge material removed from the access channel will be incorporated as fill material to raise the proposed access road above the 100-year floodplain. Impervious surfaces would increase to

accommodate the proposed access road and other hard-structure surfaces to facilitate barge loading and off-loading operations, including truck traffic in and out of the Proposed Barge Facility site. 0.4 acres of wetlands would be impacted. A detailed discussion of wetland impacts, and associated mitigation measures is included in Section 4.13.2, "Wetlands."

4.2.1.4 Preferred Alternative Mitigation Measures

The City of Wabasha will meet all required permits and approvals and ensure the timing of tree removal does not interfere with bat roosting season. Stormwater runoff will be directed to an infiltration area on site to reduce impacts from additional impervious surface area. Additional trees can be planted in the surrounding site area to replace the removed trees and provide additional screening from the project to surrounding properties. No additional mitigation measures are included in project plans at this time.

4.2.1.5 Alternate Site Assessment

There are no tree cover impacts for the two southernmost sites as neither alternative site has any existing trees. The Wabasha Marina was completed graded and is partially developed. Any trees that were on the site were removed during the original development. The South Fitzgerald site has no trees on the site. The Izaak Walton Park, Wabasha Municipal Dock and Mississippi Parkside Marina sites are developed park sites and marinas where tree cover has been removed during the development of these areas. Therefore, additional tree removal would be limited in these three sites to develop the proposed project.

4.2.1.6 Alternate Design/Magnitude Assessment

Expanded material storage on the proposed site would increase impacts to vegetation and result in further tree removals within the Carrels Site. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 4 acres of tree clearing
Alternate Dredging Areas	No additional tree clearing
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	No additional tree clearing

4.3 Economic Environment

4.3.1 Existing Conditions

Historic aerial imagery indicates that gravel mining occurred on the Study Area, beginning in earnest in 1949 and continuing into the early 1970s. By 2010, gravel mining had ended, and trees have primarily reclaimed the filled gravel pits. The Study Area is currently comprised of vacant woodland, appears to have been used for the dumping or storage of scrap metal, construction material, and various vehicle parts, and does not contribute to the existing economic environment within the City of Wabasha.

4.3.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the vacant and undeveloped status of the project location and the City of Wabasha with regard to economic environment. The project site would not be used for any city or other improvements, or potential economic development opportunities and the city would lose the potential revenue streams from the agreement with the USACE.

4.3.3 Preferred Alternative Assessment

The current Wabasha Comprehensive Plan (2016-2035),[6] last amended July 6, 2021, lists the future land use of the project site as "Industrial." The Comprehensive Plan discusses Wabasha's unique location and opportunity for development of a commercial river port facility that would be used for commercial purposes including, but not limited to, the ongoing efforts by the Corps of Engineers in maintaining the Mississippi River 9-foot navigation channel. The implementation of the Proposed Project would support these goals outlined in the City of Wabasha's Comprehensive Plan and is anticipated to increase the community's economic vitality.

4.3.4 Preferred Alternative Mitigation Measures

The Proposed Project would not result in adverse impacts to the City of Wabasha's economic environment. Thus, no mitigation measures related to the economic environment are included in project plans at this time.

4.3.5 Alternate Site Assessment

Developing the Izaak Walton Park site for this project would eliminate the current recreational uses of the site as a park and city dock and would remove the existing city trail connection as the pedestrian bridge would need to be removed to widen the water channel for barge access. Converting the Wabasha Municipal Dock would eliminate the existing city park and campground area resulting in a total loss of the existing Mississippi Parkside Marina. Converting the Mississippi Parkside Marina for the proposed project would be a total taking of the existing marina business as well as the loss of the city dock at this location. The Izaak Walton Park, Wabasha Municipal Dock, and Mississippi Parkside Marina, hold year-round regional water-based events. Removing these recreational uses would significantly impact the economic vitality of the City of Wabasha. Developing the Wabasha Marina for the proposed project would eliminate the current commercial marina business and 23 seasonal homes created an economic loss for the City's current tax base. Developing the South Fitzgerald site would not impact the existing vacant site.

4.4 Environmental Justice

According to the EPA's Environmental Justice Screening and Mapping Tool (EJScreen), approximately 38 percent of the population located within a ¼-mile radius of the Proposed Project is considered low income, and approximately one percent of the population located within a ¼-mile radius of the proposed project is considered minority population/people of color. Additional demographic information is included in Appendix B. All identified adverse impacts that would result from the

[6] City of Wabasha. 2023. Wabasha Comprehensive Plan, 2016-2035. https://www.wabasha.org/wp-content/uploads/Final-Plan-2016.pdf, accessed July 2023.

implementation of the Proposed Project are capable of being mitigated and are expected to be reduced significantly with appropriate measures. These measures are outlined in Section 5, "Mitigation Measures." No disproportionately high environmental justice impacts are anticipated to occur as a result of the Proposed Project.

4.5 Utilities

4.5.1 Existing Conditions

The Project Site is not currently served by the City of Wabasha's existing public utilities system.

According to the City of Wabasha's Comprehensive Plan (2016-2035), an existing 6-inch water main runs along 5th Grant Boulevard West, immediately south of the Project Area. Similarly, a mixed 6-inch and 10-inch sanitary sewer pipe also runs along 5th Grant Boulevard West, immediately south of the Project Area.

There are currently no electrical utilities running to or within the Project Site.

4.5.2 No-Build Alternative Assessment

In the No-Build Alternative, it is assumed that the physical condition of the Project Site generally would resemble existing conditions and remain vacant without utilities expanding inside the parcel boundaries.

4.5.3 Preferred Alternative Assessment

The implementation of the Proposed Project would require the extension of the City of Wabasha's existing sewer, water, and electrical utilities to the Project Site. Sanitary sewer extension may include the installation of a lift station on a portion of the Project Site.

According to the City of Wabasha's Comprehensive Plan (2016-2035), the City's existing public utilities system (water, wastewater, and stormwater) is well-positioned and of adequate size to support the required expansion into the growth areas. The Comprehensive Plan anticipates extending the City's existing water and wastewater service area to include the Project Site. There are no expected impacts to the City's water or wastewater systems due to the slight usage increases as part of the proposed project.

Electric utilities would be required and coordinated through Northern States Power Company, whose parent company is Xcel Energy. In 2022, Xcel reported it used 53% non-carbon sources for its energy mix and has a goal of 100% net-zero emissions by 2050.

4.5.4 Preferred Alternative Mitigation Measures

The Proposed Project would not result in adverse impacts to the City of Wabasha's utilities system. No mitigation measures related to utilities are included in project plans at this time.

4.5.5 Alternate Site Assessment

Public water and sewer and electrical are available for the Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina alternative sites but extensions from the current public utilities through the sites would be necessary for the development of the proposed project. The Wabasha Marina and South Fitzgerald sites do not have existing water or sewer services available on site. A public

extension from Rustic Lane and/or Main Street East would have to be completed to serve the Wabasha Marina. A public extension from Angelique Avenue or Dugan Avenue would have to be completed to serve the South Fitzgerald site.

4.6 Land Use

4.6.1 Property and Right of Way Needs

4.6.1.1 Existing Conditions

The existing Project Site is currently privately owned. The current Wabasha Comprehensive Plan (2016-2035), identifies the Project Site as an opportunity for future industrial development and land use.

4.6.1.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the project location with regard to property and right-of-way needs. The City of Wabasha would not purchase the Project Site, and the Project Site would maintain its existing vacant condition. Unless the USACE were to utilize this site as outlined in their Tier 4 alternative as a temporary site where an agreement with the private owner and construction of a temporary entrance road is required.

4.6.1.3 Preferred Alternative Assessment

Under the Preferred Alternative, the City of Wabasha would own the Project Site and contract out the port operations and transportation of materials.

As part of the Proposed Project, a new entrance road would be constructed along 5th Grant Boulevard West to allow trucks to access the new site. Trucks accessing the site would follow a specific truck route to and from the site, which will take them from the project site on 5th Grant Boulevard West, to Trunk Highway 61 (TH 61), and then onto Shields Avenue.

Because the City of Wabasha would own the Project Site under the Preferred Alternative, no additional property and right-of-way needs are anticipated during the construction and/or operation of the Proposed Project.

4.6.1.4 Preferred Alternative Mitigation Measures

Prior to project construction, the City of Wabasha will collaborate with the current landowner, who is identified as a willing seller, to determine fair market value for purchase of the Project Site. While this DEIS addresses the entirety of the two parcels, the City only intends to purchase the 8.2-acre portion that is necessary for the Proposed Barge Facility. The remaining areas would continue under private ownership.

4.6.1.5 Alternate Site Assessment

The City of Wabasha own the Izaak Walton Park site. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Maiden Avenue which is an undersized local roadway that would need to be improved to allow for the proposed heavy trucks

needed to haul materials from the barge terminal site. In addition, the haul route would travel north bound on 5th Grant Boulevard West crossing the St. Elizabeth's Hospital emergency entrance.

The City of Wabasha owns the Wabasha Municipal Dock. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Main Street and turn south on Bridge Avenue then west on Hiawatha Drive. Both Main Street and Bridge Avenue would have to be improved to allow for the heavy truck traffic necessary for the barge terminal use.

The City of Wabasha owns the Mississippi Parkside Marina. No transfer of ownership would be necessary for the proposed development. The barge facility haul route would start on Campbell Avenue which is an undersized local road that would have to be improved to allow for the use of heavy trucks. In addition, the haul route would travel north bound on 5th Grant Boulevard West crossing the St. Elizabeth's Hospital emergency entrance. The Northern Alternatives haul routes can be seen in **Exhibit 3C** including the Izzak Walton Park, Wabasha Municipal Dock and the Mississippi Municipal Dock.

The Wabasha Marina site is owned by Cervidae LLC., who is not identified as a willing seller. The City would have to negotiate a fair market value and purchase the project site. The barge facility haul route would start at Angelique Avenue which currently is not constructed to the site and travel west along 12th Street E to Pembroke Ave. Angelique Avenue and 12th Street East would have to be improved to allow for the use of heavy trucks, which is approximately 1.21 miles of right-of-way improvements along 85 single family residential homes.

The South Fitzgerald site is owned by Edward and Jolene Greenheck, Riverview Terrace Property Owners Inc, and the United States of America who are not identified as willing sellers. The City would have to negotiate a fair market value and purchase the project sites. The barge facility haul route would start at Dugan Avenue which is not constructed at this time. Travel westward on River Drive South then south and west along Angelique Avenue and 12th Street East. All of these roadways would have to be improved to allow for the barge facility heavy truck traffic use, which is approximately 1.31 miles of right-of-way improvements along 95 single-family residential homes. The Southern Alternatives haul routes can be seen in **Exhibit 3D** including the Wabasha Marina and South Fitzgerald sites.

4.6.2 Land Use, Plans, Zoning, and Special Districts/Overlays

4.6.2.1 Existing Conditions

The Project Site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha, Wabasha County, Minnesota (Section 30, Township 111N, Range 010W). These parcels are presently privately owned. The City anticipates purchasing the requisite area to house the facility from a willing seller prior to construction activities.

The Project Site is bounded by the Mississippi River to the north and agricultural land to the east and west. 5th Grant Boulevard West (Wabasha County Road 59), which borders the Project Site to the south, provides connection to downtown Wabasha and U.S. Highway 61. The Upper Mississippi River National Wildlife and Fish Refuge ("Refuge") has island and adjacent property adjacent to the proposed project area.

The Project Site is comprised of vacant woodland and appears to have been used for the dumping or storage of scrap metal, construction material, and various vehicle parts. According to historic aerial imagery—which is available for limited years from 1939 to the present—gravel mining occurred on the Project Site, beginning in earnest in 1949 and continuing into the early 1970s. By 2010, gravel mining had ended, and successional trees have reclaimed the filled gravel pits.

In July 2020, Bolton & Menk, Inc., conducted a wetland delineation that identified 16.1 acres of Type 1 Seasonally Flooded Wetlands located within the northernmost portions of the Project Site.

South of the Project Site, across 5th Grant Boulevard West, is predominantly agricultural land. Some of the agricultural lots adjacent to the Project Site contain houses, however the nearest lots that are primarily of residential use are located approximately ¼ mile southeast of the Study Area. All of the parcels south of the project site from the northern city limit to Rocque Avenue between 5th Grant Boulevard West to U.S. Highway 61 are zoned Industrial.

The two parcels that comprise the Project Site are zoned R-1, "Low-Density Residential" and RC "Residential Conservancy." Both zoning districts are intended to allow for the use and development of residential structures, yards, and directly related complimentary uses at a lower density than traditionally developed in the originally platted cities. The parcels bordering the project site to the east and west are also zoned R-1. The parcels located south of the project site, across 5th Grant Boulevard West, are zoned I, "Industrial."

The Project Site is also located in the S-1 and S-2 Shoreland Overlay Zones. Shoreland Overlay Zoning Ordinances typically contain a variety of provisions that guide land development and activity in shorelands with the goal of protecting surface water quality, near-shore habitat, and shoreland aesthetics. S-1 and S-2 Shoreland Overlay Zones are intended to provide standards for shoreland areas within the city that are primarily undeveloped. The proposed development will comply with all the standards within the Shoreland Overlay Zone. The Project Site is located within the FEMA 100-Year floodplain. The Project Site is not located within a Drinking Water Management Supply Area (DWSMA)—however, the lots directly south of the project site, across 5th Grant Boulevard West, are located within a DWSMA.

4.6.2.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the project location and surrounding areas with regard to land use, plans, zoning, and special districts/overlays. Unless the USACE were to utilize this site as outlined in their Tier 4 alternative as a temporary off-load site. The USACE would not be required to rezone or process a conditional use permit for the major traffic generator of the use.

4.6.2.3 Preferred Alternative Assessment

The proposed development of a barge port facility under the Preferred Alternative is consistent with the current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021. The Comprehensive Plan designates the future land use of the project site as "Industrial" and discusses Wabasha's unique location and opportunity for development of a river port facility that would be used for commercial purposes.

Of the 26.8- acre Study Area, approximately 8.2 acres would be used and developed for the proposed project, leaving the remaining area in its current undeveloped state.

The preferred project site is zoned RC (Residential Conservancy) and R1 (Low Density Residential). A public hearing to rezone these parcels is scheduled for June 11, 2024, with a final review by City Council scheduled for July 2, 2024. Prior to the construction of the barge terminal, a Major Traffic Generator CUP (conditional use permit) will be necessary for the expected heavy truck traffic that will be generated by the use.

The preferred site has a Shoreland Overlay Zone of S-1 adjacent to the Mississippi River and S-2 throughout the rest of the project area. The proposed development will comply with all the standards within the Shoreland Overlay Zone.

The preferred alternative site is adjacent to Refuge lands and within the Floodway and 100-year floodplain. The Preferred Alternative would also involve dredging a portion of the Mississippi River for barge traffic to access this barge facility. A portion of that material, once dewatered would be used as fill to elevate the proposed project's access road and facilities out of the 100-year floodplain.

Since the City's top priority is ensuring the safety of Wabasha residents, the preferred project site will allow for the truck transport of dredged material directly to County and MnDOT highway truck routes, avoiding significant truck traffic through residential areas of the city, and minimizing the safety concerns of Wabasha residents with zero impacts to surrounding residential uses and no residential uses along the truck route.

4.6.2.4 Preferred Alternative Mitigation Measures

Proposed fill – from side channel dredging and amended with other fill material as needed – would raise the project site to an elevation of approximately 678.6 feet to 680.5 feet, thereby removing the access road and other material transfer infrastructure from the 100-year floodplain. The dredged material will be evaluated prior to use as fill. Additionally, a "No-Rise" Certification is anticipated and will be submitted to FEMA with the project design to document no impact to flood elevations due to placement of fill within the Mississippi River floodplain (Appendix C). Wetland impacts will be mitigated and permitted through USACE and MNDNR application processes.

Upon completion and approval of the EIS, the City will initiate a traffic generator conditional use permit application to review the haul route and anticipated heavy truck traffic trips generated by the barge terminal use. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone.

Due to the proposed project being adjacent to Refuge lands, construction and operational control methods would be enacted to include, but not limited to no wake barge and boat traffic, prohibit "nose-in" operations for barge maneuvering, and continue coordination with Refuge staff to periodically assess site status and identify any future mitigation requirements.

All direct and indirect impacts to other areas mentioned above will be specifically addressed later in this document. The City of Wabasha will meet all required permitting standards, zoning regulations, and ordinances related to industrial site development.

4.6.2.5 Alternate Site Land Use and Zoning Assessment

The Izaak Walton Park site is approximately 5.5 acres with land use designations of Open Space, Institutional, and Medium Density Residential and is zoned R2 (Medium Density Residential). The site is used as a public park and boat docks. The surrounding land use is residential. The site is within the S-3 Shoreland Overlay Zone and completely within the 100-Year Floodplain. To construct the proposed project, the site would have to complete a land use plan amendment from Open Space, Institutional, and Medium Density Residential to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from R2 to Industrial, and a major traffic generator CUP. The proposed project is not compatible with the existing land uses and zoning surrounding the site.

The Wabasha Municipal Dock site is approximately 7.03 acres with a land use designation of Open Space and is zoned R2 (Medium Density Residential). The site is used as a public park and campground. The surrounding land use is low and medium density with full-time and seasonal residential. The site is within the S-3 Shoreland Overlay Zone and completely within the 100-Year Floodplain. To construct the proposed project, the site would have to complete a land use plan amendment from Open Space to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from R2 to Industrial, and a major traffic generator CUP. The proposed project is not compatible with the existing land uses and zoning surrounding the site.

The Mississippi Parkside Marina site is approximately 16.88 acres with land use designations of Open Space and General Commercial and is zoned RC (Residential Conservancy) and R2 (Medium Density Residential). The site is used as a city boat dock and campground. The surrounding land use is largely low density residential and St. Elizabeth's Hospital to the southwest. The site is within the S-1 and S-3 Shoreland Overlay Zone and is within the Floodway along the Mississippi River and portions of the properties are within the 100-Year Floodplain. To construct the proposed project, the site would have to complete a land use plan amendment from Open Space and Commercial to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from RC and R2 to Industrial, and a major traffic generator CUP. The proposed project is not compatible with the existing land uses and zoning surrounding the site.

The Wabasha Marina site is approximately 15.84 acres with a land use designation of General Commercial and is zoned GC (General Commercial). The site is used as a commercial boat dock and as seasonal residential. The surrounding land use is low density residential. The site is within the S-3 Shoreland Overlay Zone. To construct the proposed project, the site would have to complete a land use plan amendment from Commercial to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from GC to Industrial, and a major traffic generator CUP. The proposed project is not compatible with the existing land uses and zoning surrounding the site.

The Southern Fitzgerald site is approximately 30.5 acres with a land use designation of Low Density Residential and is zoned RC (Residential Conservancy) and RRGT (Rural Residential Growth Transitional). The site is vacant. The surrounding land use is the Mississippi River and low density residential. The site is within the S-1 and S-2 Shoreland Overlay Zone and withing the Floodway and 100-Year Floodplain. To construct the proposed project, the site would have to complete a land use plan amendment from Low

Density Residential to Industrial, requiring an amendment to the Land Use Plan Map within the Comprehensive Plan, as well as competing a rezone from RC and RRGT to Industrial, and a major traffic generator CUP. The proposed project is not compatible with the existing land uses and zoning surrounding the site.

4.6.2.6 Alternate Site Residential Impact and Safety Assessment

Given that safety is a priority for the City, the residential impacts for the surrounding properties from the barge terminal use and the haul routes for all alternative sites were carefully evaluated as the use will generate an estimated 100 truck trips in and out of the developed site per day. As can be reviewed in **Table 1 – Alternate Site Assessment** and the proposed Northern and Southern Haul Route **Exhibits 3C** and **3D**.

The residential impacts generated for the northern alternative sites of the Izaak Walton Park, Wabasha Municipal Dock or the Mississippi Parkside Marina would have significant impacts for 17-39 homes either surrounding the project sites or along the haul routes. See the Northern Haul Routes **Exhibit 3C**. In addition, all of the northern sites would most likely direct the truck traffic away from downtown from the project sites along 5th Grand Boulevard West requiring that they cross the St. Elizabeth's Hospital emergency entrance.

The two southern alternative sites, Wabasha Marina and the South Fitzgerald site, would impact 85 and 95 residential homes respectfully either adjacent to the site or along the haul routes. See the Southern Haul Route **Exhibit 3D**.

4.6.3 Community and Critical Facilities

4.6.3.1 Existing Conditions

The Riverview Cemetery is located approximately 250 feet west of the Study Area, beyond the agricultural land that is adjacent to the Project Site. An active freight railroad line operated by Canadian Pacific Railway runs from the northeast to the southwest, between 5th Grant Boulevard West and U.S. Highway 61. A small rail yard is located approximately 400 feet southeast of the Project Site. The Gunderson St. Elizabeth's Hospital is located approximately 0.40 miles southeast of the Project Site.

4.6.3.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the Study Area and surrounding areas with regard to community facilities and critical facilities.

4.6.3.3 Preferred Alternative Assessment

The preferred site is a vacant parcel with no on-site community or critical facilities and will not directly impact any of the identified community or critical facilities surrounding the site. Indirect impacts may include increased truck traffic along 5th Grant Boulevard West, as well as minor, temporary noise effects during construction and loading/off-loading activities, although noise is anticipated to have minimal impact. The haul route for the site will direct all truck traffic north along 5th Grant Boulevard West away from St. Elizabeth's Hospital. For more information on traffic-related impacts, please refer to Section 4.20.1, "Traffic." For more information on noise-related impacts, please refer to Section 4.19, "Noise."

4.6.3.4 Preferred Alternative Mitigation Measures

The City of Wabasha will meet all required permitting standards, zoning regulations, and ordinances related to the development of a commercial port facility. Standard construction noise mitigation practices will be used to minimize any potential impacts to surrounding facilities.

4.6.3.5 Alternate Site Assessment

Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina contain numerous community facilities and are the primary sites for multiple local and regional water-based events year-round. To develop the proposed use on any of these sites would eliminate all on-site community facilities. In addition, the Wabasha Municipal Dock site is adjacent to the Northern States Power property located at 701 Main Street West. Development adjacent to this critical facility would have to be addressed.

The Wabasha Marina and South Fitzgerald sites do not contain public community or critical facilities. Though the Wabasha Marina does contain commercial community accessible facilities that would be eliminated if the project were to develop on site.

4.6.4 Parks, Open Space, and Recreational Facilities

4.6.4.1 Existing Conditions

According to the City of Wabasha's Comprehensive Plan (2016-2035) and the Parks and Trails Master Plan adopted on 11/2022several trails and recreational facilities are located near the Proposed Project:

- The Nelson-Trevino Bottoms Natural Area is located across the Mississippi River, approximately 0.25 miles northeast of the Study Area.
- The City of Wabasha's Beach Park is located approximately 0.60 miles southeast of the Study Area.
- The Mississippi River Trail, a bike and pedestrian trail, is located within 0.5 miles of the Study Area.
- A City of Wabasha five-mile bike and pedestrian trail is located just east of the Study Area and travels through the Gunderson St. Elizabeth's Hospital parcel.
- Upper Mississippi River National Wildlife and Fish Refuge begins just up-river of the Study Area and stretches 261 river miles from Wabasha, Minnesota to Rock Island, Illinois.
- The Mississippi River Water Trail is located adjacent to the Study Area on the Mississippi River. This trail serves as a navigational guide for recreational travel on the river via boat or other watercraft, and highlights amenities and key destinations.
- The Great River Road, a National Scenic Byway, travels along the Mississippi River through ten States, and follows Highway 61 through the City of Wabasha.
- The National Eagle Center, a heavily-trafficked outdoor recreational and educational facility, is located approximately 1.5 miles from the Study Area.

In general, this area of the Upper Mississippi River has a substantial amount of fishing and boating activities. Small boats frequently use this area to access the side channel to the west of Drury Island, and there are also primitive camping sites on the interior of the island complex.

Additionally, the Study Area is located adjacent to the Upper Mississippi River National Wildlife and Fish Refuge. The Upper Mississippi National Wildlife and Fish Refuge is the longest national wildlife refuge in the lower 48 states, extending 261 miles from the Chippewa River in Wisconsin almost to Rock Island, Illinois. The Refuge is an Audubon designated Important Bird Area (ABA) and Ramsar designated Globally Important Bird Area. Lower Pool 4 of the Mississippi River is part of the Upper Mississippi National Wildlife and Fish Refuge which is managed by the USFWS. The USFWS also owns and manages adjacent land northwest of the Study Area.

4.6.4.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the existing status of the Study Area and surrounding areas with regard to available parks, open space, and recreational facilities.

4.6.4.3 Preferred Alternative Assessment

For discussion of impacts related to the Upper Mississippi River National Wildlife and Fish Refuge, Audubon-designated Important Bird Area, Lower Pool 4 of the Mississippi River, and other nearby natural and biologically-significant areas, please refer to Section 4.15.1, “Resources, Habitats, and Vegetation.”

The Proposed Project would not directly impact any of the identified trails or other land-based recreational feature as the site is currently vacant. Indirect impacts may include increased truck traffic along 5th Grant Boulevard West, potentially decreasing the semi-rural ambiance of this roadway. During construction and loading/unloading activities, noise may be a factor for persons participating in non-motorized recreational activities, immediately adjacent to the project location. For aquatic recreational users, an increase in barge traffic to and from the proposed project area will require increased vigilance to reduce impacts between barges and other boat – motorized or non-motorized – traffic.

4.6.4.4 Preferred Alternative Mitigation Measures

For discussion of mitigation measures related to the Upper Mississippi River National Wildlife and Fish Refuge, Audubon-designated Important Bird Area, Lower Pool 4 of the Mississippi River, and other nearby natural and biologically-significant areas, please refer to Section 4.15.1, “Resources, Habitats, and Vegetation.”

Appropriate road and waterway signage will identify this area as increased truck and barge traffic, respectively. Additionally, the contracted operator of the facility will be required to comply with City of Wabasha noise ordinances, and to confine operations to set days and times during the regular work week. This information will be clearly articulated to the contracted facility construction personnel and operators. During the lifespan of the Proposed Barge Facility, the City will routinely audit operations through an impact assessment to identify future additional mitigation requirements and recommendations.

4.6.4.5 Alternative Site Assessment

Of the five (5) alternatives, three sites; Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina are all active city-owned recreational areas with multiple recreational facilities.

Izaak Walton Park includes restrooms, 76 parking stalls with 4 handicap stalls, 15 picnic tables, a 120-people capacity picnic shelter, BBQ pit for large groups, drinking fountain, city docks for short and long-term rentals, city docs for non-motorized water access, and a 10' bike path connecting the public water access and the westside trails. The park includes the following activities: river activities, motorized and non-motorized boating, picnicking, large group events, fishing, and three public boat launch docks.

The Wabasha Municipal Dock (Rotary Beach Park) site includes a bathhouse and restrooms, 10' gazebo, walking paths, 20 parking stalls, picnic tables, two picnic shelters. The park site includes the following activities: swimming beach, non-motorized boating, natural play set, swing set, fishing, river and nature viewing, picnicking, community gathering for festivals, and a 10' bike path extending between 7th Street and Main Street within the vacated railroad ROW and a perimeter sidewalk.

The Mississippi Parkside Marina site includes a campground and RV sites, two boat launches, 60-70 boat docks, and parking for 60+ boats. The site includes the following activities: access to the water for two boat docks, fishing, camping, river and nature viewing, and community gathering for festivals.

The Wabasha Marina is a privately owned commercial marina with approximately 100 boat docks, one permanent home site, five (5) commercial boat storage buildings, and 23 seasonal homes with a plan for an additional 45 home sites in the near future.

The South Fitzgerald site is a vacant site with no recreational facilities.

Constructing the proposed barge terminal use on any of the developed alternative sites would eliminate all current uses for the site.

4.6.4.6 Alternate Design/Magnitude Assessment

If the smaller barges alternative is used, this would increase by two or three times the number of barge trips required for hauling material. This may impact recreational users of the river system both on the main and side channels.

4.7 Climate Trends and Impacts

4.7.1 Existing Conditions

Minnesota's climate is trending generally towards warmer and wetter conditions with more frequent intense precipitation events.[7] The location of the Proposed Project is within the Mississippi River – Winona Watershed. Data from the Minnesota Department of Natural Resources' Minnesota Climate

[7] Minnesota Department of Natural Resources. 2023. Climate Trends. Electronic document, https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html, accessed February 2023.

Explorer[8] tool shows both historical and projected future climate trends for this watershed. Historical data from 1895 to 2021 shows variable average temperatures and precipitation totals from year to year, as shown in the graphs below, and gives an impression of the existing climate conditions within the region. The historic trends for temperature and precipitation are:

- Average daily mean temperature of 44.25 degrees Fahrenheit with an increase of 0.17 degrees F per decade.
- Average daily maximum temperature of 54.39 degrees Fahrenheit with an increase of 0.10 degrees F per decade.
- Average daily minimum temperature of 34.11 degrees Fahrenheit with an increase of 0.25 degrees F per decade.
- Average annual precipitation of 32.26 inches with an increase of 0.57 inches per decade.

Wabasha County is currently considered to have a moderate heat exposure score compared to other counties in Minnesota (Exhibit 5, "Heat Exposure in Minnesota - Counties").[9] Trends of warmer temperatures may increase the risk of heat waves and vulnerability.

[8] Minnesota Climate Explorer. 2022. Minnesota Department of Natural Resources. Electronic resource, https://arcgis.dnr.state.mn.us/ewr/climateexplorer/main/historical, accessed October 2022.

[9] Minnesota Department of Health's Climate & Health Program and U-Spatial. 2019. Heat Vulnerability in Minnesota. Electronic document, https://maps.umn.edu/climatehealthtool/heat_app/, accessed March 2023.

Exhibit 5.A: Average Temperature

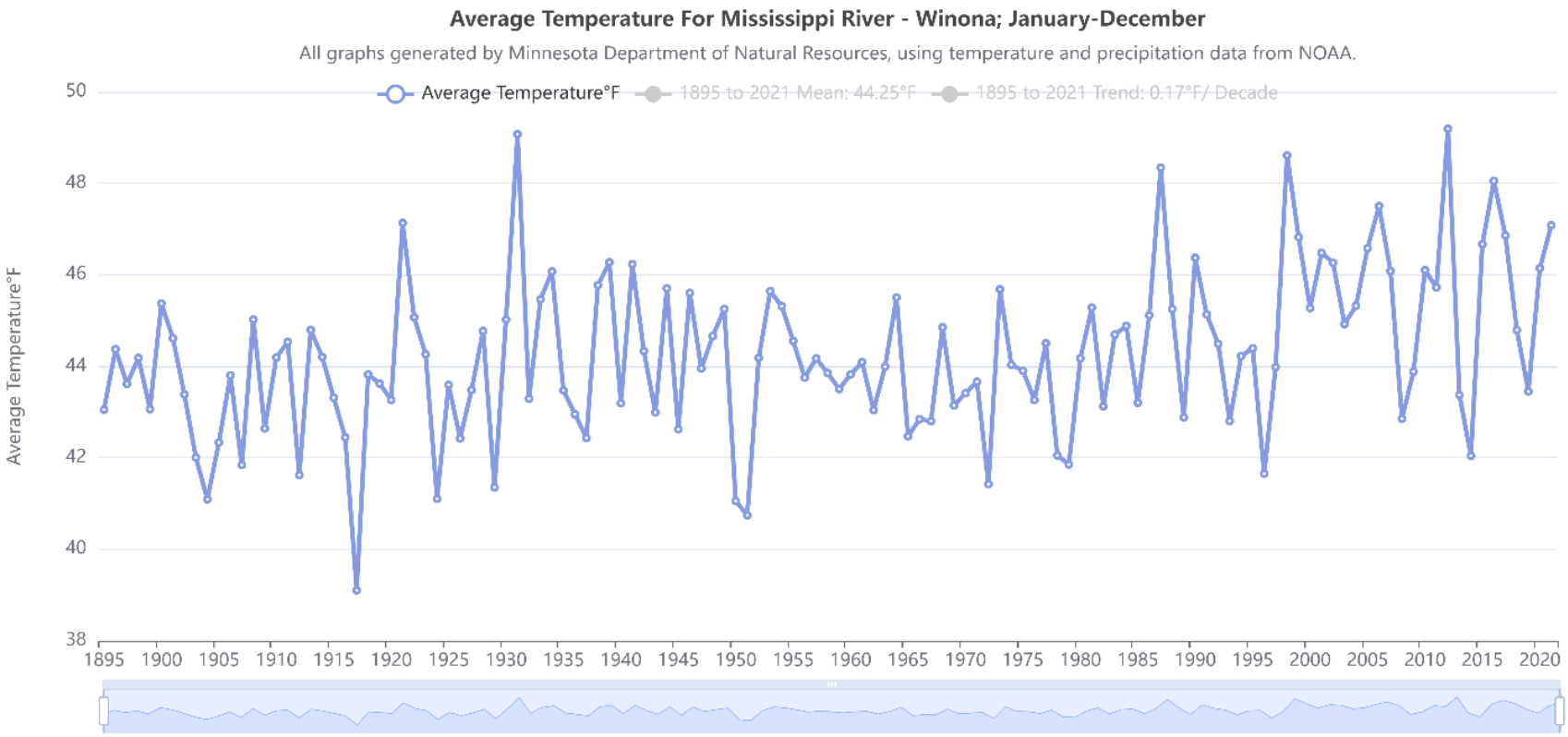


Exhibit 5.B: Maximum Temperature

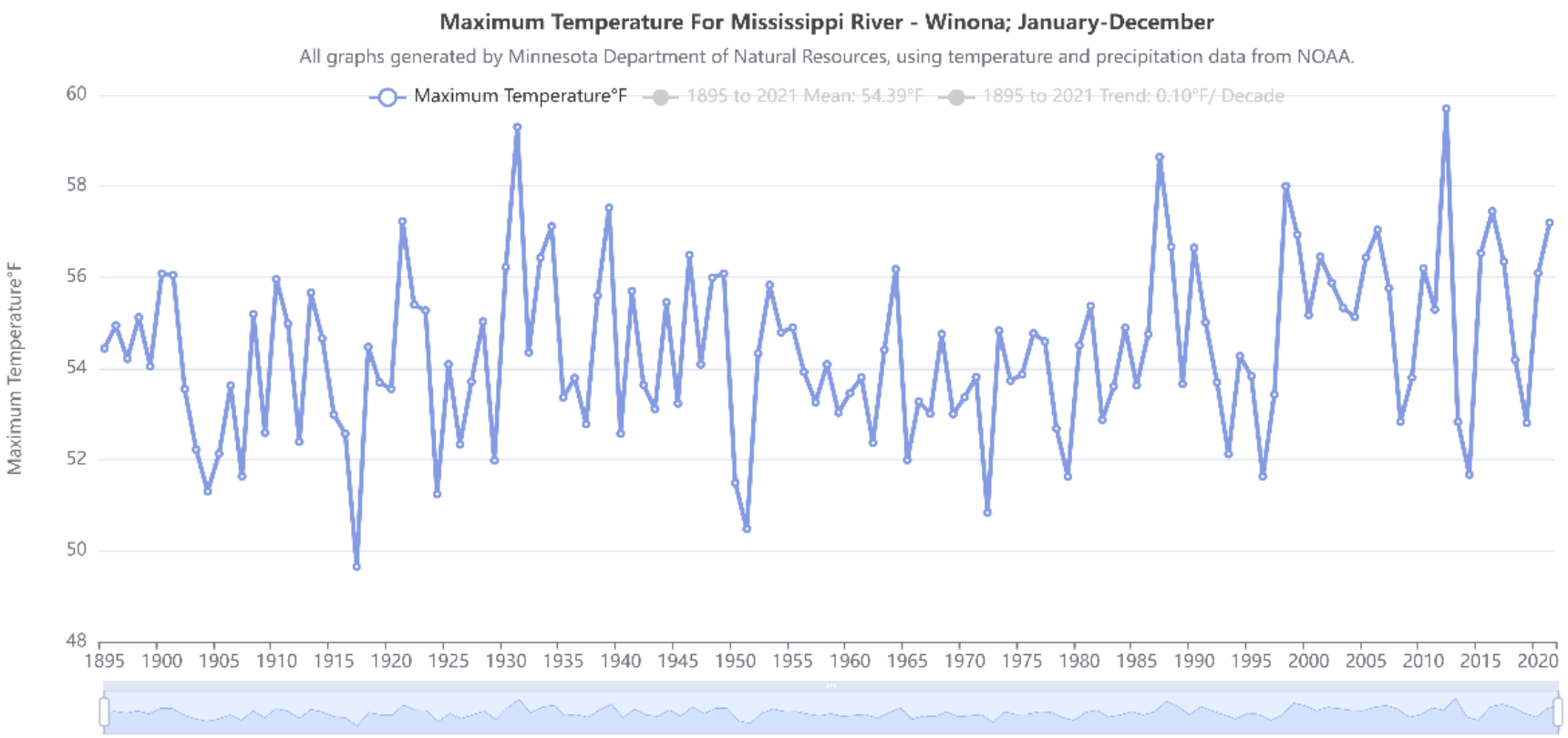


Exhibit 5.C: Minimum Temperature

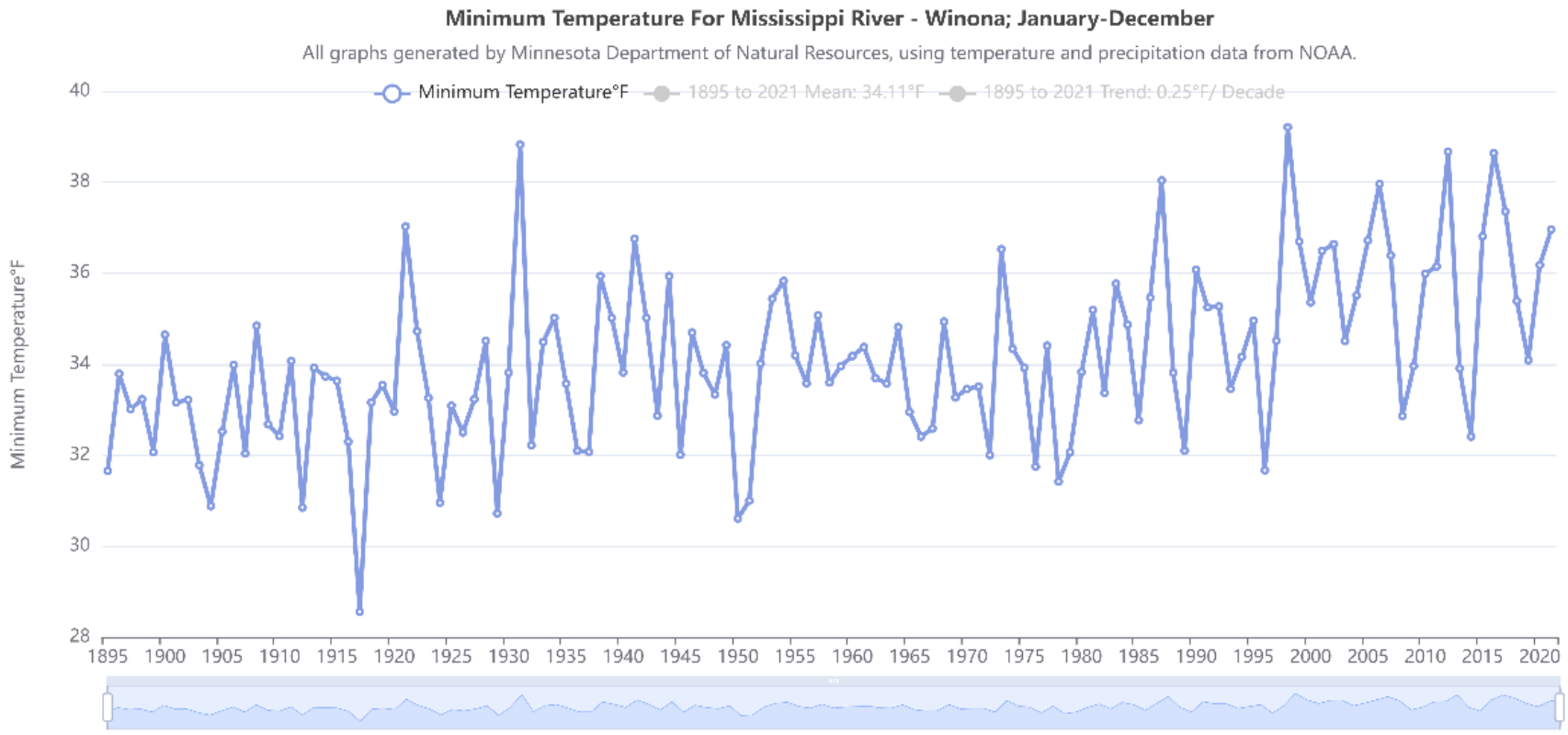


Exhibit 5.D: Precipitation

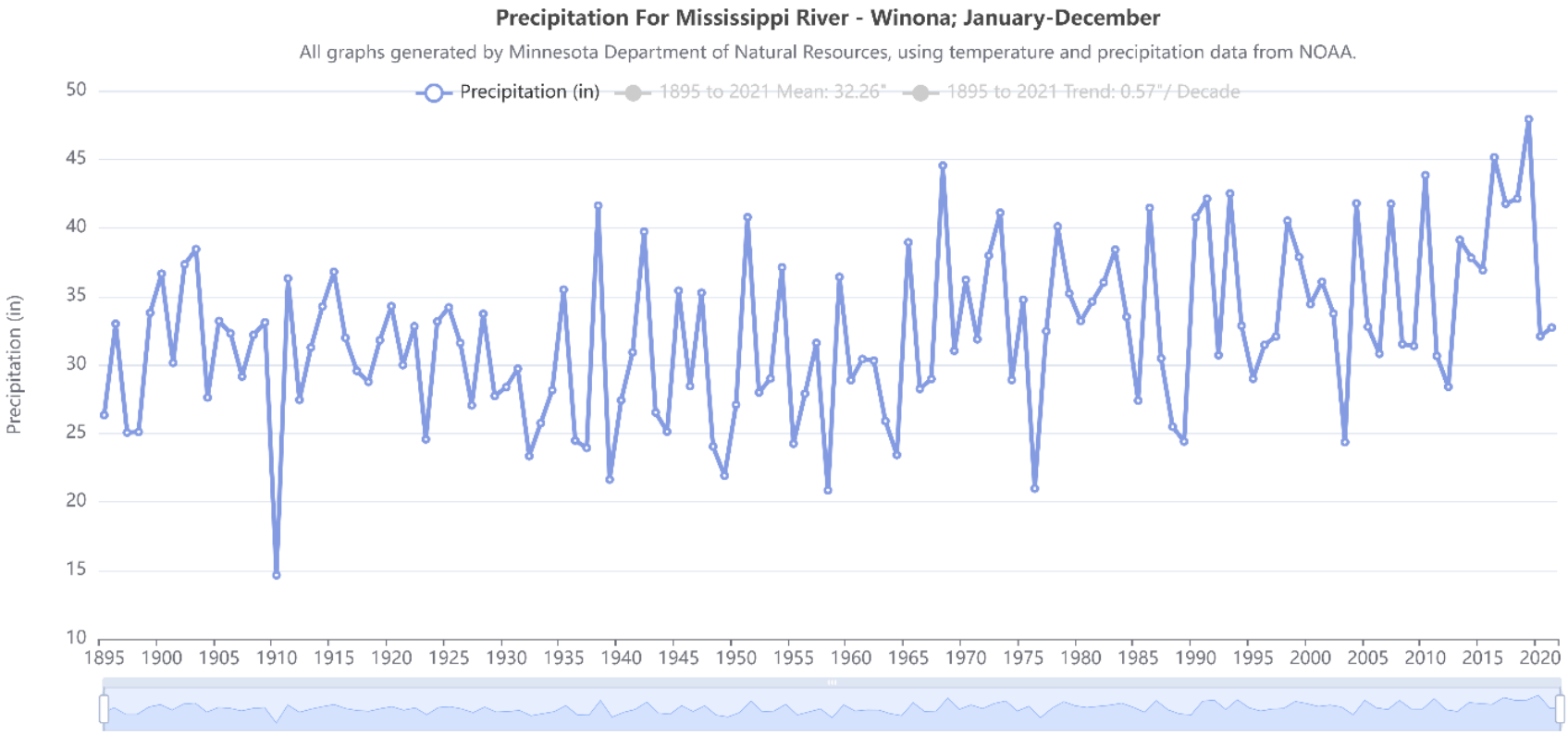
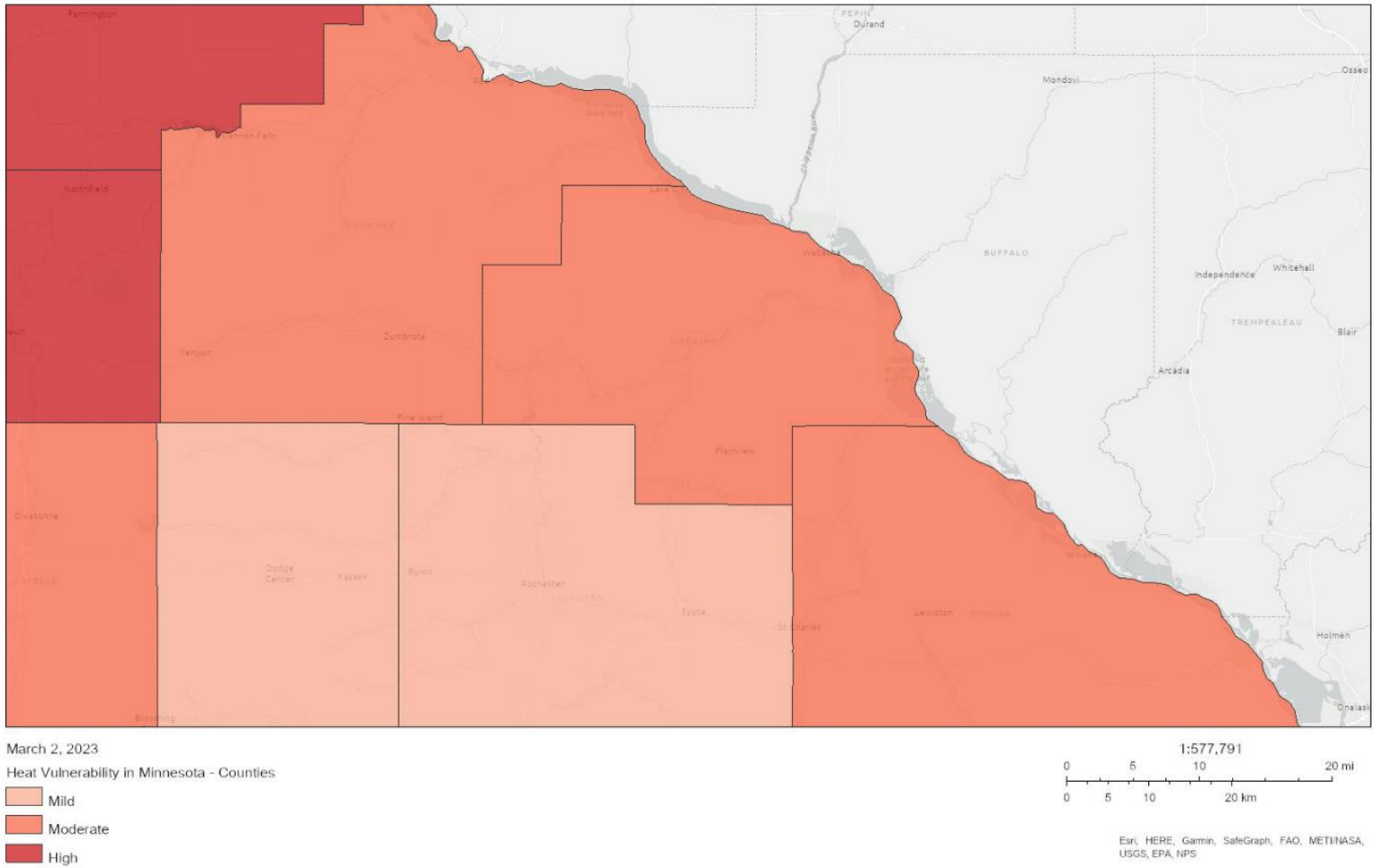


Exhibit 6: Heat Vulnerability in Minnesota – Counties



4.7.2 No-Build Alternative Assessment

Projected future data for Mississippi River – Winona Watershed was evaluated using the Minnesota Climate Explorer. The mid-century (2040-2059) projections fit with the life of the Proposed Project and are summarized below. The data makes projections using RCP 4.5 (representative concentration pathway), which is an intermediate stabilization scenario. The information shown is the model mean of eight general circulation global climate models. Assuming no impact from the Proposed Project, the climate in the region is anticipated to follow the trends below:

- Projected average daily mean temperature: 48.85 degrees Fahrenheit
- Projected daily maximum temperature: 55.52 degrees Fahrenheit
- Projected daily minimum temperature: 42.43 degrees Fahrenheit
- Projected average annual precipitation: 33.00 inches

Comparing the projected values with the historical values, the average daily mean, maximum, and minimum temperatures, and the average annual precipitation are all expected to rise over the next few decades regardless of project impacts.

Increased annual average precipitation may also influence the risk of flooding as a result of climate changes. The project area is located within a 100-year floodplain, designated as Zone AE on the FEMA FIRM Map Set (**Exhibit 8**).[10] According to the Risk Factor tool, the City of Wabasha has a moderate risk of flooding over the next 30 years.[11] The chance of severe storm, or 100-year flood event are projected to increase from one percent in a given year to 26 percent over the next 30 years. This matches with projections for the State, in general, that indicate there will be a "continued loss of cold extremes and dramatic warming of coldest conditions," "continued increase in frequency and magnitude [of extreme rainfall]; unprecedented flash floods," and "more hot days with increases in severity, coverage, and duration of heat waves" by 2099.[12]

[10] Federal Emergency Management Agency (FEMA). 2000. FEMA Flood Map Service Center. Electronic resource, https://msc.fema.gov/portal/search?AddressQuery=wabasha%2C%20mn#, accessed March 2023.

[11] Risk Factor. 2023. "Flood Factor: Wabasha, Minnesota." Electronic resource, https://riskfactor.com/city/wabasha-mn/2767378_fsid/flood, accessed February 2023.

[12] Metropolitan Council. 2023. "Climate Vulnerability Assessment: Regional Risks and Opportunities." Electronic document, https://metrocouncil.org/Communities/Planning/Local-Planning-Assistance/CVA.aspx, accessed January 2023.

Exhibit 7A: Recent and Projected Average Temperature

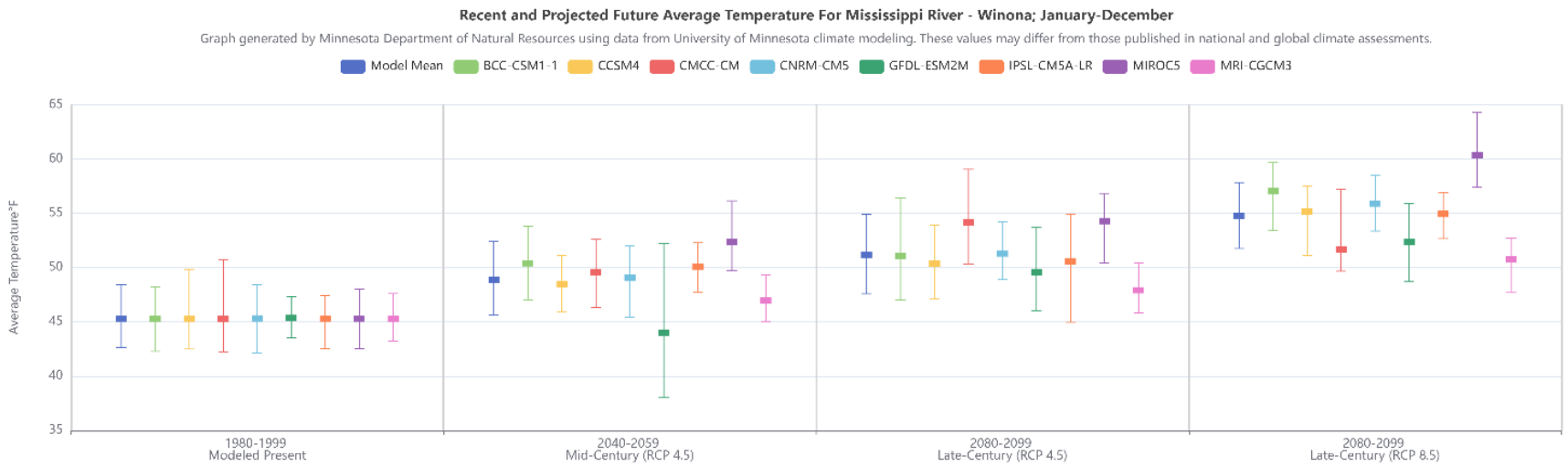


Exhibit 7B: Recent and Projected Precipitation

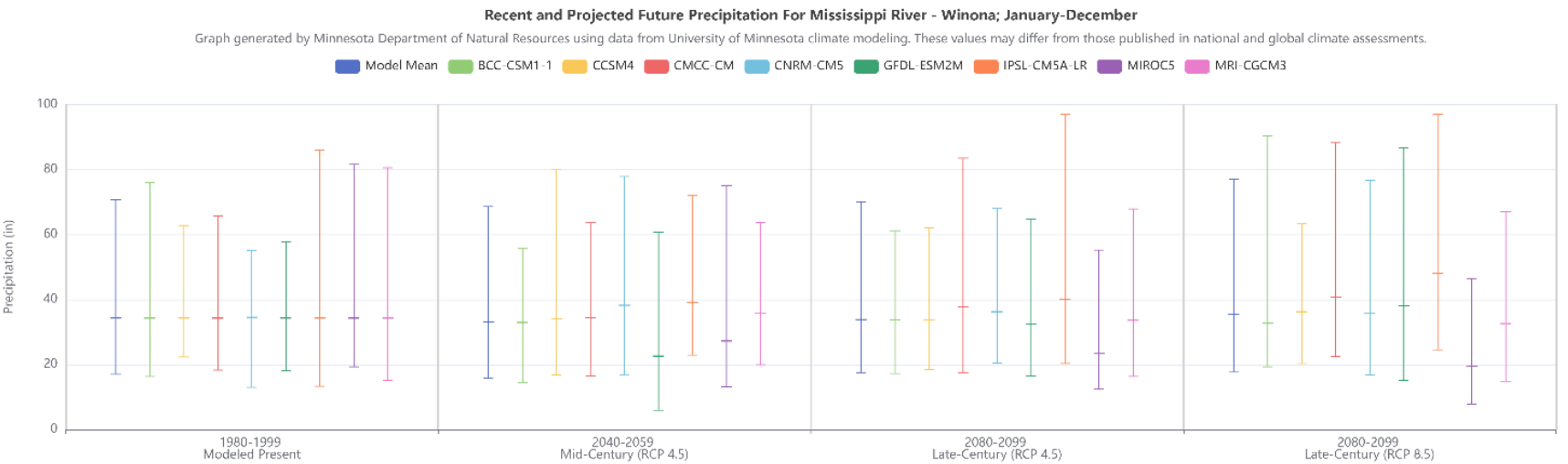


Exhibit 7C: Recent and Projected Maximum Temperature

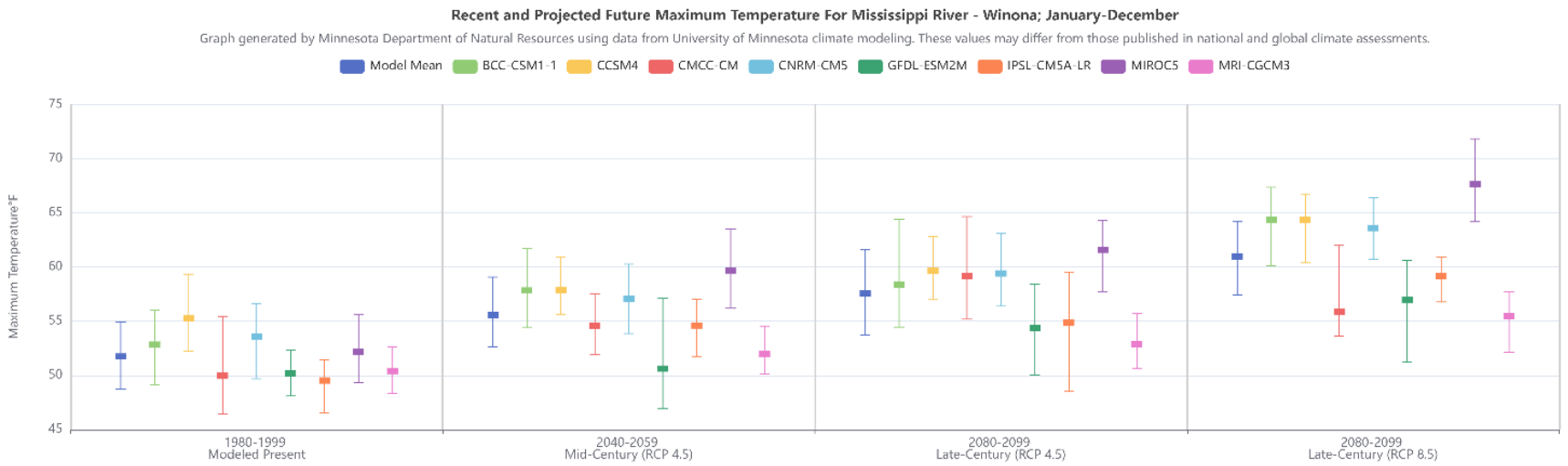


Exhibit 7D: Recent and Projected Minimum Temperature

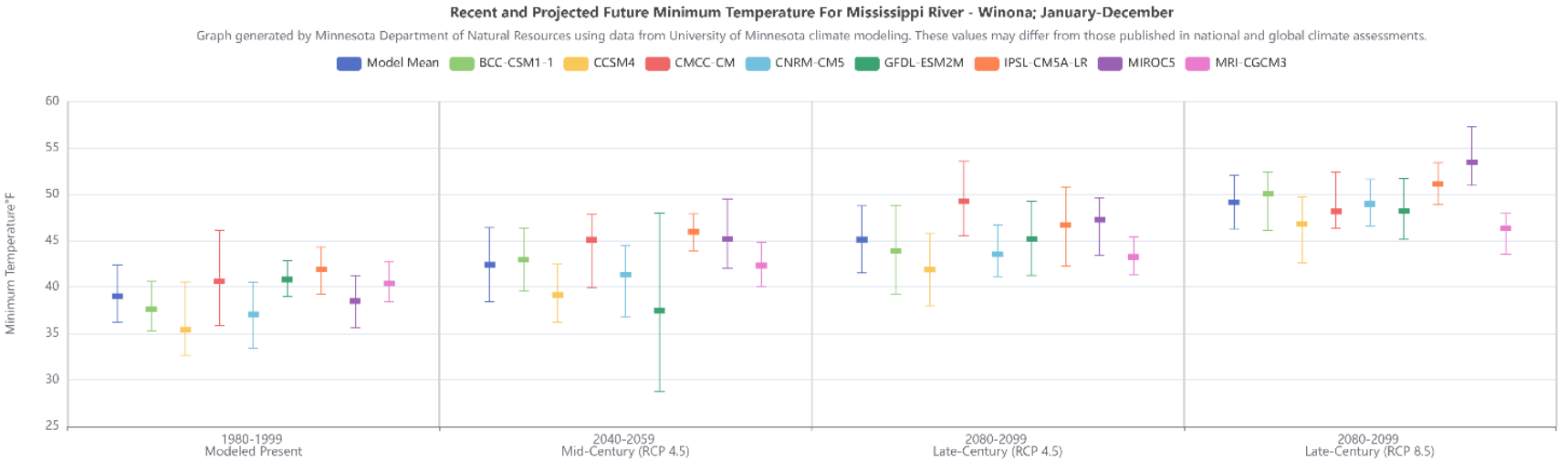
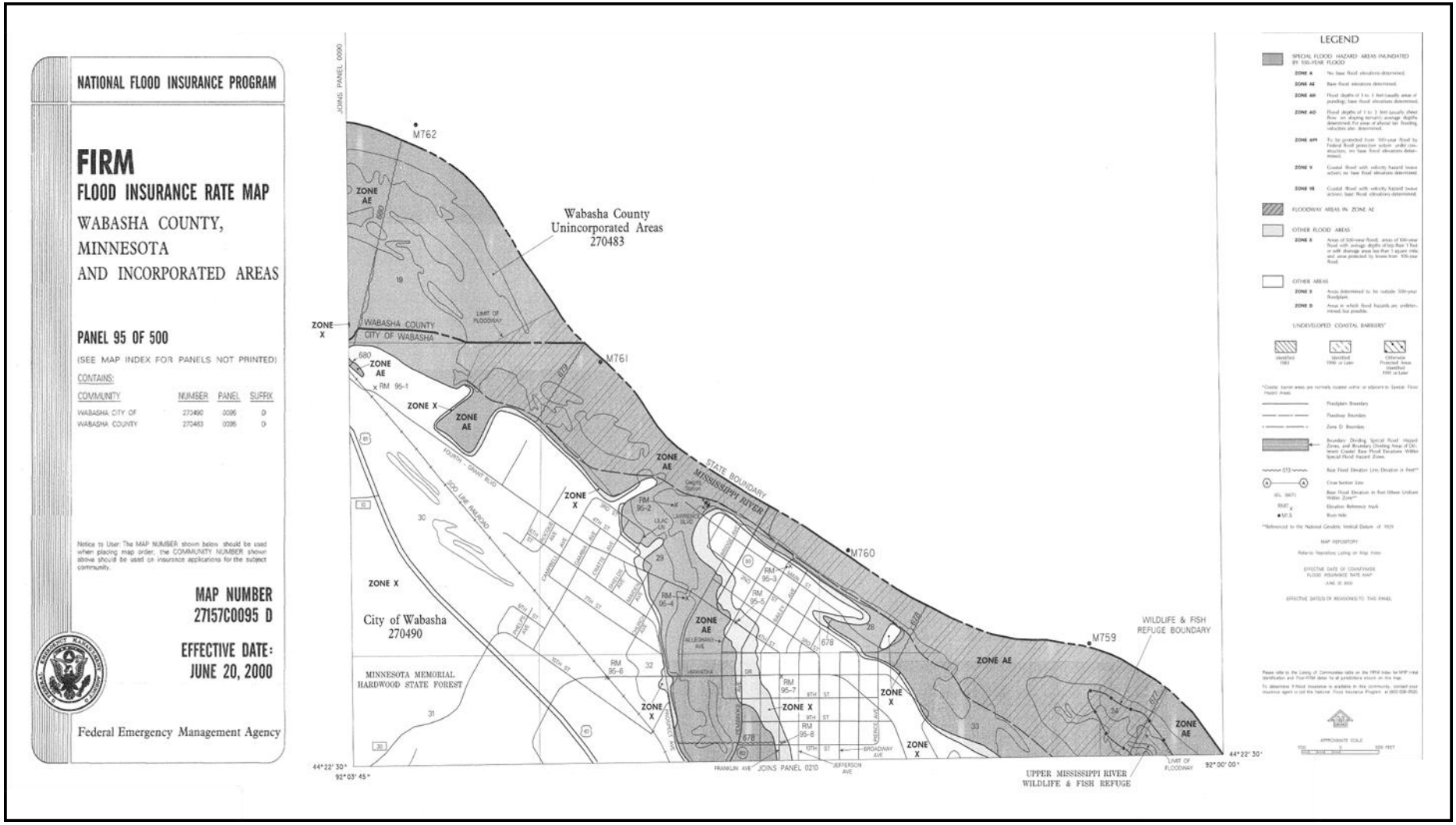


Exhibit 8: FEMA FIRM Map Showing Project Area



4.7.3 Preferred Alternative Assessment

Given the climate trends towards warmer and wetter conditions and increased potential for severe storm events, the following climate change risks have been identified in relation to the Proposed Project.

Table 3: Climate Trends and Impacts

Climate Trend	Project Information	Adaptations / Resilience
Current and future flood potential and stormwater management during increased rain events.	Clearing of trees and wetland areas and the addition of impervious surfaces may affect drainage within the floodplain.	Design plans for the project include considerations for stormwater maintenance. The City of Wabasha will continue to meet current permitting guidelines and restrictions related. Wetland considerations are further addressed in Section 4.13.2. Further stormwater management information is discussed in in Section 4.13.2.
Increasingly warmer temperatures.	No part of project design is anticipated to have any effect on increasing temperature.	N/A

4.7.4 Preferred Alterative Mitigation Measures

The City of Wabasha will meet all required permitting standards. No additional mitigation measures directly related to climate change are included in project plans at this time, although sustainable site design and best management practices are incorporated to address extreme weather events and other potential climate change impacts. Site and project design will be reviewed to ensure the Proposed Project is resilient to these potential impacts.

4.7.5 Alternate Site Assessment

No additional climate related assessments can be identified for the five (5) alternative sites at this time, although sustainable site design and best management practices would be required to address extreme weather events and other potential climate change impacts.

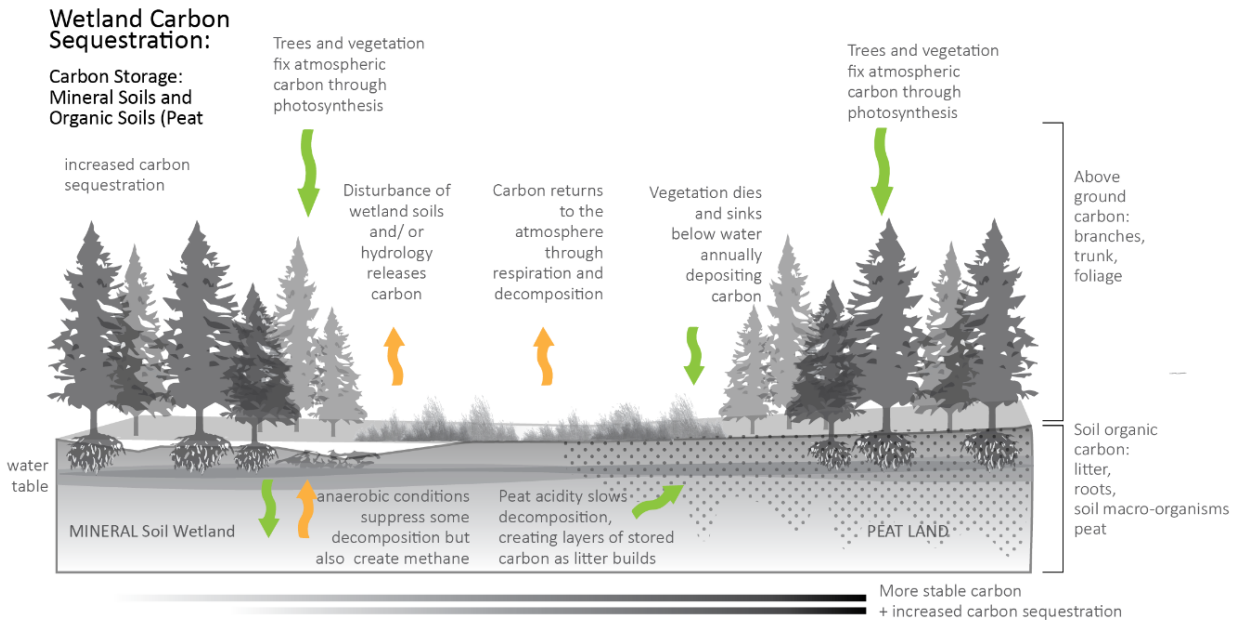
4.8 Greenhouse Gas

4.8.1 Existing Conditions

The Study Area is currently comprised of 16.1 acres of freshwater wetlands and 9.0 acres of wooded area. Wetlands are a source of emissions from various biogeochemical processes: “Under aerobic soil conditions, which are common in most upland ecosystems, organic matter decomposition releases CO_2, and atmospheric CH_4 can be oxidized in the surface soil layer. In contrast, the anaerobic soils that characterize wetlands can produce CH_4 (depending on the water table position) in addition to emitting CO_2. Accordingly, wetlands are an inherent source of CH_4, with globally estimated emissions of 55 to 150

teragrams (Tg) of CH_4 per year."[13] While data specific to the project location is unavailable, natural riparian wetlands in temperate America produce 0.758 $MTCO_2e$ in CH_4 annually with more methane being generated by wetlands that are permanently wet or more frequently inundated.[14] Conversely, wetlands remove CO_2 from the atmosphere and incorporate it into the vegetation and soil in a process known as carbon sequestration (Exhibit 11, "Carbon Sequestration Process"). One study of freshwater wetlands reported an average rate of carbon sequestration of 70.7 metric tons of CO_2 per acre.[15] Similarly, forested land serves as a carbon sink, reducing net emissions. According to data provided by the EPA, one acre of U.S. forest sequesters 0.84 metric tons of CO_2 per year.[16] Based on the acreage of wetlands and forest within the project area, this would result in an estimated -1,145.83 $MTCO_2e$ annually.

Exhibit 9: Carbon Sequestration Process[17]



[13] Stephen M. Ogle, Patrick Hunt, and Carl Trettin. 2014. "Chapter 4: Quantifying Greenhouse Gas Sources and Sinks in Managed Wetland Systems." In *Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory*. Technical Bulletin No. 1939. Office of the Chief Economist, U.S. Department of Agriculture, Washington, DC, p. 4-5.

[14] IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Hiraishi, T., Krug, T., Tanabe, K., Srivastava, N., Baasansuren, J., Fukuda, M. and Troxler, T.G. (eds). Published: IPCC, Switzerland, p. 5.25

[15] Melanie Sturm. 2019. Stewardship of Wetlands and Soils Has Climate Benefits. Natural Resources Defense Council. Electronic document, https://www.nrdc.org/experts/melanie-sturm/stewardship-wetlands-and-soils-has-climate-benefits, accessed February 2023.

[16] U.S. EPA. 2022. Greenhouse Gases Equivalencies Calculator - Calculations and References. Electronic document, https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, accessed February 2023.

[17] Image from Minnesota Board of Water and Soil Resources. 2023. Carbon Sequestration in Wetlands. Electronic document, https://bwsr.state.mn.us/carbon-sequestration-wetlands#:~:text=Wetlands%20are%20some%20of%20the,(N2O)%202., accessed February 2023.

4.8.2 No-Build Alternative Assessment

According to the USACE 2017 DMMP, the No-Build alternative would necessitate the transportation of dredged material entirely by trucks. This would require an estimated 459,000 annual haul miles. Assuming that these trucks are medium- to heavy-duty haul trucks that utilize diesel fuel, this would result in estimate annual emissions of 648.0 $MTCO_2e$.[18]

If these emissions are considered together with the carbon sequestration provided by the existing land use within the project area, this ultimately results in net annual emissions of -497.83 $MTCO_2e$ (Table 4, "Emissions Related to No-Build Alternative").

Table 4: Emissions Related to No-Build Alternative

Emissions Type	Emissions Source	Annual Emissions ($MTCO_2e$)
Existing Conditions	Land Cover	-1145.83
No-Build Scenario	Truck Hauling	648.0
		Total = -497.83

4.8.3 Preferred Alternative Assessment

Greenhouse gas emissions sources are anticipated to include,

- Equipment usage at the project site during construction,
- Equipment usage at the project site for ongoing operations,
- Barge and towboat traffic to and from the docking site,
- Truck and vehicle traffic to and from the project location.

These and other sources of greenhouse gases for the proposed alternative are identified in Table 5, "Emissions Related to the Proposed Project" and discussed below.

Table 5: Emissions Related to the Proposed Project

Emissions Type	Emissions Source	Annual Emissions ($MTCO_2e$)
Construction	Construction Equipment	9.09 (annualized)
Construction	Land Conversion	-1115.28
Operations	Transfer Equipment	23.5
Operations	Truck Hauling	132.5
Operations	Barge Hauling	13.2
		Total = -936.99

[18] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Construction

Construction of the Proposed Barge Facility is projected to require a single construction season in 2024. Construction activities will include the filling of 0.4 acres of wetlands, the reduction of 2.7 acres of forested land, the addition of 3.3 acres of impervious surface, and the dredging of approximately 37,000 CY of material to create the access channel to the Proposed Barge Facility.

Construction Equipment

Construction activities for this project are anticipated to include a wide variety of construction equipment of various equipment classes, sizes, and engine types. Typical construction equipment for the land conversion and facility construction activities includes, but is not limited to, excavators, material handlers, skid steers, cranes, bulldozers, pavers, compactors, jackhammers, and haul trucks. These types of vehicles primarily rely on diesel as a fuel source, which results in the emission of CO_2 and, to a lesser extent, CH_4 and N_2O. Dredging equipment may include hydraulic or mechanical types or equipment with different fuel requirements although both types typically utilize diesel fuel, as well.

Table 5 provides an estimate for the emissions generated by approximately 10 diesel-powered pieces of heavy equipment and 10 gasoline-powered passenger vehicles operating for the single construction season anticipated to complete the proposed project (approx. 120 working days)[19] as well as dredging equipment operating for an average of 411 total hours with an average fuel consumption of 16 gallons per hour.[20] The total emissions from these activities (272.6 $MTCO_2e$) are considered one-time emissions, however the industry standard for determining long-term impacts of construction-related GHG output is to annualize the total emissions over a project's lifetime, which is defined as a 30-year period. [21] Annualized, this would be 9.09 $MTCO_2e$.

Land Conversion

As discussed previously, wetlands and forests serve as carbon sinks and reduce net emissions. The reduction of land area for these two cover types will reduce the amount of carbon sequestration in the area from -1,145.83 to -1,115.28 $MTCO_2e$ per year based upon the resulting acreage. Ultimately, since the land conversion that would occur within the Proposed Barge Facility site is anticipated at only 15% of the total Study Area, the remaining wetland and forested areas should still provide an overall net reduction in emissions compared with those generated by the project (Table 5).

Operations

The barge terminal is projected to facilitate the transfer of at least a portion of the 270,000 CY of sand that is annually dredged from the Mississippi River. This material would be moved via river barges to the terminal, transferred using construction equipment such as excavators and backhoes to haul trucks, and transported to off-site facilities for use as reclamation material. Emissions related to dredging are not

[19] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

[20] WillardSays.com. 2012. *Dredge Production Cost Analysis Spreadsheet*. Electronic document, https://www.willardsays.com/operation-management-safety/dredge-cost-analysis/, accessed March 2023.

[21] Meridian Consultants, LLC. 2016. *Environmental Impact Report (EIR 15-01): Lompoc Motorsports Project, City of Lompoc*. Prepared for the City of Lompoc. Section 4.6 Greenhouse Gas Emissions: 4.6-16.

considered in this analysis as the amount of material being dredged is not anticipated to change from the No-Build alternative. The remaining operational activities (barge transport, transfer from barge to trucks, and truck transport) are sources of emissions that are evaluated in this document.

Barge Transport

Barge transport produces emissions via the combustion of diesel fuels used to power tow vessels. However, these emissions are generally considered relatively minor compared with other methods of transportation. For instance, data from the USACE indicates that barges are able to transport one ton of cargo 616 miles per gallon of fuel compared to the 478-mile capability of railcars and the 150-mile capability of haul trucks.[22] Furthermore, a single barge has the capacity to haul 1,750 short tons, the equivalent of 16 railcars or 70 trucks.[23]

Given the projected volume of dredged material to be managed by the Proposed Project, and the average fuel capacity of barge transport, it is anticipated that these activities would result in 2.8 $MTCO_2e$ in emissions annually. However, it is anticipated that the Proposed Barge Facility will also facilitate non-USACE related cargo transport. The Proposed Barge Facility will be located midway between existing ports in Red Wing and Winona. In 2018, the Red Wing port received 680 barge loads across 3 docks and the Winona port received 1,512 barge loads across 8 docks. As a midway point between these ports, the proposed barge terminal is anticipated to receive some of this traffic. However, due to space constraints, it is assumed that the proposed terminal will receive no more than 300 barge loads of non-USACE cargo annually. Transport of this amount of cargo will generate approx. 10.4 $MTCO_2e$ annually.[24] Combined with the emissions from the transport of dredged material, this makes a total of barge transport-generated emissions 13.2 $MTCO_2e$ per year.

Material Transfer

In order to transfer dredged material from barges to the trucks that will haul the material off-site, construction equipment such as excavators and backhoes are typically utilized. These types of equipment primarily rely on diesel fuel. Given an estimated operating time of approximately 160 hours a year, based upon the USACE DMMP which outlined an operating period of one month, these types of equipment are anticipated to require approx. 2,240 gallons of fuel each year.[25] Combustion of this fuel results in annual emissions of 23.5 $MTCO_2e$.[26]

[22] USACE. 2019. Fact Sheet 13: Comparing Navigation. Electronic document, https://www.mvp.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/588155/fact-sheet-13-comparing-navigation/, accessed February 2023.

[23] USACE 2019.

[24] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

[25] Central Power Systems & Services. 2021. Types of Gas for your Rental Construction Vehicle. Electronic document, https://cpower.com/2021/11/16/types-of-gas-for-your-rental-construction-vehicle/#:~:text=While%20each%20make%20and%20model,to%202.5%20gallons%20per%20hour, accessed February 2023.

[26] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Truck Transport

Once transferred into haul trucks, dredged material will be transported to the Wabasha Sand & Gravel Facility. The material may then be transferred to other secondary locations from this point for reclamation activities and other uses, but this is outside of the scope of this analysis. The distance between the Proposed Barge Facility and the Wabasha Sand & Gravel Facility is approximately 1.2 miles (2.4-mile round trip). Transport from the barge terminal to the Wabasha Sand & Gravel Facility will require an estimated 93,896 trucking miles annually. The resultant emissions from medium- to heavy-duty, diesel-powered trucks is 132.5 $MTCO_2e$.[27]

4.8.4 Preferred Alternative Mitigation Measures

In order to minimize any unnecessary emissions, best management practices such as anti-idling restrictions for fossil-fuel powered vehicles will be employed. Future evaluation of alternative fuel vehicles and other emerging technologies will be evaluated as those become cost-effective for construction and other operations. No additional mitigation measures are included in the project plans at this time.

4.8.5 Alternate Site Assessment

The three city-owned and one privately-owned recreational site, Izaak Walton Park, Wabasha Municipal Dock and Mississippi Parkside Marina, and the Wabasha Marina (private) have similar uses such as motorized and non-motorized boats along with open space and imperious spaces such as vehicle parking, trails, and buildings. These four sites likely emit a similar level of greenhouse gas. Converting these sites from community, public and private facilities to the proposed barge terminal use, will likely produce a similar increase in greenhouse gas emission as outlined for the preferred alternative.

The vacant South Fitzgerald site is producing no greenhouse gas emissions but if the proposed project were developed on this site, a similar increase in emissions would likely occur as outlined for the preferred site.

4.8.6. Alternate Design/Magnitude Assessment

The use of smaller barges would require two to three times as many trips to haul the same amount of material as the larger proposed barge capacity. These additional trips would contribute to local GHG, and while may not be impactful on a regional scale, may impact and add to local emissions sources.

4.9 Geology, Soils, and Topography/Landforms

4.9.1 Geology

4.9.1.1 Existing Conditions

[27] Calculated utilizing the EPA Simplified GHG Emissions Calculator. 2022. Electronic document, https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator, accessed February 2023.

Bedrock Geology

According to the Geologic Atlas of Wabasha County, C-14, Plate 2, bedrock geology beneath the Study Area is predominantly the Eau Claire Formation which consists of sandstone, siltstone, and shale interbedded in thin to medium beds. The sandstone is very fine grained to fine grained. The sandstone and siltstone are light to yellowish gray, variably glauconitic, and commonly contain gray to black brachiopod shell fragments. The shale is greenish gray. Unit coarsens upward, with siltstone and shale replaced in abundance by sandstone. Uppermost 10–20 feet is mostly very fine grained sandstone and minor amounts of siltstone. The unit is 125–150 feet thick. A tongue in the uppermost part of the Eau Claire Formation crops out near Wabasha. [28]

Surficial Geology

The Geologic Atlas of Wabasha County, C-14, Plate 3, shows the surficial geology consists of floodplain alluvium, West Campus Formation, and Grey Cloud terrace. Floodplain alluvium is mainly fine sand and silt on floodplains; includes sand and gravel that infills modern river channels. Some depressions have been filled with thick silty to clayey sediment and includes minor lakeshore sediment along Lake Pepin. Contacts with other map units are commonly scarps. The West Campus formation is comprised of sand and gravelly sand; coarsens to cobbly gravel in places. The sediment is largely reworked from the Mississippi valley train; deposited during early, high stages of the Mississippi River and preserved in terraces above the modern floodplain. The West Campus formation is mapped at three major terrace levels in Wabasha County. The Grey Cloud terrace is 40–50 feet (12–15 m) above Lake Pepin and the present floodplain level. The terrace elevation is 700–710 feet (214–216 m) in Lake City and Wabasha. Most contacts with other map units are scarps.[29]

The pollution sensitivity of near-surface materials has a high rating across the majority of the Study Area. The sensitivity to pollution of near-surface materials is an estimate of the time it takes for water to infiltrate the land surface to a depth of 10 feet. Generally, areas of coarse-grained material have a higher sensitivity to pollution compared to areas of fine-grained material, except where special conditions (karst, bedrock at or near the surface, mining, and peatlands) occur. No special conditions are mapped or known within the project site.

While Wabasha County is located in a karst region, the Study Area consists of non-karst bedrock, with Cambrian sandstones and shales as the uppermost bedrock layers. Karst bedrock can be found in close proximity to the Study Area, both south and west (Figure 6, “Geologic Conditions/Groundwater”).

4.9.1.2 No-Build Alternative Assessment

There are no geologic impacts anticipated and existing site conditions will remain. Unless the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site. The USACE would have to regrade a portion of the site raising the temporary dock out of the floodway creating a similar impact to the preferred permanent alternative.

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[28] Mossler, John H. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 2-Bedrock Geology. Retrieved from University of Minnesota Digital Conservancy. Available at: https://conservancy.umn.edu/handle/11299/58557.

[29] Hobbs, Howard C. 2001. C-14 Geologic Atlas of Wabasha County, Minnesota. Plate 3-Surficial Geology. Retrieved from University of Minnesota Digital Conservancy. https://conservancy.umn.edu/handle/11299/58557.

4.9.1.3 Preferred Alternative Assessment

Any potential impacts to geology will occur solely during construction; therefore, no operating or long-term impacts are anticipated as a result of the Proposed Project. Construction impacts are anticipated to include grading of the Proposed Barge Facility site and raising the site to an elevation of approximately 678.6 feet to 680.5 feet, thereby removing the access road and other material transfer infrastructure from the 100-year floodplain, which is at an elevation of 678.6 feet.

No significant geologic features or hazards (karst formations) were identified in the immediate Study Area and therefore impacts are not anticipated.

4.9.1.4 Preferred Alternative Mitigation Measures

Project construction will limit excavation to ensure avoidance of any sensitive geologic features. Should any of these features be identified or discovered during construction, these activities will be halted until further consultation with state agency personnel is complete.

With karst features located approximately 3,000 feet from the Study Area, and the increased sensitivity of coarse-grained materials such as the sand and gravel aquifers, excavation will be limited to less than 10 feet and will only occur during project construction. Grading activities will include the use of fill material.

4.9.1.5 Alternate Site Assessment

As is the case with the preferred site, impacts to geology would only occur during construction for the other five alternative sites. Construction impacts for all sites would include grading to raise the alternative sites out of the 100-Year floodplain and creating an access road to move barged materials off-site. No significant geologic features or hazards (karst formations) were identified for the alternate sites therefore no impacts are anticipated.

4.9.2 Soils and Topography

4.9.2.1 Existing Conditions

Soils

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Maps were reviewed within and around the proposed project footprint. The predominant soil types and soil component names within the Study Area are listed in Table 6, “Soil Types Within the Study Area”. Additional information regarding the soil hydrologic classification provides insights regarding potential runoff and erosion control measures that may be needed during construction.

Table 6: Soil Types within the Study Area[30]

Map Unit Symbol	Map Unit Key	Component Name	Soils Label	Hydric Rating	Estimated % of Study Area
N646A	1946882	Ceresco	N646A, Ceresco	No	18.8
N648A	1946885	Kalmarville	C648A, Kalmarville	Yes	13.9
MdA	2216395	Meridian	MdA, Meridian	No	2.4
DmA	2216322	Mt. Carroll	DmA, Mt. Carroll	No	3.8
ThA	2216437	Tell	ThA, Tell	No	1.9
Ts	2216441	Terrace escarpments, sandy	Terrace escarpments, sandy	No	3.9
GP	2216134	Udipsamments	GP, Upidsamments	No	49.7
W	2216215	Water	W, Water		5.6

Soils in Wabasha County are generally characterized in the soil survey as silty loam developed on alluvium and sedimentary bedrock. The river terrace and floodplain alluvium are composed of sand and gravel and is about 180 feet thick. This body of sand and gravel is underlain by lower permeability sedimentary bedrock.[31]

The Soil Survey Geographic Database (SSURGO) lists almost half of the Study Area soil as gravel pit and udipsamments. The udipsamments complex has a 0-25 percent slope, is excessively drained, and has sandy and gravelly outwash parent material. The next largest soil types within the Study Area are Ceresco and Kalmarville, respectively, which are *somewhat poorly drained* and *poorly drained*. The majority of the Study Area has minimal slopes, except for the portion listed as Ts – terrace escarpments, sandy. This soil type is listed as having steep slopes, with a slope range of 15-60 percent.

The NRCS classifies soils into hydrologic soil groups, A – D:

- Group A – Soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands.
- Group B – Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately course texture.
- Group C – Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture.
- Group D – Soils have a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays with high swelling potential, soils with a permanent high-water

[30] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture.

[31] City of Wabasha. 2018. Hydrogeologic Assessment of the Drinking Water Source and Wells for the City of Wabasha, Part I.

table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material.

- Group "/D" – Soils with a high-water table, but if drained conform to the first letter listed before "/D" (for example, A/D, B/D).

See Section 4.13.3. for a discussion of erosion/sedimentation control measures related to stormwater runoff.

Project activities during the construction phase that will impact soils include the dredging of river bottom sediment to create a navigable passage and construction of access road, weighing station, small operations structure, and barge fleeting area. Additionally, dredged sediment will be brought to an upland area of the site.

Operational activities of the Proposed Project will not further impact the soils and topography of the site beyond the temporary placement of transported goods on the site prior to being hauled off-site.

Dredged Material – Sediment and Substrate[32]

The Chippewa River is the major contributor of sand-sized sediment in Lower Pool 4. Sediment quality is generally good in Pool 4. Main channel sediments are primarily medium to coarse sands with only trace amounts (generally less than 3 percent by weight) of silts and clays. Sand, silt, and clay sediments are found within defined sloughs, while finer silt and clay materials are found in marshy backwater areas.

To broadly assess the concentrations and location of contaminants found in Lower Pool 4 sediments, USACE staff collected 28 sediment samples from Lower Pool 4 between 2013 and 2020 (see Figure 3 of the USACE Lower Pool 4 DMMP). To specifically assess the concentrations of contaminants within the Read's Landing access area, two borehole sediment samples were collected in June 2021 (see Figure 3 of the USACE Lower Pool 4 DMMP). Each sample was analyzed for polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbon (PAH), pesticides and heavy metals and compared to Minnesota Pollution Control Agency's (MPCA) sediment reference values (SRVs) and the sediment quality triad (SQTs), which refer to extent of degradation within the sediment caused by contamination. Of those 31 samples, two were collected in boat harbor at Alma, Wisconsin, three in shoreline access area (Alma Marina and Read's Landing), and 26 in the main navigation channel. Collection data can be found in Appendix F of the USACE Lower Pool 4 DMMP.

In general, the MPCA SRVs limits are higher concentration thresholds than SQTs. Furthermore, level II SQTs are higher than level I SQTs. In terms of concentration levels from low to high, if a contaminant found in sediment is below the SQT level I threshold, it has very low levels of that contaminant and is likely safe for bottom-dwelling aquatic organisms. If the contaminant level is higher than the SQT level I threshold but below the level II threshold, it is likely moderately safe for bottom-dwelling aquatic organisms. If the contaminant level is above the SQT level II threshold, that contaminant is likely at a level that is harmful to those organisms. An exceedance of the SQT level II threshold will often still be well below the SRV threshold, as the SRV thresholds are set at levels to protect human health based on contact with the material in two upland settings. Contaminant thresholds for SRVs in the

[32] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

recreational/residential setting are lower than the commercial/industrial settings because it is assumed that in the former settings there would likely be more contact with the sediment, including contact by children.

To summarize, in order from lowest to highest levels of contamination, are SQT level I, SQT level II, SRVs for residential/recreation, and then SRVs for commercial/industrial.

Results of the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were uncontaminated. There were no SQT or SRV exceedances observed. Additionally, there are no restrictions for upland placement due to contaminant levels.

Topography/Landforms

Elevations on the site range between 668 to 708 feet above mean sea level.[33] Two-foot contour mapping shows the lowest elevations along the Mississippi River, with a steep bluff along the edge of the floodplain. A USGS topographic map of the proposed site is included in Figure 2.

4.9.2.2 No-Build Alternative Assessment

Future flood events are anticipated to increase due to climate change impacts, which may cause shoreline and overland soil erosion. These erosion events may cause increased sediment trapping in the backwater areas of the Mississippi River, reducing viable fishery and aquatic species' habitat. While extreme flood events may move some of this sediment downriver, silt deposition on the Study Area's floodplain area may lead to an increase of fine sediment on the landscape and potential deposition into wetland areas.

4.9.2.3 Preferred Alternative Assessment

The Proposed Project will include dredging an access channel from the main Mississippi River navigation channel as well as areas immediately adjacent to the shoreline where the proposed barge dock will be constructed. The current estimate is 37,000 CY of bottom sediment removed to facilitate barge access to the Proposed Barge Facility site. This sediment will be used as fill – and augmented as needed – on the Proposed Barge Facility site to raise access road and facility locations elevations outside of the 100-year floodplain.

The majority of the Study Area served as a former sand and gravel quarry with areas of highly disturbed soils. Grading during project construction will primarily be completed using fill material from access channel dredging or brought in from offsite. Minimal excavation will occur during construction activities, except in the vicinity of stormwater infiltration areas. Maximum excavation is anticipated not to exceed 10 feet and will be sloped to facilitate stormwater infiltration versus surface runoff following rain events.

4.9.2.4 Preferred Alternative Mitigation Measures

All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from MPCA and MNDNR for grading and erosion control. MNDNR and/or BWSR-approved seed mixes and wildlife friendly erosion control mesh will be used to ensure soil stabilization.

[33] Elevations taken from MnTOPO. http://arcgis.dnr.state.mn.us/maps/mntopo/.

Additionally, a "No-Rise" review and certificate will be requested from FEMA to identify and facilitate any additional floodplain mitigation requirements. The project proposer and contracted companies shall comply with all permits and approvals and include mitigation and monitoring requirements as needed.

4.9.2.4 Alternate Site Assessment

The five alternate sites have similar soil and topography to the preferred site and are all located southward along the Mississippi River within city limits, less than 2.2 miles from the preferred site. Each of the alternative sites have varying channel development needs based on where the barge terminal could be located within the parcel. Dredging impacts for a proposed hopper barge channel to the Mississippi River have been estimated for five alternative sites using an average depth of four (4) feet. See **Table 1 – Alternate Site Assessment** for this estimated assessment.

The difference in estimated acres needed to dredge and the volume of dredged materials are primarily a function of the length of the channel needed to connect a barge terminal facility to the adjacent navigable channel of the Mississippi River and the current estimated depth of the River.

4.9.2.6 Alternate Design/Magnitude

The expanded magnitude and layout on the proposed Carrels Site would require additional grading and fill to prepare the site for additional material storage capacity. Additionally, if the dredging area were increased, that additional material would require dewatering onsite to make it suitable as fill material.

4.10 Floodplains

4.10.1 Existing Conditions

The Study Area is subject to frequent inundation of the Mississippi River. The bank of the river is approximately 1500 feet from the Mississippi River centerline and Minnesota-Wisconsin state border within the 2-mile-wide FEMA Zone AE floodplain. This site is currently shown on FEMA FIRM 27157C0095D and can be seen in Figure 7, "Surface Water." Preliminary hydraulic modeling data for the Mississippi River is available from the MNDNR at the site showing a 100-year flood elevation of 678.6 ft, approximately 8 ft above the existing riverbank. The site is part of an old quarry that falls from approximately elevation 700-feet down to the riverbank, creating a minor backwater bay along the valley wall. The existing river channel is over 35 feet deep in the 100-year flood condition and the side channel at the Study Area is approximately 18 feet deep in the 100-year flood condition, but shallower at normal river flows. The site is affected by backwater due to Lock and Dam 4 (Pool 4) at Alma, WI. This causes sediment to build up within the channel at this location. Additionally, the Chippewa River confluence is approximately two miles upstream of the project area, which carries a significant sediment load and creates a wide delta within the Nelson-Trevino Bottoms State Natural Area.

4.10.2 No-Build Alternative Assessment

The no-build alternative would not change the flood flow regime within the Mississippi River. However, future flood events are anticipated to increase due to climate change impacts. Increased erosivity of future flood events may similarly result in increased sediment load and deposition within Lock and Dam Pool 4 and the project site's backwater areas, reducing viable fishery and aquatic species' habitat while

depositing silt on the site's wetland areas. The backwater effects of the downstream dam at Alma would continue to slow down low flows and cause increasing sedimentation within the reservoir. Combined with high sediment loads from the Chippewa River, the channel would increasingly fill with sediment and potentially increase flood elevations and inundate wetland and floodplain forest communities.

4.10.3 Preferred Alternative Assessment

The site will be regraded and fill will be added within the floodplain for the Preferred Alternative construction. Stockpiled dredge material will be placed on the terminal docking site above the 100-year flood elevation. Impacts to flood elevations are described in the attached report "Preliminary No Rise Certification: Wabasha Barge Facility" (Appendix C). The report details no appreciable impact to flood elevations or velocity due to the proposed barge facility design, and a standard No Rise certification is included.

4.10.4 Preferred Alternative Mitigation Measures

Bank armoring along the barge dock area is proposed to reduce erosion potential during high flows. Permanent structural components are proposed along the river side of the barge facility to prevent bank erosion and sediment transport downstream. Dredging activities within the side channel to maintain the barge access lane are anticipated to decrease flood risk by increasing conveyance and flood volume storage within the floodplain.

4.10.5 Alternate Site Assessment

As all five alternative sites are within the 100-year floodplain, fill would be required to raise the proposed barge facility and access roadway out of the floodplain and a No Rise certification obtained for all alternative sites.

4.10.6 Alternate Design/Magnitude Assessment

The expanded material storage area at the proposed Carrels Site would require additional fill to build this outside of the 100-year floodplain, thereby requiring additional evaluation for the "No Rise" certification process.

4.11 Aquifers

4.11.1 Existing Conditions

Minnesota is divided into six groundwater provinces based on bedrock and glacial geology. The aquifers within these provinces occur in two general geologic settings: bedrock, and unconsolidated sediments deposited by glaciers, streams, and lakes. The project site is located in the East-Central Province and within the Quaternary water-table and buried unconfined aquifer. The East-Central Province has surficial and buried sand and gravel aquifers that are common. The East-Central Province's aquifers are

underlain by thick and extensive sandstone and carbonate (Paleozoic) and (Precambrian) sandstone aquifers.[34]

Groundwater data for the Study Area was obtained from the MNDNR. No springs are currently identified onsite by the MNDNR Spring Inventory. Depth to groundwater within the site is generally 0-20 feet.[35] The project site is not within an existing Drinking Water Service Management Area (DWSMA) or a wellhead protection area (see Figure 6, "Geologic Conditions/Groundwater") but there are DWSMA and Wellhead protection areas within 300 feet. There is an existing unverified well onsite, Well ID: 536092.

4.11.2 No-Build Alternative Assessment

There are no anticipated changes or impacts to the aquifer. The property owner may review options and opportunities to see the unverified well.

4.11.3 Preferred Alternative Assessment

Although the Study Area is not located within the DWSMA, the sand and gravel nature of this region has the potential to transport potential contaminants to the aquifer. While not anticipated, new potential contaminants have the potential to infiltrate and reach the aquifer through the unverified well. Above-ground storage tanks, while not confirmed, may be incorporated as part of the Proposed Project.

4.11.4 Preferred Alternative Mitigation Measures

Following completion of project design plans, an Industrial Stormwater permit may be required through the MPCA (SIC Code 4491). The unverified well will be located and managed as needed, either by sealing or identifying its potential for future use. The project site will be in compliance with all MCPA permit requirements. Additionally, coordination with the Minnesota Department of Health (MDH) will help determine the feasibility of confirming and either using or sealing the unverified well currently listed on the site. Pending the incorporation of an above-ground storage tank and its proposed contents, additional requirements will be met through both the MPCA and the MDH, which may include a spill response plan and other requirements. '

4.11.5 Alternate Site Assessment

As no springs identified by the MNDNR Spring Inventory and no mapped DWSMA or Wellhead protection areas are located within the five alternative sites, no environmental consequences are anticipated.

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[34] Adams, Roberta. 2016. Pollution sensitivity of near-surface materials: St. Paul, Minnesota Department of Natural Resources, Minnesota Hydrogeology Atlas Series HG-02, report and plate. Available at: https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/mha_ps-ns.html.

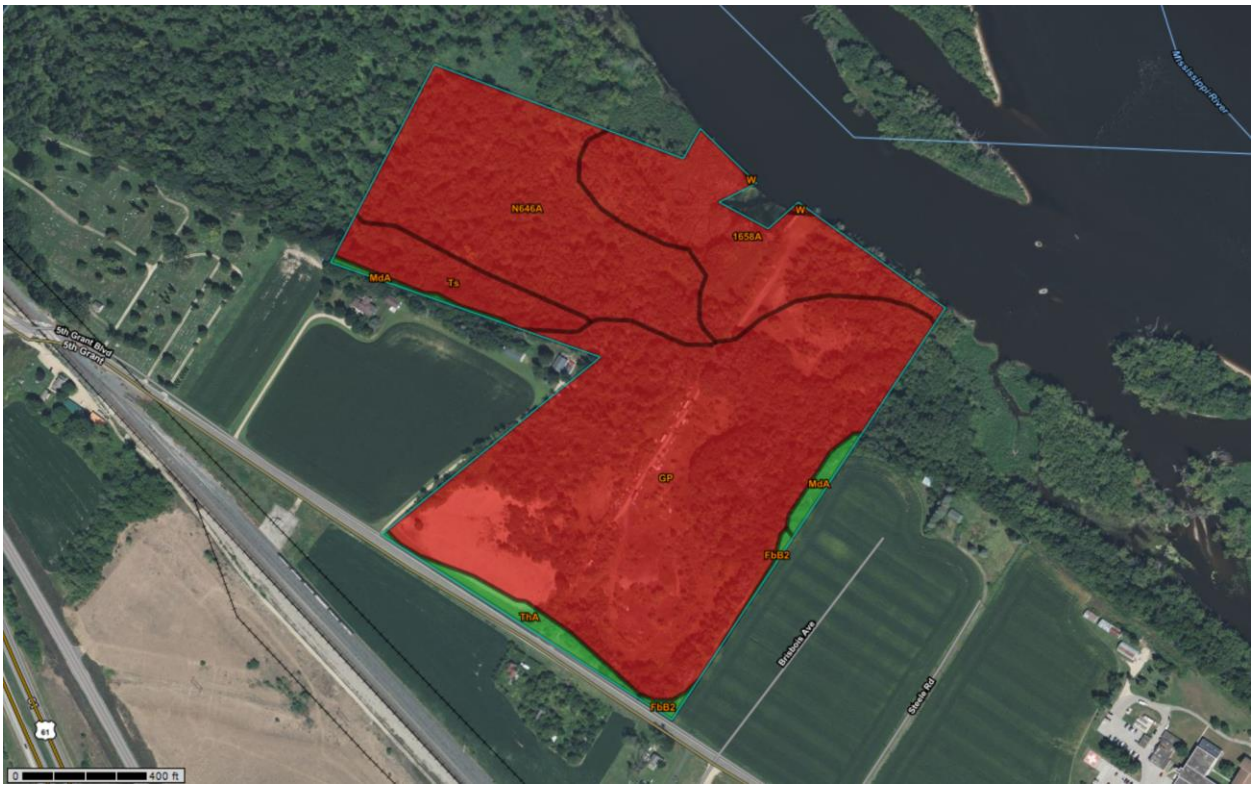
[35] Peterson, Todd A. 2005. C-14 Geologic Atlas of Wabasha County, Minnesota. Part B, Plate 8 – Hydrogeology of the Unconsolidated and Bedrock Aquifers. Retrieved from MNDNR. https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wabacga.html.

4.12 Farmlands

4.12.1 Existing Conditions

Based on information assessed from the Natural Resources Conservation Service Web Soil Survey (WSS), less than 3% of the project area is considered Prime Farmland and this area is confined to the eastern-most edge of the property and a small area right along the roadway (Exhibit 12).

Exhibit 10*:* Prime Farmland Areas[36]



Summary by Map Unit — Wabasha County, Minnesota (MN157)

Summary by Map Unit — Wabasha County, Minnesota (MN157)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1658A	Algansee-Kalmarville complex, river valleys, 0 to 3 percent slopes, frequently flooded	Not prime farmland	7.2	14.7%
FbB2	Festina silt loam, 1 to 6 percent slopes, moderately eroded	All areas are prime farmland	0.2	0.5%
GP	Pits, gravel-Udipsamments complex	Not prime farmland	26.3	53.7%
MdA	Meridian sandy loam, 0 to 2 percent slopes	All areas are prime farmland	0.6	1.2%
N646A	Ceresco-Spillville complex, 0 to 3 percent slopes, frequently flooded	Not prime farmland	11.3	23.0%
ThA	Tell silt loam, 0 to 2 percent slopes	All areas are prime farmland	0.9	1.8%
Ts	Plainfield sand, river valley, 15 to 60 percent slopes	Not prime farmland	2.4	4.9%
W	Water	Not prime farmland	0.0	0.1%
Totals for Area of Interest			**48.9**	**100.0%**

[36] Web Soil Survey, Natural Resources Conservation Service, U.S. Department of Agriculture. Data assessed January 17, 2023. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

4.12.2 No-Build Alternative Assessment

No changes are anticipated to the Study Area in the no-build condition. Therefore, farmland will be neither created nor developed. The areas identified are not currently under cultivation and not anticipated to be cultivated anytime in the near future.

4.12.3 Preferred Alternative Assessment

Since there are no cultivated areas on the current Study Area, no impacts to farmland are anticipated. There may be minimal impacts to "Prime Farmland" soils in the southwest corner of the project area to facilitate construction of an access road to the barge facility.

4.12.4 Preferred Alternative Mitigation Measures

Since there are no identified farmland areas on the Study Area, no mitigation measures are required at this time. Best management practices will ensure soil transport is minimal during construction activities.

4.12.5 Alternate Site Assessment

Of the five alternate sites, there are farmland areas associated only with the South Fitzgerald property. Much of this site is identified as Burkhardt loam or Waukegan silt loam, which are identified as "Farmland of Statewide Importance" and "All Areas are Prime Farmland," respectively.

4.13 Water Resources

4.13.1 Surface Water

4.13.1.1 Existing Conditions

The project site is within the Buffalo-Whitewater watershed (HUC8: 07040003) and immediately adjacent to the Mississippi River. Impaired and public waters are described in Table 7, "Impaired and Public Waters Within One Mile of Wabasha Barge Facility." The Mississippi River is currently impaired for Mercury and PCBs in fish tissue.

Table 7: Impaired and Public Waters Within One Mile of Wabasha Barge Facility

AUID	Name	Impaired Use	Additional Impairments	Distance to Project Area
07-0400-03-627	Mississippi River – U.S. Lock & Dam #4 Pool	Aquatic Life / Consumption	Mercury in fish tissue PCB in fish tissue	Within/adjacent
NA	Brewery Creek	NA	NA	~0.25 mile

Brewery Creek is a steep, small stream within a 3.95 square mile highly-forested watershed that discharges into the Mississippi River just north of the Study Area halfway between the north end of Wabasha and Read's Landing. The Study Area does not directly influence the quality of Brewery Creek.

The Mississippi River receives drainage directly from the Study Area and has a 56,940 sq mi watershed at the project location. The direct drainage area from the Study Area represents less than 0.0003% of the total contributing area to the Mississippi River at the site location. As noted, the Mississippi River is currently impaired for Mercury and PCBs in fish tissue. Just upstream of the site is Lake Pepin, a natural lake formed by the backup of water behind sedimentary deposit of the Chippewa River's delta and Lock and Dam 4 downstream at Alma, Wis. The lake is currently impaired for excess sediment and nutrients which has resulted in multiple Total Maximum Daily Load (TMDL) studies. Lake Pepin is considered part of Pool 4, and its impairments have potential to propagate to the lower pool at the project site if sediment and nutrient loading from the larger watershed are not addressed.

USACE manages estimated dredged material quantities of approximately 270,000 CY of material per year within Lower Pool 4. Stockpiled material is often temporarily placed on elevated sediment deposits on the Chippewa River delta.

4.13.1.2 No-Build Alternative Assessment

The Study Area would remain in a mix of natural and historically disturbed vegetated condition in the no-build alternative. This would not change the impairment status of the Mississippi River or other surface waters. Sediment loads from the upstream Lake Pepin, Chippewa River and larger contributing watershed would continue to threaten fish and aquatic life and threaten to fill Pool 4 over time. Dredging activities currently enacted by the USACE would need to find an alternate offloading facility for removal of sediment from the surface waters and floodplain areas. By not constructing the preferred alternative, which expedites the movement of dredged material away from the river, sediment is placed in flood-prone areas for longer periods of time which increases the likelihood that large storm events can sweep dredged material back into the river channel.

4.13.1.3 Preferred Alternative Assessment

The construction of the Preferred Alternative includes tree clearing and ground disturbance, leading to increased likelihood for sediment to be transported to downstream surface waters. With cumulative watershed impacts, turbidity may be added to the list of items contributing to the Mississippi River impairment considerations. Furthermore, the site operator's equipment will require fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). The use of these chemicals increases the likelihood of a spill on site that may flow to surface waters.

The in-stream impacts to the Mississippi River are anticipated from dredging for the side channel access that is anticipated along the path shown on Exhibit 1 of Appendix D. [Dredging within the main navigation channel is not the subject of this evaluation.] The dredging associated with the Wabasha Barge Facility includes creating a barge access channel for docking. Dredging associated with these activities will impact 10.2-acres of the Mississippi River, removing approximately 37,000 CY of material (Appendix D, Exhibit 2, "Proposed Wetland Impact Map").

4.13.1.4 Preferred Alternative Mitigation Measures

The impacts to the Mississippi River will include dredging approximately 37,000 CY of material to create a side access channel for barge traffic. There are no known or anticipated contaminants in the immediate vicinity of the Study Area. Dredging will require permitting through the Corps and MNDNR,

and all necessary permit and approval requirements will be followed, in accordance with requisite standards.

The EPA-approved impairments for the Mississippi River are considered non-construction related and all project activities will comply with the NPDES construction stormwater permit. Bank armoring along the proposed transfer site is proposed to reduce erosion potential during high flows and reduce the likelihood of additional impairment to the Mississippi River and adjacent wetland areas. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the NPDES Permit to reduce or eliminate the potential for increased turbidity or other surface water impacts. Stormwater infiltration practices will filter runoff from the project site to offset sediment loading and treat runoff prior to discharging to surface waters. An Industrial Stormwater permit may be necessary, and all site construction activities and operations will comply with these additional permit requirements.

4.13.1.5 Alternate Site Assessment

The dredging impacts for the five alternative sites have been estimated both in terms of area and volume and can be found in **Table 1 – Alternate Site Assessment**. The Mississippi River shoreline depths vary within the approximate 2.2-mile stretch encompassing the alternative sites as does the length of the proposed constructed channel to allow for barge access to each of the alternative sites. Dredging would be required for all the alternative sites. Therefore, there are anticipated environmental impacts for each site what would require mitigation measures, permitting and best management practices.

4.13.2 Wetlands

4.13.2.1 Existing Conditions

On June 18, 2020, and June 25, 2020, a field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the study area. The boundaries of the wetlands study area, which do not include the edge of the Mississippi River, are shown on Exhibit 1 of Appendix D. The field investigation found a total of four Type 1 (Seasonally Flood Basin/Floodplain Forest) wetlands (Wetland 1 through Wetland 4). Wetland boundaries shown on Exhibit 1 of Appendix D were approved by the Minnesota Wetland Conservation Act (WCA) Notice of Decision dated September 4, 2020 (Appendix D).

The Study Area was historically used as a gravel pit, at least since the 1930s. Natural features, especially in upland areas of the site, have been degraded from a long history of site use. Site observations indicate that reclamation of the site never took place, and it remains largely disturbed. Large stockpiles, abandoned equipment, and debris litter the upland portion of the site in its current state. Based on review of historical aerial photographs of the Project Site, Wetland 1, Wetland 4, and a small portion of Wetland 3 appear to be incidental in nature. The incidental wetlands were likely a result of depressions remaining from gravel mining operations. Invasive species were observed to dominate at least one strata of vegetation within Wetland 1, 2, and 4.

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredged or fill material into waters of the United States, which includes on-site wetlands and the Mississippi River. Section 10 of the Rivers and Harbors Act regulates alteration of navigable waters of the United States. It is anticipated that an Individual Permit through the US Army Corps of Engineers (USACE) will be required to satisfy Clean

Water Act Sections 404 and Section 10 of the Rivers and Harbors Act. Section 401 of the Clean Water Act requires a water quality certification for any activity that requires a federal permit for discharge into Waters of the United States. The Minnesota Pollution Control Agency (MPCA) certifies Section 401 water quality and has authority over Waters of the State, including incidental wetlands, isolated wetlands, streams, and other surface waters that are federally or WCA non-jurisdictional.

The CWA and WCA require that impacts to aquatic resources be avoided if practicable alternatives exist. An alternatives analysis to satisfy these regulations will be completed within the required State and Federal permitting documents.

The "No-Build Alternative" and a discussion of mitigation measures are described in the sections below.

4.13.2.2 No-Build Alternative Assessment

Under the No-Build alternative, impacts to wetlands from the Wabasha Barge Terminal Project would be avoided. Under a No-Build Alternative, emergency actions such as placement of fill material within the main channel border of the Mississippi River could take place. Aquatic habitats and threatened and endangered species could be impacted by this action under emergency conditions. The No-Build Alternative would not achieve project objectives. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar impact to the wetlands as the preferred permanent alternative.

4.13.2.3 Preferred Alternative Assessment

The Preferred Alternative includes construction of the Proposed Barge Facility with wetland impacts that have been minimized to the greatest extent practicable while still achieving the project goals. The preferred alternative layout, approved wetlands, and aquatic resource impacts are shown on Appendix D, Exhibits 1 through 3.

The Proposed Project is within a site identified by the MBS as having Moderate Biodiversity Significance (Appendix D, Exhibit 3, "Minnesota Biological Survey Map". Wetland 3 contributes to this designation and is considered a high value wetland and therefore avoidance of impacts to Wetland 3 was considered a high priority. Wetland 3 is the most natural and undisturbed portion of the site and provides the most potential habitat for protected species. Wetland 3 will not be directly impacted by the preferred alternative and the "Moderate Biodiversity" designation is anticipated to remain intact.

The Preferred Alternative would permanently impact one wetland (Wetland 1). Proposed impacts to Wetland 1 are due to filling a portion of the wetland for grading and construction of the barge facility. Wetland 1 is adjacent to the proposed barge/dock and off-loading area, which contains the material hauler, hopper, scale, and conveyor system. A portion of that wetland will not be filled, however, as a conservative estimate the entire wetland is considered permanently impacted. Permanent proposed impacts to Wetland 1 are 0.40 acres.

4.13.2.4 Preferred Alternative Mitigation Measures

Impacts to delineated wetlands and the Mississippi River are proposed as part of the Wabasha Barge Facility project. The proposed project will impact a total of up to 0.40 acres of wetland within Bank Service Area (BSA) 7 and the Mississippi River Watershed.

Mitigation efforts will be completed in accordance with local, State, and Federal regulations. Mitigation requirements will be met prior to construction activities impacting wetlands or streams at the site. The city will work closely with local (LGU), state (MNBWSR, MNDNR, and MPCA), and federal (USACE) agency staff to identify requirements and ensure all potential concerns are addressed. Permit applications and plan sets will be submitted to the appropriate agencies for review.

The preferred method of mitigation will be to purchase credits from a mitigation bank within the same BSA and major watershed as the site. It is anticipated that mitigation for the wetland impacts will occur at a minimum of a 2:1 ratio (i.e., 0.80 acres of wetland replacement for the 0.40 acres of impact) through a purchase of wetland credits within BSA 7.

4.13.2.5 Alternate Site Assessment

The wetland impacts for the five alternative sites have been estimated and can be found in **Table 1 – Alternate Site Assessment**. As all of the alternative sites are located along the Mississippi River and are within the 100-Year Floodplain, all of the sites are anticipated to have similar wetland impacts as each site would have to be raised above the floodplain to facilitate the proposed use.

Therefore, there are anticipated environmental impacts for each site what would require mitigation measures, permitting and best management practices.

4.13.2.6 Alternate Design/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to wetlands within the Carrels Site. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	No change to wetland impacts
Use of Smaller Barges	No change to wetland impacts

4.13.3 Stormwater

4.13.3.1 Existing Conditions

The Wabasha Barge Terminal project area was historically used as a gravel pit. Natural features, especially in upland areas of the site, have been degraded from a long history of site use but remain heavily wooded with multiple wetlands on site at the toe of the bluff. Site observations indicate that reclamation of the site never took place and portions of the site remain disturbed. Existing conditions stormwater runoff flows through wooded and wetland areas down a steep bluff before joining the Mississippi River. Existing conditions hydrology is described in depth in the attached document “USACE Dredge Material Management Plan – Preliminary Drainage Memo” (Appendix E).

The Project Site and surrounding surface waters are not located within a defined watershed district or watershed management organization area and thus do not have specific and more stringent pollutant removal requirements for stormwater runoff.

4.13.3.2 No-Build Alternative Assessment

The site would continue to experience natural filtering of stormwater through the forest regions, shallow wetlands, and shallow subsurface flow. There would be no anticipated change in flow rates, volumes, or timing of storm flows. Disturbed areas due to prior gravel pit operations would continue to transport more runoff, sediment, and nutrients to the Mississippi River than in naturally occurring conditions. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would increase the impervious surface of the site and have a similar impact to the stormwater as the preferred permanent alternative.

4.13.3.3 Preferred Alternative Assessment

The preferred design adds 3.3 acres of impervious surface to the site by providing an access road and barge docking station with associated infrastructure, increasing discharge rates, runoff volumes, sediment loading and increasing the flashiness of flows within the grading footprint, which discharges directly to the Mississippi River. The preferred Site Plan minimizes the impervious footprint while providing adequate access and maneuverability for dredged material transport operations.

Tree clearing and ground disturbance will occur during construction, leading to increased likelihood for sediment to be transported to downstream surface waters.

4.13.3.4 Preferred Alternative Mitigation Measures

Ditches will be constructed around the perimeter of the active operations area to collect, store, and treat runoff prior to discharging to the Mississippi River. Areas not part of the facility operations will remain in natural or historically disturbed condition. An infiltration basin is proposed to mitigate impacts to stormwater runoff caused by the proposed alternative, catching stormwater from previously disturbed areas that are currently not receiving treatment.

The design of the infiltration basin is described in the document “USACE Dredge Material Management Plan – Preliminary Drainage Memo” (Appendix E). The water quality volume would infiltrate and receive treatment prior to entering the Mississippi River via shallow subsurface flow. Offsite discharge rates are not increased after mitigation and the majority of stormwater flow throughout the year is treated prior to discharge. Sediment is captured via infiltration pretreatment in the form of rock check dams, mitigating potential sediment load increases due to impervious surface construction.

During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the MPCA NPDES Permit. The EPA-approved impairments for the Mississippi River are considered non-construction related and do not require any additional best management practices or plan review for compliance with the NPDES Construction Stormwater Permit.

4.13.3.5 Alternate Site Assessment

The Izaak Walton Park site could use a portion of the existing parking lot as part of the barge terminal facility reducing the impervious surface needed for construction. However, additional impervious

surface areas would be needed at the dock area and along the truck load/unload areas increasing the need for stormwater facilities.

The Wabasha Municipal Dock site is a fully developed park site with limited impervious surfaces for shelters and trails. The majority of the site is pervious open space. Development of the site would significantly increase the impervious surface and stormwater needs.

The Mississippi Parkside Marina site could use a portion of the boat vehicle parking area as part of the proposed barge use to reduce the impervious area of the site. However, additional impervious surface areas would be needed at the dock area and along the truck load/unload areas increasing the need for stormwater facilities.

The Wabasha Marina has been partially developed with portions of the site covered with gravel for access and parking. Portions of this area would be improved and used for the necessary truck traffic and barge terminal use. However, additional improvements would likely increase the impervious surface for the site increasing the need for stormwater facilities.

South Fitzgerald is a vacant undeveloped site. The proposed use would increase the impervious surface of the site for the dock, load/unload areas as well as the access route on site requiring that all improvements be managed with necessary stormwater facilities.

For all the alternative sites, ground disturbance and tree removal, where present, would occur during construction, leading to increased likelihood for sediment to be transported to downstream surface waters.

4.13.3.6 Alternate Design/Magnitude Assessment

The alternates that expand material storage areas or change the layout of the proposed site may increase stormwater runoff and would require additional stormwater management to ensure consistent or improved water quality and water quantity at the project site. Should any additional changes occur on the project area during final design, a stormwater management plan and/or stormwater pollution prevention plan would assess and capture the site mitigation requirements.

4.13.4 Groundwater

4.13.4.1 Existing Conditions

The Project Site is located within the East-Central Minnesota Groundwater Province and within the Quaternary water-table and buried unconfined aquiver. No springs are identified onsite by the MNDNR Spring Inventory. Depth to groundwater within the site is generally 0-20 feet.[37] The Project Site is not located within an existing DWSMA or a wellhead protection area (see Figure 6, “Geologic Conditions/Groundwater”) but there are DWSMA and Wellhead protection areas located nearby. There is an existing unverified well onsite, Well ID: 536092 (**Exhibit 11**, “Minnesota Well Index”).

[37] Peterson, Todd A. 2005. C-14 Geologic Atlas of Wabasha County, Minnesota. Part B, Plate 8 – Hydrogeology of the Unconsolidated and Bedrock Aquifers. Retrieved from MNDNR. https://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/wabacga.html.

4.13.4.2 No-Build Alternative Assessment

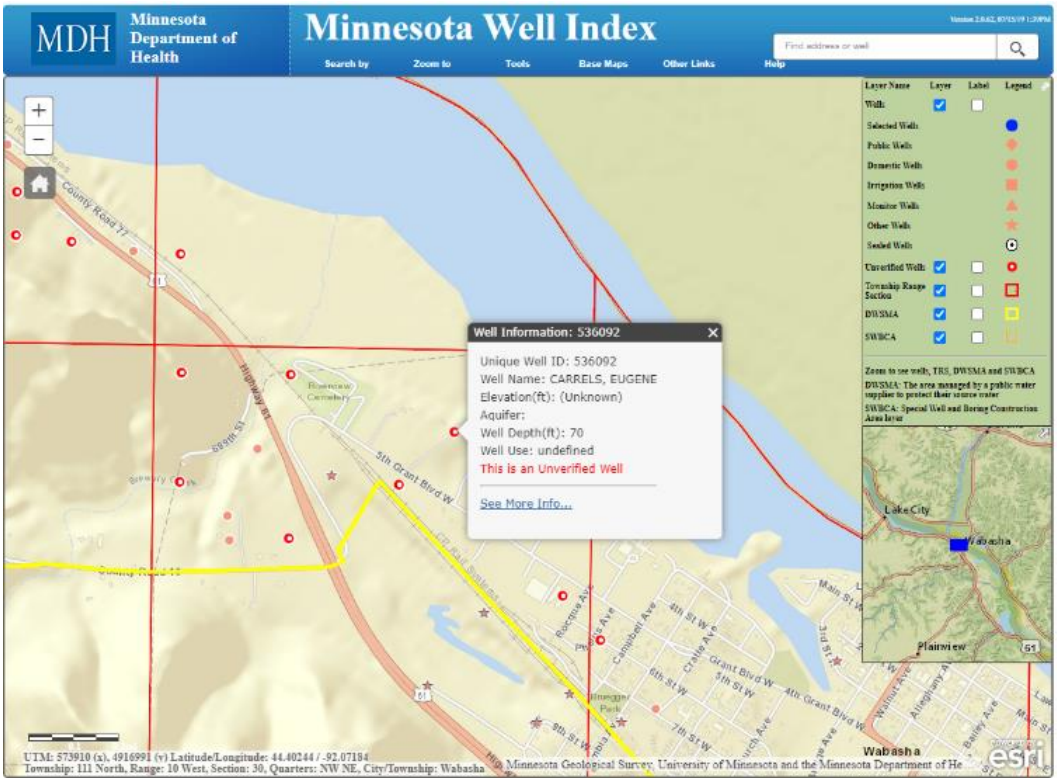
No impacts are anticipated to the groundwater aquifer in the No-Build alternative.

4.13.4.3 Preferred Alternative Assessment

Although the Project Site is located outside of a DWSMA, the sand and gravel nature of this region has the potential to transport potential contaminants to the aquifer. While the region is within a potential karst area, there are no known karst features or springs that could directly link to groundwater resources.

The treatment of stormwater runoff via and infiltration swale and basin increase local flux of water to groundwater within the lower floodplain bench but is not anticipated to increase nutrient levels or affect groundwater reserves. The footprint of the basin is not expected to increase the water table, which will be most responsive to fluctuation in the Minnesota River levels. When the site gets connected to public utilities – water/wastewater – there are no anticipated impacts and the current system is sufficient to manage the increases.

Exhibit 11: Minnesota Well Index



4.13.4.4 Preferred Alternative Mitigation Measures

Follow all required guidelines and permit requirements, including best management practices. Should karst or other unique geologic conditions be identified during project construction, activities will halt, and the contractor will immediately coordinate the MNDNR for next steps.

Coordination with MDH will help locate the unverified well and manage it appropriately by either sealing the well or otherwise evaluating for future use at the project site.

4.13.4.5 Alternate Site Assessment

No impacts are anticipated to the groundwater aquifer for the alternate sites.

4.13.5 Wastewater

4.13.5.1 Existing Conditions

There are no wastewater utilities currently connected to the Study Area.

4.13.5.2 No-Build Alternative Assessment

There are no anticipated wastewater connections with the No-Build alternative and existing site conditions will remain in place.

4.13.5.3 Preferred Alternative Assessment

Wastewater connectivity may occur with future construction of a small operations facility. There are no anticipated impacts to the current wastewater system, and it is of sufficient capacity to manage any identified additions.

4.13.5.4 Preferred Alternative Mitigation Measures

All required permits and regulatory requirements will be followed prior to connecting wastewater utility infrastructure.

4.13.5.5 Alternate Site Assessment

Wastewater connectivity could occur with future construction on all alternative sites. There are no anticipated impacts to the current wastewater system, and it is of sufficient capacity to manage any of the identified additions.

4.13.6 Water Appropriation

4.13.6.1 Existing Conditions

There are no water utilities currently connected to the Study Area.

4.13.6.2 No-Build Alternative Assessment

There are no anticipated water connections with the No-Build alternative and existing site conditions will remain in place.

4.13.6.3 Preferred Alternative Assessment

Water connectivity may occur with future construction of a small operations facility, but no additional appropriations are anticipated as part of this utility connection. There are no anticipated mitigation requirements for when water utilities are expanded to the project site. The current system is of sufficient capacity to manage any anticipated additions.

4.13.6.4 Preferred Alternative Mitigation Measures

All required permits and regulatory requirements will be followed prior to connecting water utility infrastructure.

4.13.6.5 Alternate Site Assessment

There are no water utilities currently connected to any of the alternative sites. A water connection would have to be extended during construction.

4.14 Contamination/Hazardous Materials/Wastes

4.14.1 Existing Conditions

Potentially Contaminated Sites

According to the MPCA's "What's in My Neighborhood" interactive mapping database, there are seven existing potential environmental hazards within ½-mile of the Study Area. Table 8, "MPCA "What's In My Neighborhood Sits within ½ Mile" and Figure 11, "Potentially Contaminated Sites" identifies those uses within a half-mile radius from the proposed site.

Table 8: MPCA "What's In My Neighborhood" Sites within ½ Mile

Site Number	Site Name	Distance of Proposed Site	Activity
No Number Available	KPR US Cardinal Health	0.35 miles	• Hazardous Waste – Minimal Quantity Generator (Active) (MNR000080846) • Industrial Stormwater (Active) (MNRNE338S) • Air Quality (Inactive) (15700031) • Industrial Stormwater (Inactive) (A00016400)
No Number Available	Timm Lawn Care	0.45 miles	• Aboveground Tanks (Active) (TS0124982)
No Number Available	Gunderson St. Elizabeth Medical Center	0.35 miles	• Air Quality (Active) (15700032) • Hazardous Waste – Very Small Quantity Generator (Active) (MND076513209)

Dredged Materials Testing

To broadly assess the concentrations and location of contaminants found in Lower Pool 4 sediments, USACE staff collected 28 sediment samples from Lower Pool 4 between 2013 and 2020 (see Figure 3 of the USACE Lower Pool 4 DMMP). To specifically assess the concentrations of contaminants within the Read's Landing access cut at the head of the pipeline, two borehole sediment samples were collected in June 2021 (see Figure 3 of the USACE Lower Pool 4 DMMP). Each sample was analyzed for

polychlorinated biphenyl (PCB), polycyclic aromatic hydrocarbon (PAH), pesticides and heavy metals and compared to Minnesota Pollution Control Agency's (MPCA) sediment reference values (SRVs) and the sediment quality triad (SQTs), which refer to extent of degradation within the sediment caused by contamination. Of those 31 samples, two were collected in boat harbor at Alma, Wisconsin, three in shoreline access area (Alma Marina and Read's Landing), and 26 in the main navigation channel. Collection data can be found in Appendix F of the USACE Lower Pool 4 DMMP.[38]

In general, the MPCA SRVs limits are higher concentration thresholds than SQTs. Furthermore, level II SQTs are higher than level I SQTs. In terms of concentration levels from low to high, if a contaminant found in sediment is below the SQT level I threshold, it has very low levels of that contaminant and is likely safe for bottom-dwelling aquatic organisms. If the contaminant level is higher than the SQT level I threshold but below the level II threshold, it is likely moderately safe for those organisms. If the contaminant level is above the SQT level II threshold, that contaminant is likely at a level that is harmful to bottom-dwelling aquatic organisms. An exceedance of the SQT level II threshold will often still be well below the SRV threshold, as the SRV thresholds are set at levels to protect human health based on contact with the material in two upland settings. Contaminant thresholds for SRVs in the recreational/residential setting are lower than the commercial/industrial settings because it is assumed that in the former settings there would likely be more contact with the sediment, including contact by children.

To summarize, in order from lowest to highest levels of contamination, are SQT level I, SQT level II, SRVs for residential/recreation, and then SRVs for commercial/industrial.

Results of the 2013-2020 Lower Pool 4 survey and the 2021 borehole samples showed that the sediments in Lower Pool 4 were uncontaminated. There were no SQT or SRV exceedances observed. Additionally, there are no restrictions for upland placement due to contaminant levels.

4.14.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to potentially contaminated sites, hazardous materials, and wastes.

4.14.3 Preferred Alternative Assessment

A Phase I Environmental Site Assessment was completed in January 2020 and determined that there is no potential risk for contamination due to recognized environmental conditions and previous land uses on the project site. The potential for impacts to the Study Area is considered as a low potential for encountering contaminated materials during project operations.

4.14.4 Preferred Alternative Mitigation Measures

Any potentially contaminated materials encountered during construction and operations will be managed and treated in accordance with applicable Federal, State, and local regulations. A Phase II Environmental Site Assessment was not recommended for the Project Site.

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[38] USACE. 2023. Lower Pool 4 Dredged Material Management Plan. https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Lower%20Pool%204/Pool%204_Final%20DMMP.pdf?ver=a8kfBkiPjAIcRyF76dhzjg%3d%3d, accessed July 2023.

All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from the MPCA, MNDNR, and Wabasha County for grading and erosion control. DNR and/or BWSR-approved seed mixes and wildlife friendly erosion control mesh will be used to ensure soil stabilization.

4.14.3 Alternate Site Assessment

According to the MPCA's "What's in My Neighborhood" interactive mapping database, the following hazardous sites are in close proximity to the alternative sites.

There are two hazardous waste sites between 700 and 800 feet of the Izaak Walton Park and the Mississippi Parkside Marina alternative sites located on the 800 and 900 blocks of 5th Grant Boulevard West. See MCPA ID: MNR000060103 and 148254238. These potential risks would have to be further investigated.

There is an underground storage tank adjacent to the Wabasha Municipal Park at the Wabasha Resort/ Ryans On The River within 100 feet of the Park north of Main Street West. There is also a Hazardous Waste and very small quantity generator located just south of the Wabasha Resort on Main Street West within 100 feet of the Park. See MCPA ID: TS0013777 and MNR000058784. The City of Wabasha also has a small park shop building located at 220 Bridge Street, approximately 750 feet from the park site, which is listed as a Petroleum Remediation, Leak Site. See MPCA ID: LS0006674. These potential risks would have to be further investigated.

The Wabasha Marina has a "Hazardous Waste; Industrial Stormwater; Petroleum Remediation, Leak Site; Underground Tanks" use on site. See MPCA ID: LS0016423; MNR000005603; MNR0536YM; MNR053957; TS0123516. These potential risks would have to be further investigated.

There are no listed hazardous sites near the South Fitzgerald Alternate Site.

4.15 Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources

4.15.1 Resources, Habitats, and Vegetation

4.15.1.1 Existing Conditions

The Study Area is located at UMR Mile 760 within the Lower Pool 4 of the Upper Mississippi River. This section of the river is part of the "pooled portion" of the river, which exists upstream of St. Louis, controlled by a series of locks and dams. Construction of the dams in the 1930s significantly altered the ecology of the Upper Mississippi by creating a series of slackwater navigation pools. Pool 4, which is 44.2 miles long, extends from Lock and Dam 3 at Red Wing, Minnesota to Lock and Dam 4 at Alma, Wisconsin, and includes Lake Pepin. Lower Pool 4 provides a variety of aquatic habitats for fish and mussels within main channels, side channels, secondary channels, and backwater areas. Seasonally flooded backwaters also provide habitat for a variety of species including racoon, muskrat, beaver, mink, river otter, white-tailed deer, reptile species, amphibian species, and numerous waterfowl/migratory bird species.

The Upper Mississippi River National Wildlife and Fish Refuge was established in 1924 as a refuge for fish, wildlife and plants and a breeding place for migratory birds. The Upper Mississippi National Wildlife and Fish Refuge is the longest national wildlife refuge in the lower 48 states, extending 261 miles from the Chippewa River in Wisconsin almost to Rock Island, Illinois. The refuge is an important migration site for waterfowl (*e.g.,* ducks, swans, etc.) and the bald eagle, as well as an important nesting site for water birds (*e.g.,* herons, bitterns, etc.) and the bald eagle.[39] Approximately 50 percent of canvasback ducks occurring in the continental US use the refuge during fall migration. It is an Audubon designed Important Bird Area (ABA) and Ramsar designated Globally Important Bird Area. Lower Pool 4 of the Mississippi River is part of the Upper Mississippi National Wildlife and Fish Refuge which is managed by the USFWS. The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project.

According to MNDNR's Ecological Classification System, the Project Site is within the Eastern Broadleaf Forest Province, Paleozoic Section, Blufflands Subsection. "The Blufflands provide a critical migratory corridor for forest songbirds, raptors, and waterfowl. It is the most important subsection for reptiles and one of the most important subsections for mollusks."[40] More USGS Species of Greatest Conservation Need (SGCN) are known or predicted to occur within the Blufflands Subsection than any other subsection in Minnesota. There are a total of 156 species on the SGCN list in the Blufflands subsection, 82 of those species are also listed as Federal or State endangered, threatened, or of special concern.

Steep bluffs and deep stream valleys up to 600 feet deep are characteristic of the Blufflands. Two key habitats for the Blufflands Subsection as identified in the Minnesota Comprehensive Wildlife Conservation Strategy[36] are present at the site: cliff/talus habitat and the Mississippi River.

The Minnesota Biological Survey (MBS) ranks survey sites at the conclusion of work in a region. The ranking is based on presence of rare species populations, size and condition of native plant communities, and the context of the site within the greater landscape. A Natural Heritage Review letter dated July 8, 2022 (Appendix G; MNDNR Correspondence # MCE 2022-00127) indicates the Proposed Project is within a site identified by the MBS as having Moderate Biodiversity Significance. "Sites ranked as moderate can contain occurrences of rare species, moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery." Three State-listed plant species of special concern have been documented at the MBS site, including: green dragon (*Arisaema dracontium*), Gray's sedge (*Carex grayi*), and cattail sedge (*C. typhina*) (MNDNR Correspondence # MCE 2022-00127).

Existing vegetation and conditions at the Project Site based on the wetland delineation completed in June 2020 are described below. Wetland 3, located on the northwest side of the site, is a seasonally flooded forested wetland dominated by silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), and black willow (*Salix nigra*). Herbaceous vegetation observed in wetland 3 include jewelweed (*Impatiens capensis*), creeping jenny (*Lysimachia nummularia*), Canadian clearweed (*Pilea pumila*), and white vervain (*Verbena urticifolia*). Dominant species observed in Wetland 1 were American elm, boxelder, and European buckthorn. Wetlands 1 and 2 contained significant amounts of

[39] Audubon. 2023. Upper Mississippi River NWR IBA. Electronic document: https://www.audubon.org/important-bird-areas/upper-mississippi-river-nwr-iba, accessed on February 16, 2023.

[40] Minnesota Department of Natural Resources. 2006. Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife, Comprehensive Wildlife Conservation Strategy. Electronic document, https://files.dnr.state.mn.us/assistance/nrplanning/bigpicture/cwcs/profiles/blufflands.pdf, Accessed on February 20, 2023.

European buckthorn (*Rhamnus cathartica*), between 25 percent and 55 percent of total shrub cover. Wetlands 1 and 2 appear to have been incidentally created by historical gravel mining operations at the site rather than naturally occurring floodplain forests.

Species observed within upland areas or transition zones of the Project Site in June 2020 include: green ash, American elm, eastern cottonwood (*Populus deltoides*), and northern pin oak (*Quercus ellipsoidalis*) in the canopy layer; American elm, common pricklyash (*Zanthoxylum Americanum*), buckthorn, Bell's honeysuckle (*Lonicera x bella*), Siberian elm (*Ulmus pumila*), and green ash in the shrub/sapling layer; and Pennsylvania sedge (*Carex pensylvanica*), grass-leaved goldenrod (*Euthamia graminifolia*), creeping jenny, jewelweed, Canadian wood nettle (*Laportea canadensis*), white vervain, Black-fruited clearweed (*Pilea fontana*), switchgrass (*Panicum virgatum*), Virginia creeper (*Parthenocissus quinquefolia*), Kentucky blue grass (*Poa pratensis*), poison ivy (*Toxicodentron radicans*), common blue violet (*Viola sororia*), hop trefoil (*Trifolium campestre*), and American vetch (*Vicia americana*) in the herbaceous layer.

Much of the upland portion of the Project Site has been substantially disturbed by historic mining activities. Site observations indicate that reclamation of the site never took place and remains largely disturbed. To this day, large stockpiles, abandoned equipment, and debris litter the upland portion of the Project Site.

MNDNR has designated Pool 4 of the Mississippi River as a Lake of Outstanding Biological Significance. The criteria for biological significance are based on occurrence and analysis of communities of aquatic plants, fish, birds, and/or amphibians. A lake may meet criteria for only one of the four communities for it to be given a designation. The criteria for the designation of a Lake of Outstanding Biological Significance include:

- High aquatic plant richness, high floristic quality, and a population of an endangered or threatened plant species.
- Important wild rice lakes.
- Exceptional fishery for selected game fish or an outstanding nongame fish community.
- One or more of the following: endangered or threatened colonial waterbird nesting area, presence of several endangered, threatened, or special concern lake bird species, or six or more lake bird Species of Greatest Conservation Need.

4.15.1.2 No-Build Alternative Assessment

No additional impacts would occur at the Project Site as a result of the no-build alternative. The project objectives would not be achieved. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar environmental impact as the preferred permanent alternative.

4.15.1.3 Preferred Alternative Assessment

The Proposed Project is expected to directly impact previously disturbed upland portions of the Project Site, Wetland 1, and the Mississippi River. Approximately 2.7 acres of trees will be cleared for site grading. Wetland 3 is the most natural and undisturbed portion of the Project Site. It is expected that

rare and/or protected vegetation occurring at the site would likely occur within Wetland 3. Wetland 3 will not be directly impacted.

Direct impacts to the upland portion of the Project Site will have only a minor impact on habitat as the uplands are generally already impacted. Increased traffic from hauling trucks can pose a hazard to wildlife attempting to cross the Project Site. Increased noise at the Project Site may cause wildlife sensitive to noise to relocate or avoid the Site.

Wetland 1 would be directly impacted by adding fill associated with the barge facility. This would be a permanent impact of 0.40 acres of Type 1 – Seasonally Flooded Wetland. Impacts to Wetland 1 are unlikely to cause loss of rare or protected species as this wetland represents a smaller and lower quality wetland habitat than Wetlands 2 or 3. Wetland 1 is also likely to be incidental in nature, caused by historic mining operations at the site. Animal species would no longer be able to use this wetland and would likely relocate to Wetland 2 or Wetland 3.

Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Invasive species (primarily European buckthorn) have been observed on site within Wetland 1 and Wetland 2. Other invasive species observed at the site include hop trefoil (*Trifolium campestre*), Canada thistle (*Cirsium arvense*), and reed canary grass (*Phalaris arundinacea*).

Impacts to cliff/talus habitat at the site are expected to be minimal and indirect. The existing road and river access will be improved, therefore, no additional bluff areas along the river will need to be altered. Impacts would be related to sound disturbance and increased human activity which may affect animal behavior within the habitat.

Impacts to vegetation within the MBS site of Moderate Biodiversity Significance are expected to be minimal and limited to construction of the barge facility infrastructure in uplands and Wetland 1.

Pool 4 of the Mississippi River is designated as a Lake of Outstanding Biological Significance. This project will not significantly impact valuable or protected plant species, wild rice communities, the use of the lake as an exceptional fishery, or the bird community. Specific impacts to protected species are discussed in Section 4.15.2.

4.15.1.4 Preferred Alternative Mitigation Measures

Preventing the spread of invasive species during construction and operation of the barge terminal facility will occur as part of BMPs measures that will be put in place to control and appropriately manage vegetation and invasive species. Disturbed areas on the site will primarily be replaced with gravel surfaces (access road, loading and stockpile areas). Reseeding and landscaping materials will be native seed mixes which are free of invasive plants or plant parts.

Impacts to wetlands will be mitigated per Section 4.13.2.

Tree removals will be limited to winter timelines to reduce potential impact to bat and bird species.

Ecologically Significant Areas:
Based on direction from MNDNR (Correspondence # MCE 2022-00127) the following Best Management Practices (BMPs) will be implemented to minimize impacts to the MBS Site of Moderate Diversity,

including the minimization of impacts to state-listed plant species of special concern. All equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species.

BMPs to mitigate impacts to resources, habitats, and vegetation:

- Vehicular disturbance will be minimized at the site. Vehicles are only to be allowed on the proposed access road.
- Necessary equipment and supplies will be stored/stockpiled in designated areas.
- Dredge material will only be placed in designated upland areas.
- Construction will be conducted during the winter months when the ground is frozen.
- Equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species.
- To the extent possible, operations will occur within already-disturbed areas.
- Disturbed areas will be revegetated with native species suitable to the local habitat as soon as possible post-construction.
- Weed-free seed mixes, topsoils, and mulches will be used for revegetation.
- To prevent the release of plastic fibers to the aquatic resources, the use of erosion control blankets will be limited to bio-netting or natural netting that do not contain plastic components. Hydro-mulch products will also be limited to plastic-free types.

4.15.1.5 Alternate Site Assessment

Construction of the proposed barge project on the Izaak Walton Park site is expected to directly impact 0.05 acres of wetlands and potentially impact 18 threatened, endangered or species of special concern along with the removal of approximately 0.25 acres of trees for site grading.

Construction of the proposed barge project on the Wabasha Municipal Dock site is expected to directly impact 0.17 acres of wetlands and potentially impact 18 threatened, endangered or species of special concern along with the removal of approximately 0.49 acres of trees for site grading.

Construction of the proposed barge project on the Mississippi Parkside Marina site is expected to directly impact 0.3 acres of wetlands and potentially impact 20 threatened, endangered or species of special concern along with the removal of approximately 0.42 acres of trees for site grading.

Construction of the proposed barge project on the Wabasha Marina site will potentially impact 20 threatened, endangered or species of special concern. No wetlands or trees are located on the parcel.

Construction of the proposed barge project on the South Fitzgerald site is expected to directly impact 0.17 acres of wetlands and potentially impact 17 threatened, endangered or species of special concern. There are no trees on the site.

See **Table 1 – Alternate Site Assessment** for alternate site data located above.

4.15.1.6 Alternate Design/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to vegetation and habitat within and adjacent to the Carrels Site. The expanded dredge area may disrupt aquatic

vegetation and shoreline species. Additionally, if expanded material storage areas were implemented, this would cause additional impacts to wetlands and result in further tree removals. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts Additional 4 acres of tree clearing
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	Increased number of trips may disrupt aquatic vegetation growth

4.15.2 Rare, Threatened, and Endangered Species and Ecosystems

4.15.2.1 Existing Conditions

State-Listed Species

Minnesota's Endangered Species Statute and the associated Rules (Minnesota Rules, Chapter 6134 and Parts 6212.1800 to 6212.2300) impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules.

A query of the Natural Heritag' Information System (NHIS) database was completed to assess the potential presence of state-listed threatened, endangered, and species of special concern within a one-mile radius of the project area. The review identified several occurrences of invertebrate animals, vascular plants, and vertebrate animals, including the following:

Invertebrates

- Black Sandshell Mussel (*Ligumia recta*) – Special Concern
- Butterfly Mussel (*Ellipsaria lineolate*) – Threatened
- Monkeyface Mussel (*Theliderma metanevra*) – Threatened
- Mucket Mussel (*Actinonaias ligamentina*) – Threatened
- Purple Wartyback Mussel (*Cyclonaias tuberculata*) – Endangered
- Round Pigtoe Mussel (*Pleurobema sintoxia*) – Special Concern
- Sheepnose Mussel (*Plethobasus cyphyus*) – Endangered
- Spectaclecase Mussel (*Cumberlandia mondonta*) – Endangered
- Spike Mussel (*Euryna dilatate*) – Threatened
- Wartyback Mussel (*Quadrula nodulata*) – Threatened

Plants

- Cattail Sedge (*Carex typhina*) – Special Concern
- Gray's Sedge (*Carex grayi*) – Special Concern
- Green Dragon (*Arisaema dracontium*) – Special Concern
- Muskingum Sedge (*Carex muskingumensis*) – Special Concern

Fish

- American Eel (*Anguilla rostrata*) – Special Concern
- Blue Sucker (*Cycleptus elongatus*) – Special Concern
- Mississippi Silvery Minnow (*Hybognathus nuchalis*) – Special Concern
- Paddlefish (*Polyodon spathula*) – Threatened
- Pirate Perch (*Aphredoderus sayanus*) – Special Concern

Birds

- Peregrine Falcon (*Falco peregrinus*) – Special Concern

Snakes

- Timber Rattlesnake (*Crotalus horridus*) – Threatened

Federally-Listed Species

Under the Endangered Species Act (ESA) (16 U.S.C. §§ 1531-1544), all federal agencies shall, in consultation with the Secretary of the Interior, use their authority to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of habitat determined under the ESA to be critical. The ESA provides a program for conserving threatened and endangered plants and animals, and the habitats in which they are found. It is designed to protect critically imperiled species from extinction. The ESA is administered by the United States Fish and Wildlife Service (USFWS). An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become "endangered" in the foreseeable future without further protection.

A regulatory review for federally-listed species surrounding the project area was conducted using the USFWS's Information for Planning and Consultation (IpaC) tool. The following species were identified during the review:

- Northern Long-eared Bat (*Myotis septentrionalis*) – Endangered (effective 3/31/23)
- Higgins Eye Pearlymussel (*Lampsilis higginsii*) – Endangered
- Spectaclecase Mussel (*Cumberlandia monodonta*) – Endangered

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior USFWS. The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) of 1940, amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or golden eagles, including their parts (including feathers), nests, or eggs.

- Bald Eagle (*Haliaeetus leucocephalus*) – Protected
- Black-billed Cuckoo (*Coccyzus erythropthalmus*)
- Golden Eagle (*Aqulla chrysaetos*) – Protected
- Lesser Yellowlegs (*Tringa flaviper*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*)
- Rusty Blackbird (*Euphagus carolinus*)
- Short-billed Dowitcher (*Limnodromus griseus*)

Species Descriptions and Discussions

Mussels

Lower Pool 4 of the Mississippi River hosts large assemblages of aquatic invertebrates and mussels. Invertebrate diversity can be attributed to the variety of habitats found in the area. Specialized invertebrates that rely on running water can be found in a range of water velocities near the project area. Several mussel surveys have been completed within Lower Pool 4, many of which were associated with channel maintenance and dredging activities. As many as 43 species of mussels have historically been observed in Pool 4.[41] In 2002, 2015, and 2021, the Corps of Engineers completed mussel skimmer dredge transects along the stretch of the river located immediately adjacent to the proposed Barge Terminal Facility. According to the Corps mussel survey data, only two live mussels of two common species (Threehorn Wartyback and Threeridge) were found in 2002. No live mussels were found in this stretch of the Mississippi River during the 2015 or 2021 surveys.

The MNDNR and USFWS required a mussel survey for this project. Level II and Level III surveys were conducted June 6th through June 8th, 2023, under Minnesota DNR Special Permit No. 32812 and USFWS Recovery Permit ES59798B-2. No federally listed mussel species were detected during the surveys. One state-listed threatened species, the Mucket, was detected as a rare occurrence. Two species of special concern, the black sandshell and the round pigtoe, were detected live and considered relatively common through the study area. The Final Report – Mussel Survey of the Mississippi River for a Proposed Barge Terminal In Wabasha, MN is included as Appendix F.

The mucket, once a widely distributed species within the Mississippi and Hudson Bay drainages, is not common only in the St. Croix River and some of its tributaries and occurs at low densities in the Mississippi, Zumbro, and Otter Creek rivers according to the MNDNR Rare Species Guide. The mussel prefers medium to large rivers with coarse sand and gravel. Threats to this species includes dams, small

[41] Kelner. 2021. Upper Mississippi River mussel species list. US Army Corps of Engineers, St. Paul District.

population sizes, sedimentation, pollution, channelization, and non-native species, particularly invasive zebra mussels (*Dreissena polumorpha*).

Background review of federally listed mussel species:

The Wisconsin Department of Natural Resources (WIDNR) conducted a survey of unionid mussels throughout the Upper Mississippi River from 1977 through 1979. During that survey, 115 specimens were collected in the Lower Pool 4, of which 13 species were documented, the most abundant being Threeridge, Pigtoe, and Pimpleback.[42] No Higgins eye mussels were observed, Sheepnose and spectaclecase mussels were not listed, and one purple wartyback mussel was observed in Lower Pool 4.

Ten state-listed species of mussel have been observed within a mile of project area including the endangered purple wartyback, sheepnose, and spectaclecase mussels.[43] The spectaclecase mussel is also Federally-listed as endangered as well as the Higgins eye mussel.[44]

Spectaclecase mussels are a large species of mussel, growing up to 9 inches in length. Spectaclecase mussels are found partially or fully buried in sediments of large rivers, preferably in firm mud and sheltered areas. They are known to be extant within 20 streams in 11 states, including the Mississippi River in Minnesota. Within Pool 4, at river mile 760 to 760.5, two individuals were documented in 2009.[45] Threats to this species includes dams, small population sizes, sedimentation, pollution, channelization, and non-native species, particularly invasive zebra mussels (*Dreissena polumorpha*).

Higgins eye mussel is only found in the Upper Mississippi River, north of Lock and Dam 9 and three tributaries of the Mississippi. USFWS defined ten Essential Habitat Areas (EHAs) for this species as areas of utmost importance to the conservation of the species.[46] The list of EHAs does not include any areas within Pool 4. This species depends on deep, free flowing rivers and clean water. Causes of decline include introduction of invasive species, habitat loss, altered water flow patterns, and dredging and waterway traffic silting over mussel beds. Colonization of exotic and invasive zebra mussels are currently considered the largest threat to this species. Zebra mussels attach to shells of mussels preventing them from normal movement (traveling, burrowing, and closing an opening shells).[8]

In Minnesota, the purple wartyback mussel is currently only known to be extant within the Mississippi River and portions of the St. Croix River.[47] It is considered extremely rare within the Mississippi River.

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[42] Wisconsin Department of Natural Resources. 1981. A Survey of Unionid Mussels in the Upper Mississippi River (Pools 3-11). Technical Bulletin No. 124. Madison, WI. Electronic document, https://search.library.wisc.edu/digital/AFF3IUKQUQYSEJ8M, accessed on February 20, 2023.

[43] Minnesota Department of Natural Resources. 2023. Natural Heritage Information System. Electronic Resource, https://www.dnr.state.mn.us/nhnrp/nhis.html, accessed on February 17, 2023.

[44] United States Fish and Wildlife Service. 2023. Information Planning and Consultation (IPaC). United States Fish & Wildlife Service. Electronic resource, https://ipac.ecosphere.fws.gov/, Accessed on February 16, 2023.

[45] United States Fish and Wildlife Service. 2019. Spectaclecase (Cumberlandia monodonta) 5-Year Review: Summary and Evaluation. August 12, 2019. Electronic document, https://ecos.fws.gov/docs/five_year_review/doc6103.pdf, accessed on February 22, 2023.

[46] United States Fish and Wildlife Service. 2004. Higgins Eye Pearlymussel (Lampsilis higginsii) Recovery Plan: First Revisions. May 2004. Electronic document, https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1031&context=endangeredspeciesbull, accessed on February 22, 2023.

[47] Minnesota Department of Natural Resources. 2018a. Rare Species Guide: Cyclonaias tuberculata. Rev. by Bernard Sietman. Electronic document, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV09010

Accessed on February 22, 2023.

The preferred habitat for this species is gravel substrates in moderate currents of large rivers. Suitable host fish for the glochidia of purple wartyback mussels include channel catfish, yellow bullhead, flathead catfish, and black bullhead. Threats to the purple wartyback and other protected mussel species are similar to the threats for spectaclecase and higgins eye mussels: dams, sedimentation, pollution, channelization, and non-native species (particularly zebra mussels).

Plants

Four state-listed plant species of special concern have been documented near the site, including: green dragon (*Arisaema dracontium*), Gray's sedge (*Carex grayi*), *Muskingum sedge* (*Carex muskingumensis*), and cattail sedge (*Carex typhina*) (MNDNR Correspondence # MCE 2022-00127).

Green dragon is a facultative-wet species found in active floodplain forests in the eastern United States. The following tree species are often observed occurring with this species: *Populus deltoides*, *Acer saccharinum, Fraxinus pennsylvanica*, *Ulmus americana, Ulmus rubra, Juglans nigra, and Tilia americana.* Ground vegetation occurring in the same habitat may include *Laportea canadensis and Arisaema triphyllum.*[48]

Each of the listed sedge species are perennial wetland species with a clump forming habit. Cattail and Muskingum sedges are wetland obligates. In Minnesota, the habitat for these sedges is restricted to mature floodplain forests along the Mississippi and Saint Croix Rivers. Cattail and Muskingum sedges typically occur in forests dominated by *Populus deltoides* and *Acer saccharinum* with very few shrubs.[49] Gray's sedge is a shade tolerant facultative-wet species. It is found in mature alluvial forests of the eastern United States, particularly along the Mississippi River.[50] Co-occurring canopy tree species for Gray's sedge include *Populus deltoides*, *Acer saccharinum*, *Salix nigra*, *Fraxinus pennsylvanica*, *Ulmus americanus*, *Betula nigra*, *Quercus bicolor*, and *Celtis occidentalus*.[12]

Fish

Pool 4 features a wide variety of aquatic habitats including fast flowing main channels, variable width and depth side channels, secondary channels, and backwater areas. Tailwater habitat is absent in this pool. The diversity of habitat types allows for a wide range of aquatic species. The Upper Mississippi River Restoration (UMRR) program has a Long Term Resource Monitoring (LTRM) station in Lake City that is operated by MNDNR. The Lake City field station performs LTRM of Pool 4 including monitoring water quality, vegetation, macroinvertebrates, and fish. For the period of record (1993 to present), 85 fish species are listed as having been observed in Pool 4.[51]

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[48] Minnesota Department of Natural Resources. 2023. Rare Species Guide: Arisaema dracontium. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMARA04020, accessed on February 17, 2023.

[49] Minnesota Department of Natural Resources. 2023. Rare Species Guide: Carex typhina. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP03E40, accessed on February 17, 2023.

[50] Minnesota Department of Natural Resources. 2023c. Rare Species Guide: Carex grayi. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP035H0, accessed on February 17, 2023.

[51] Upper Mississippi River Restoration program. 2015. Graphical Fisheries Database Browser – Stratified Random Sampling. United States Geological Survey, Upper Midwest Environmental Sciences Center. Electronic resource, https://www.umesc.usgs.gov/data_library/fisheries/graphical/fish_front.html, accessed on February 16, 2023.

In 2017, the United States Geological Survey (USGS) released the Species of Greatest Conservation Need national database. This list identifies the species which are most in need of conservation within a given state or territory. Sixteen species from the SGCN database for Minnesota are also recorded as observations in UMRR's LTRM data for Pool 4. Those species include:

- Lake sturgeon *(Acipenser fulvescens)*
- Skipjack herring *(Alosa chrysochloris)*
- Western sand darter *(Ammocrypta clara)*
- American eel *(Anguilla rostrata)*
- Pirate perch *(Aphredoderus sayanus)*
- Crystal darter *(Crystallaria asprella)*
- Blue sucker *(Cycleptus elongatus)*
- Black buffalo *(Ictiobus niger)*
- American brook lamprey *(Lethenteron appendix)*
- River redhorse *(Moxostoma carinatum)*
- Black redhorse *(Moxostoma duquesnei)*
- Hornyhead chub *(Nocomis biguttatus)*
- Weed shiner *(Notropis texanus)*
- Pugnose minnow *(Opsopoeodus emiliae)*
- Paddlefish *(Polyodon spathula)*
- Shovelnose sturgeon *(Scaphirhynchus platorynchus)*

Nine of those species have been observed in Lower Pool 4 within the last 10 years (UMRR 2015):

- Western sand darter *(Ammocrypta clara)*
- American eel *(Anguilla rostrata)*
- Pirate perch *(Aphredoderus sayanus)*
- Blue sucker *(Cycleptus elongatus)*
- American brook lamprey *(Lethenteron appendix)*
- River redhorse *(Moxostoma carinatum)*
- Black redhorse *(Moxostoma duquesnei)*
- Weed shiner *(Notropis texanus)*
- Pugnose minnow *(Opsopoeodus emiliae)*

Paddlefish (*Polyodon spathula*), a state-listed threatened fish, as well as several other state-listed fish have been documented in Pool 4 of the Mississippi River. Paddlefish populations have decreased in recent decades and are now primarily found in the slower and deeper sections of the Mississippi and St. Croix Rivers.[52] Research completed by UMRCC list paddlefish as an occasional species (occasionally collected, not generally distributed, but local concentrations may occur) in Pool 4.[53] Paddlefish use a wide variety of habitat types within the UMR, including tailwaters (absent from Pool 4), backwaters, main channel borders, and main channels. They may also be found near structures where scour holes,

[52] Minnesota Department of Natural Resources. 2016. Minnesota Profile. Paddlefish (Polyodon spathula). Electronic resource, https://www.dnr.state.mn.us/mcvmagazine/issues/2016/may-jun/minnesota-profile-paddlefish.html, accessed on February 16, 2023.

[53] Steuck, M.J., Yess, S., Vooren, A.V., Pitlo, J.M., & Rasmussen, J. 2010. Distribution and Relative Abundance of Upper Mississippi River Fishes. Electronic document, https://docs.wixstatic.com/ugd/d70a05_eb4f98d13f514733b3a43ef8447390ca.pdf, accessed on February 16, 2023.

eddies, or current breaks occur.[54] Paddlefish have not been observed in Lower Pool 4 within the last 10 years.[55]

Other state-listed fish species including blue sucker (*Cycleptus elongatus),* Mississippi silvery minnow *(Hybognathus nuchalis),* and pirate perch (*Aphredoderus sayanus)* are listed as species of Special Concern. Research by Steuck et al in 2010 indicates that *blue sucker* is uncommon in Pool 4 and *Mississippi silvery minnow* has been historically documented in Pool 4.

Birds

The Upper Mississippi National Wildlife Refuge (UMNWR – shown in Figure 10, "Outdoor Recreation") is an Audubon Important Bird Area (IBA). Audubon estimates that approximately 40 percent of the nation's waterfowl and shorebirds use the river valley during spring and fall migrations. Three-hundred and five species of birds have been observed in the Upper Mississippi NWR.[56]

In a letter dated July 20, 2022 (Appendix J), the USFWS indicated that there are approximately 60 bald eagle nests in Lower Pool 4 and a nesting colony of great blue herons near the proposed project site. Three of the bald eagle nests are described as being in the vicinity of the project area in the letter.

Bald and golden eagles are currently protected by the Bald and Golden Eagle Protection Act which was enacted in 1940. Bald eagles are also known to occur at the open water at the confluence of the Chippewa River with the Mississippi River during the winter. The nesting season for the bald eagle in the northern United States is from December to September.[57] Bald eagles typically prefer nesting in mature or old-growth forests. A study of 53 active bald eagle nests in the USFWS Winona District of the UMR in 2009 indicated that 93 percent of nesting sites had a supercanopy of eastern cottonwood and silver maple.[58] Nest trees were observed to be the tallest trees in the immediate area at 67 percent of nest sites, however, the nests were on average situated just below the level of the surrounding tree canopy.[20] The majority of nests observed in the Winona District (79%) were on islands or island complexes within the Mississippi corridor.[20]

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[54] Upper Mississippi River Conservation Committee. 2020. UMRCC Fisheries Compendium 4th Edition. Electronic resource, https://umrcc.org/wp-content/uploads/2022/04/Compendium-4th-Edition-Final-For-Printer-2-28-2020.pdf, accessed on February 16, 2023.

[55] Upper Mississippi River Restoration program. 2015. Graphical Fisheries Database Browser – Stratified Random Sampling. United States Geological Survey, Upper Midwest Environmental Sciences Center. Electronic resource, https://www.umesc.usgs.gov/data_library/fisheries/graphical/fish_front.html, accessed on February 16, 2023.

[56] Audubon. 2023. Upper Mississippi River NWR IBA. Electronic resource, https://www.audubon.org/important-bird-areas/upper-mississippi-river-nwr-iba, accessed on February 16, 2023.

[57] United States Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. Electronic document, https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf, accessed on March 2, 2023.

[58] Mundahl, Neal & Bilyeu, Anthony & Maas, Lisa. 2013. Bald Eagle Nesting Habitats in the Upper Mississippi River National Wildlife and Fish Refuge. Journal of Fish and Wildlife Management. 4. 131120115259003. 10.3996/012012-JFWM-009. Electronic document, https://www.researchgate.net/publication/274427630_Bald_Eagle_Nesting_Habitats_in_the_Upper_Mississippi_River_National_Wildlife_and_Fish_Refuge, accessed on February 27, 2023.

The peregrine falcon is a state-listed species of special concern and is on the USGS list of SGCN. Peregrine falcons often nest on building and bridges in urban environments. The species is also known to inhabit the cliff/talus system along the Mississippi River within the Blufflands subsection.[59]

Other Wildlife

Northern Long-eared Bat (*Myotis septentrionalis*)

The federal listing of the northern long-eared bat (NLEB) was recently changed from threatened to endangered. Potential threats to the NLEB include white-nose syndrome (WNS), human disturbance in caves, wind turbine-caused mortalities, and habitat loss and degradation. An estimated population decline of 97 to 100-percent over 79 percent of the species range has been caused by WNS.[60]

The NLEB can be found in Minnesota in both the summer and winter. Winter hibernacula including caves, mines, and tunnels, are not present at the Wabasha Barge Terminal site. Summer roosting sites include floodplain forests. NLEB prefer intact mature forest for foraging but are also known to use fragmented and immature forests. Roosting trees have loose bark, broken limbs, cavities, or cracks. Wabasha County is not on the list of known maternity roost trees and/or hibernacula entrances for Minnesota.[61]

Timber Rattlesnake

The timber rattlesnake is a state-listed threatened species. According to the MNDNR, the timber rattlesnake has been observed near the project site. The ideal habitats for the timber rattlesnake in Minnesota are within the Blufflands Subsection of the Mississippi River valley in forested bluffs, south-facing rock outcrops, and bluff prairies.[62] They may be active outside of their dens from April to October. They are most active during the day in spring and fall and at night in summer.

4.15.2.2 No-Build Alternative Assessment

No additional impacts would occur at the site as a result of the no-build alternative. The project objectives would not be achieved. However, if the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have a similar impact to the ecosystems surrounding this site as the preferred permanent alternative.

4.15.2.3 Preferred Alternative Assessment

[59] Minnesota Department of Natural Resources. 2018b. Rare Species Guide: Falco peregrinus. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKD06070#:~:text=The%20Peregrine%20Falcon%20is%20best,are%20brown%20or%20blue%2Dbrown, accessed on February 22, 2023.

[60] United States Fish & Wildlife Service. 2022. Species Status Assessment Report for the Northern long-eared bat (*Myotis septentrionalis*) version 1.2., Electronic document, https://www.fws.gov/sites/default/files/documents/Species%20Status%20Assessment%20Report%20for%20the%20Northern%20long-eared%20bat-%20Version%201.2.pdf, accessed on February 27, 2023.

[61] Minnesota Department of Natural Resources and United States Fish and Wildlife Service. 2021. Townships Containing Documented Northern Long-Eared Bat (NLEB) Maternity Roost Trees and/or Hibernacula Entrances in Minnesota. Electronic document, http://files.dnr.state.mn.us/eco/ereview/minnesota_nleb_township_list_and_map.pdf, accessed on March 2, 2023.

[62] Minnesota Department of Natural Resources. 2023d. Rare Species Guide: Crotalus horridus. Electronic resource, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARADE02040, accessed on March 2, 2023.

Aquatic Organisms

Dredging has the potential to directly affect fish and benthic invertebrates by capturing and removing organisms via the dredge head or push boat propeller, causing harm or fatalities. Direct impacts could also include mortality due to the burial of sessile or less mobile organisms with sediment and degradation of water quality. Dredging operations cause the re-suspension of sediments into the water column, reducing transparency and lowering the amount of available oxygen.

Available dissolved oxygen (DO) in the water column may be reduced due to dredging as a result of the suspension of anaerobic sediments and resulting chemical and biological oxygen demands. Dissolved oxygen may decrease almost 100% in near-bottom waters around a bucket dredge in operation (USACE 2015). The observed decreases in DO are likely to be greatest near the bottom at the dredging location, however, low to moderate DO decreases in the upper water column and general area are also likely.

Impacts to aquatic organisms from dredging are largely correlated with the organism's motility (USACE 2015). Mobile organisms are less affected by dredging activities because they are able to move away from disturbed areas.

Indirect impacts to fish and benthic invertebrates may also be caused by dredging. Indirect impacts could include degradation of water quality, noise disturbance, and physical habitat disturbance including spawning habitat. Indirect impacts may cause behavioral changes in aquatic organisms. Direct and indirect dredging-related impacts would be localized and temporary.

Below is a discussion of the environmental consequences to rare, threatened, and endangered aquatic organisms.

Mussels

Existing mussel species may experience direct mortality and short-term impacts because of the proposed project (dredging activities). Based on the recent mussel survey conducted within the project area June 6th through June 8th, 2023, one state-listed threatened species, the mucket, may be present within the dredging area. Based on historical data and the results of the recent survey, the project would have no impacts on federally listed species.

Fish

Studies have shown that fish move away from actively disturbed areas during dredging and return after completion (USACE 2015). Use of the habitat by fish after dredging depends on the resulting water quality in those locations. Dredged habitats may attract fish due to warmer water during winter months and suspended food.

Fish may be affected by the removal and burial of sessile or less mobile organisms on which the fish feed. The extent of this effect on fish would be determined by the extent and presence of the existing benthic communities in the area and fish that prey on them.

Habitat loss and alteration have been linked to the decline in population of numerous fish species within the Mississippi River, including the paddlefish. Human alteration of rivers has also been cited as one of the contributors to the decline of paddlefish populations in the Upper Mississippi River. Turbulence from barges has also been known to cause mortality of yolk-sac paddlefish larvae (UMRCC 2020). Based on the items listed above, the proposed dredging and barge operations could have an effect on the listed fish species, including paddlefish if present.

Terrestrial Organisms

Vegetation

Potential habitat for cattail sedge, Muskingum sedge, and gray's sedge exists on-site within Wetland 3. Construction at the site will not impact Wetland 3 and therefore no direct impacts are anticipated for these protected species.

Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Ground disturbance from construction activities also presents a chance for aggressive and opportunistic invasive species to spread. The spread of invasive species can have a detrimental effect on native plant communities and wildlife that use those communities. Impacts associated with the spread of invasive species will be mitigated through the use of BMPs as described in Section 4.15.2.4.

Birds

The project is likely to have some temporary and long-term effects on the bird community due to construction activities (including tree cutting), increased traffic (road and near shore), and anthropogenic noise.

Tree cutting has the potential to reduce the available habitat and nesting sites for bird species. Forested areas along the river at the site, including Wetlands 2 and 3 with eastern cottonwood and silver maple documented as dominant vegetation, have the potential for suitable nesting sites for the bald eagle. A survey of active bald eagle nests should be performed within the vicinity of the site prior to site disturbance which would take place in the nesting season. Buffer guidelines are given in Section 4.15.2.4.

Anthropogenic noise caused by road noise has been linked with the avoidance of those areas by birds, including migratory birds (McClure et al. 2013). Impacts due to noise are limited as individuals are able to avoid noise at the site.

With the very large amount of habitat available in the general project area for the full variety of bird behaviors, impacts to the wading bird community are expected to be temporary and minimal.

Cliff/talus habitat near the site could provide suitable habitat for the peregrine falcon. Cliff/talus habitat will not be directly impacted since the existing road and boat ramp locations will be used and improved. Impacts to potential peregrine falcons using the cliff/talus habitat at the site would be limited to potential behavioral changes due to an increase in anthropogenic noise.

Timber Rattlesnake

Forested bluffs along the Minnesota River at the project site could provide habitat for this species. Existing forested bluffs along the river will not be directly impacted by site construction. Infrastructure at the docking area near the river will be constructed in a previously disturbed area where an existing road/path is located. Therefore, habitat for the timber rattlesnake will not be directly impacted.

The three highest causes of mortality in Minnesota's timber rattlesnake populations are poaching, vehicle collisions, and habitat destruction (MNDNR Correspondence # MCE 2022-00127). Snakes, including the timber rattlesnake, are known to use roads for thermoregulation. The chance for vehicle collisions could increase with the construction of this project.

Northern Long-Eared Bat

Potential summer foraging and roosting habitat for the NELB is present at the site. Wetlands 2 and 3, as well as forested uplands could provide habitat for the NELB. Construction at the site will not impact Wetlands 2 or 3. Tree clearing will be limited to 2.7 acres.

4.15.2.4 Preferred Alternative Mitigation Measures

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 134) prohibit the take of threatened or endangered species without a permit. Prior to the take of a protected species, a USFWS permit to take will be approved. There are no critical habitats listed at the project site for the endangered species (USFWS 2023). The USFWS and MNDNR will be notified in the event of sighting or contact with protected species.

Mitigation measures for aquatic species:

Additional coordination with MNDNR will occur in order to determine the potential for impacts and/or takings of state-protected mussel species in the Mississippi River dredge areas. MNDNR is expected to provide guidance on potential mitigation measures associated with species that may be impacted by site activities.

To prevent harm to spawning populations of paddlefish and other listed fish species, work within the water will be avoided from April to mid-June or further consultation and/or permitting with MN DNR will be required (MNDNR Correspondence # MCE 2022-00127).

To mitigate impacts from dredging operations, standard Best Management Practices (BMPs) will be implemented for dredging activities which includes:

- Dredging locations will be restricted to authorized locations
- Dredging will be restricted to daytime operations during summer months
- Dredging will abide by all applicable federal and/or state regulations which are designed to be protective of aquatic organisms

Mitigation measures for terrestrial species:

Erosion control BMPs will be used on newly exposed soils. These may include the use of wildlife friendly natural fiber, erosion control blankets, silt fencing, synthetic fiber-free hydro-mulch, and rock checks; specifications for BMPs and allowed materials would be included in construction contracts and specifications. Exposed areas of sediment would be stabilized as soon as possible and seeded with an approved BWSR seed mix to establish vegetative cover. Invasive plant species would be monitored and managed to ensure success of native species establishment.

Surveys of nesting bald eagles will be performed prior to on-land construction activities at the site. If active nests are found, no construction activities will be completed within a buffer of 660-feet from the nest (USFWS 2007).

Tree cutting will be minimized at the site to preserve habitat. Minimizing areas of disturbance, including natural vegetation and tree removals, will be limited to the extent possible. Approximately 2.7 acres of trees will be cut. Tree removal will be limited to the winter months, between November 1 and March 31.

Potential habitat for the timber rattlesnake may occur on site, however, direct impacts are not expected. Because this is a ground dwelling motile species, the potential does exist for vehicular impacts. To mitigate potential impacts to this species:

- Erosion control blankets will be limited to "bio-netting" or other natural netting types
- Working crews will be made aware of the potential to encounter the timber rattlesnake and instructed to not disturb
- DNR will be contacted if rattlesnakes are encountered at the site

4.15.2.5 Alternate Site Assessment

A review of MNDNR's protected species database was performed for a one-mile radius around each of the five alternative project locations. Based on **Table 1 – Alternate Site Assessment** the five alternative sites include between 17 and 20 threatened, endangered, or species of special concern within a one-mile radius. The South Fitzgerald site has 17 listed species within a one-mile radius. The Izaak Walton Park and Wabasha Municipal Dock sites both have18 total listed species and the Mississippi Parkside Marina and Wabasha Marina have 20 listed species within a one-mile radius. For all alternate sites, additional coordination with the USFWS and MNDNR would be required to determine the potential impacts for all protected species and BMP's would be implemented for all activities as is the case for the preferred Carrels Site.

4.15.2.6. Alternate Scale/Magnitude Assessment

Increased dredging and material storage on the proposed site would increase impacts to species within and adjacent to the Carrels Site. The expanded dredge area would disrupt fish and benthic macroinvertebrates along the channel bed. Additionally, if expanded material storage areas were implemented, this would cause additional impacts to wetlands and result in further tree removals. The extent of these impacts includes the following:

Alternative Assessed	Anticipated Impacts
Alternate Material Storage Area	Additional 0.94 wetland impacts Additional 4 acres of tree clearing
Alternate Dredging Areas	Additional 2.4 acres of Mississippi River impacts
Alternate Layout	Reduction by 0.9 acres of tree removal
Use of Smaller Barges	Increased number of trips may disrupt bird and fish species

4.16 Historic Resources

4.16.1 Existing Conditions

A Phase IA archaeological literature review was prepared by Secretary of the Interior (SOI) standards qualified archaeologists at Bolton & Menk, Inc. (BMI) for the proposed project in August 2021.[63] This report reviewed prior land uses and disturbance within the proposed project area, documented previously recorded cultural resources pertinent to the project area, and made recommendations of proposed appropriate archaeological investigation fieldwork methodology. In a letter dated September 15, 2021, the State Historic Preservation Office (SHPO) concurred with the recommendations pertaining to proposed archaeological field methodology pursuant to its review of the proposed project under applicable State statues (MS 138.665-666 and 138.40).[64] The letter clarified that review pursuant to Section 106, if applicable, would need to be initiated by the lead federal agency, which was anticipated to be the US Army Corps of Engineers (Corps). Since the time of the Phase IA and SHPO review, the proposed ground disturbance limits associated with the project were further defined, limiting the recommended archaeological reconnaissance survey area.

On September 13, 2022, BMI SOI qualified archaeologists conducted a Phase I archaeological reconnaissance survey on the Wabasha Port Authority on privately owned land.[65] No new archaeological sites were identified in the course of the survey and additional testing within a previously recorded archaeological site boundary (21WB0076) outside of the ground disturbance limits failed to yield additional cultural materials. BMI recommended no further archaeological investigations for the project as proposed at the time of survey and recommended a finding of no adverse effect to historic properties. At the time of the archaeological survey, land included in the project area was in private ownership; as such State statutes pertinent to cultural resources did not apply at the time of survey. If the property becomes non-federal, public lands, then MS 138.665-666 and 138.40 will apply.

As part of Corps permitting anticipated to be required for the project, it is anticipated that the Corps will consult with necessary cultural resource parties pursuant to Section 106 of the National Historic Preservation Act (NHPA). If the project receives federal funding through the Maritime Administration (MIRAD), however, the lead federal agency may be the US Department of Transportation (DOT). As the project moves toward the permitting stage it is anticipated these agencies will determine who will lead the Section 106 process.

4.16.2 No-Build Alternative Assessment

There are no identified consequences to historic properties under the No-Build Alternative.

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[63] August 2021. *Phase IA Archaeological Literature Review for the Wabasha Barge Facility Project, City of Wabasha, Wabasha County, Minnesota*. Prepared for the City of Wabasha. Bolton & Menk, Inc.

[64] September 15, 2021. Wabasha Barge Terminal, T111N, R10W, S30 NE, Wabasha, Wabasha County, SHPO Number 2021-2509. Letter from SHPO to Bolton & Menk, Inc.

[65] September 20, 2022. Phase I Archaeological Survey Letter Report for the Wabasha Barge Facility Project, SHPO No. 2021-2509. Letter report from Bolton & Menk, Inc. to Wabasha Port Authority.

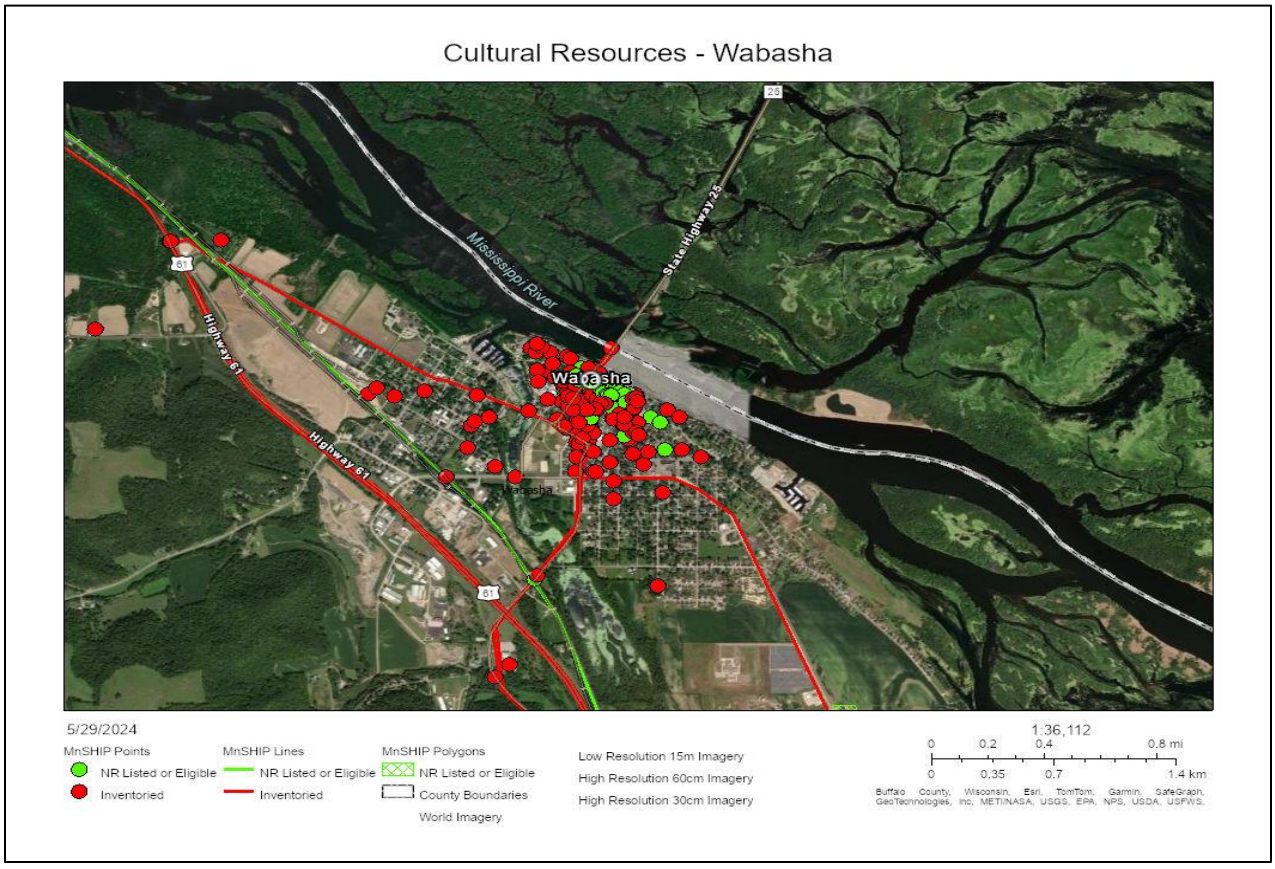
4.16.3 Preferred Alternative Assessment

There are no identified consequences to historic properties under the Preferred Alternative as long as the proposed ground disturbance limits are not expanded or there are no other significant project modifications relative to that proposed at the time of the Phase I archaeological reconnaissance survey.

4.16.4 Preferred Alternative Mitigation Measures

There are no identified mitigation measures concerning historic or cultural properties.

Exhibit 12: MN SHPO Listed or Eligible Cultural Resources



4.16.5 Alternate Site Assessment

The MN SHPO has inventoried and identified downtown Wabasha as a Historic District. With the proximity of this district to the Mississippi Parkside Marina, the Wabasha Municipal Dock, and the Izaak Walton Park (see **Exhibit 12**), development of those areas for a barge facility may adversely affect the historic properties within and adjacent to the District.

4.17 Visual Resources

4.17.1 Existing Conditions

The existing visual aesthetic of the project site is primarily woodlands with an assortment of left behind construction equipment and materials (scrap metal and various vehicle parts) that were abandoned following the mining operation that previously occupied this site.

The northern and northwestern portions of the project site contain wetlands and provide views of the Mississippi River. The eastern, western, and southern borders of the project site provide views of the surrounding agricultural land and the forested hillside located west of US Highway 61.

4.17.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to scenic views, vistas, and visual effects. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same visual impacts as the preferred permanent alternative.

4.17.3 Preferred Alternative Assessment

The proposed project would alter the existing visual aesthetic of the project site with the introduction of trucks, barges, other industrial equipment, storage facilities, and the temporary introduction of construction vehicles and equipment. This altered visual aesthetic would be visible from neighboring parcels, roadways, the Mississippi River, and from the surrounding hillside.

4.17.4 Preferred Alternative Mitigation Measures

Barge facility operations will occur primarily during day-time working hours. Exterior lights, if installed at the facility, will be down-casting and set on timers to reduce wildlife and aesthetic impacts during non-operating hours.

4.17.5 Alternate Site Assessment

The three northern alternate sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area. An area with a high concentration of residential homes facing the river for views and recreational opportunities, recreational facilities such as parks, boat docks, beaches, and trails, and the traditional downtown commercial area. These more compacted uses bring in more dense populations of residents to live, work, and play in this area. The proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would be visually impactful.

The Wabasha Marina and South Fitzgerald sites are located south of the downtown area in a quiet low density residential area that is largely underdeveloped due to a lack of public streets and utilities in the area as well as shoreland and floodplain constraints. Constructing the proposed barge facility and necessary heavy truck traffic in either of these two sites would be significantly visually impactful to these areas.

4.17.6 Alternate Design/Magnitude Assessment

Alternatives reviewed at the Carrels site, including the expanded dredging, material storage areas and alternate layouts, may impact visual quality by immediate neighbors and/or the hospital just east of the proposed location. These alternatives may require additional screening berms or specific operating hours to reduce impacts to adjacent properties.

If the smaller barges alternative was used, this would see an increase by two or three times of the numbers of barge trips required for hauling material. This may impact adjacent property owners and/or recreational users of the river system.

4.18 Dust and Odors

4.18.1 Existing Conditions

The existing project site is of vacant land use and there are no activities currently occurring on the project site that contribute to existing dust- or odor-related effects.

4.18.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to dust and odors. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same dust impacts as the preferred permanent alternative.

4.18.3 Preferred Alternative Assessment

The proposed project may generate minor dust-related impacts during construction and operation because of vehicles operating within the site along internal roads. Dust may also be generated from the offloading of materials, transportation, and loading operations. All dust-related impacts are anticipated to be minor and typical of an industrial facility located in a rural setting.

The Proposed Project is not anticipated to generate any nauseous odors during construction or operations.

4.18.4 Preferred Alternative Mitigation Measures

The operation of the proposed project is not anticipated to generate any adverse impacts or effects related to dust and odors. Any unanticipated dust- or odor-related effects resulting from the construction or operation of the proposed project will be fully mitigated through standard Best Management Practices.

4.18.5 Alternate Site Assessment

The three northern alternative sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area; a dense compact area. The proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would add significant dust to the area that would need to be mitigated.

The Wabasha Marina and South Fitzgerald sites are located in a low-density residential area that is largely underdeveloped. Constructing the proposed barge facility and necessary heavy truck traffic in either of these more rural sites could mitigate the dust for the immediate sites but careful mitigating

dust standards would be necessary for the truck materials as they passed through the 85-95 homes along the haul routes to U.S. Highway 61.

4.19 Noise

4.19.1 Existing Conditions

Existing sources of noise in the vicinity of the proposed project include vehicle traffic on 5th Grant Boulevard West (County Road 59), noise from farming located on parcels adjacent to the project site, and an active freight railroad line located approximately 300 feet south of the project site.

The project site is bounded by the Mississippi River to the north and active agricultural land to the south, east, and west. Some of the agricultural lots adjacent to the project site contain houses, however the nearest lots to the project site that are primarily of residential use are located approximately 0.25 miles southeast of the project site. Additional noise receptors in the vicinity of the proposed project include: the Riverview Cemetery, approximately 250 feet west of the project site; the Gunderson St. Elizabeth Hospital, approximately 2,000 feet east of the project site; and a couple rural residents south of 5th Grant Blvd (County Road 59), approximately 1,600 and 1,750 feet south.

4.19.2 No-Build Alternative Assessment

The No-Build Alternative would maintain the current status of the project location with regard to noise. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would have the same noise impacts as the preferred permanent alternative.

4.19.3 Preferred Alternative Assessment

Operational Noise

The proposed project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday. Construction-related noise effects from the proposed project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal pad, access road, dock/mooring piles, barge staging winch system, loading truck scale, and scale house/field office building. See Table 9, "Typical Construction Equipment Noise Levels at 50 Feet," for typical noise levels of construction equipment measured at 50 feet.

Table 9: Typical Construction Equipment Noise Levels at 50 Feet

Equipment	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA*)	
			Range	Average
Backhoes	5	6	74-92	83
Front Loaders	5	30	75-96	85
Dozers	8	41	65-95	85

Table 9: Typical Construction Equipment Noise Levels at 50 Feet

Equipment	Manufacturers Sampled	Total Number of Models in Sample	Peak Noise Level (dBA*)	
			Range	Average
Graders	3	15	72-92	84
Scrapers	2	27	76-98	87
Pile Drivers	N/A	N/A	95-105	101

* Units of "A-weighted decibels"

Source: United States Environmental Protection Agency and Federal Highway Administration

Noise resulting from the proposed project's operational activities—occurring between 7:00am and 6:00pm, Monday through Friday—would be generated by the loading and unloading of barges and trucks, from trucks and barges used to transport commercial and/or dredged materials to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site, and internal site operations equipment (e.g., material haulers: hoppers, conveyors, etc.).

Traffic Noise

The proposed project would generate traffic-related noise from trucks hauling construction materials during the construction of the proposed project, trucks hauling dredged materials during the operation of the proposed project, and from employees using personal vehicles to travel to and from the project site. However, because the proposed project would include no more than ten parking spaces for employee and operator parking and would generate less than 250 vehicle trips during peak hour operations and less than 2,500 daily trips, traffic congestion and traffic-related noise are not anticipated to adversely affect surrounding areas or sensitive receptors. The proposed project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday.

4.19.4 Preferred Alternative Mitigation Measures

The proposed project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday.

The project operator agreement is consistent with the State of Minnesota rules (MN Statute 7030.0020), which define daytime hours as 7am to 10pm, and nighttime hours as 10pm to 7am. All construction and operational activities associated with the proposed project would conform with the project operator agreement as well as the State of Minnesota noise standards listed in Table 10, "Noise Standards (MN Statute 7030.0040)."

Table 10: Noise Standards (MN Statute 7030.0040)

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1 (Residential)	60	65	50	55
2 (Commercial)	65	70	65	70
3 (Industrial)	75	80	75	80

*L_{10} is the sound level, expressed in dBA, which is exceeded 10% of the time for one hour

*L_{50} is the sound level, expressed in dBA, which is exceeded 50% of the time for one hour

4.19.5 Alternate Site Assessment

The three northern alternative sites: Izaak Walton Park, Wabasha Municipal Dock, and the Mississippi Parkside Marina are all located near the City of Wabasha's downtown area; a dense compact area. The proposed use along with the heavy trucks needed to relocate the materials from the barge terminal would add significant noise and safety issues to the area that would need to be carefully mitigated as well as possibly rerouting pedestrian and vehicle traffic and phasing out incapable uses in the project areas and along the haul routes.

The Wabasha Marina and South Fitzgerald sites are located in quiet low-density residential areas that are largely underdeveloped. Constructing the proposed barge facility and necessary heavy truck traffic in either of these more rural sites could be mitigated from in increased noise generated by the barge terminal use by limiting the working hours for the site but careful mitigating dust standards would be necessary for the truck materials as they passed through the 85-95 homes along the haul routes to U.S. Highway 61.

4.20 Transportation

4.20.1 Traffic

4.20.1.1 Existing Conditions

The barge terminal site is located along 5th Grant Boulevard W (also known as Wabasha County Road 59), a collector roadway with low traffic volumes. Access to the site is approximately a half mile south of the 5th Grant Boulevard intersection with Minnesota Trunk Highway (TH) 61, a principal arterial that provides regional mobility for passenger vehicle and freight trips along this segment of the Mississippi River. Operations to the barge terminal site would see trucks traveling to/from the site using 5th Grant Boulevard W to the north and accessing TH 61 at the 5th Grant Boulevard/County Road 10 intersection. There are two existing intersections that are along the truck route between the barge site and one of the proposed onshore transfer sites: TH 61 and 5th Grant Boulevard W, and TH 61 and Shields Avenue. This onshore transfer site is being used in the EIS analysis as a reference to calculate distance and potential impacts in transportation routes and greenhouse gas emissions (see Section 4.8).

Existing (2022) average daily traffic volume (ADT) along 5th Grant Boulevard is approximately 525 vehicles, Highway 61 is 5,700 vehicles, and Shields Avenue has an ADT of 1,700 vehicles. Based on current levels of traffic, there are minimal approach delays for all roads within the study area. The intersections of TH 61 at 5th Grant Boulevard W/County Road 59 and TH 61 at Shields Avenue operate at level of service (LOS) A during the peak AM and PM hours. A LOS of A indicates free-flow conditions with minimal travel delays. Therefore, there are no mobility concerns at these intersections.

A 3-year (2019-2021) crash analysis was completed for the three intersections being investigated in the study area. Crash data was reviewed from the Minnesota Crash Mapping Analysis Tool. Intersection crash rates and critical rates were calculated, and all three intersections are operating within the normal range for similar intersections. Therefore, there are no safety concerns at these intersections.

4.20.1.2 No-Build Alternative Assessment

In a no-build scenario, traffic operations will remain the same, and all study area intersections will operate with acceptable LOS, and traffic volumes will remain unchanged. The 5th Grant Boulevard roadway will not see an increase in traffic, nor will construction of the Barge Terminal Site Driveway occur under the No-Build Alternative. If the USACE were to utilize this site as outlined as their Tier 4 alternative as a temporary off-load site, the temporary use would use the same haul routes as outlined in the preferred permanent alternative. However, if the USACE were to use other alternative sites surrounding the City of Wabasha, the City would not be able to control the haul routes.

4.20.1.3 Preferred Alternative Assessment

With construction of the preferred alternative, the Barge Terminal Site will be constructed along 5th Grant Avenue and a new driveway entrance to the site will be built. Dredged material would be offloaded from barges at the site. Material will then be loaded into trucks and taken offsite, including the site located along Shields Avenue. Traffic entering and exiting the barge terminal site will be minor, with an average of ten trucks in and ten trucks out per hour, between 8:00 AM and 4:00 PM Monday through Friday. There will be a minimal number of additional vehicles accessing the site, including employees and equipment service/delivery vehicles that will periodically visit the site. Due to the low volume of traffic that will be accessing the site, a left turn lane to access the site is not warranted and is not proposed to be constructed.

At each of the study area intersections, traffic operations are not expected to be adversely impacted by the preferred alternative. The low volume of vehicles being added per hour, with approximately 20 movements per intersection, will not result in measurable impacts to the current operations or safety conditions.

4.20.1.4 Preferred Alternative Mitigation Measures

Based upon the analysis completed and documented in the Traffic Impacts Memorandum, included in Appendix H, no transportation mitigation measures are recommended with the construction of the preferred alternative. The analysis of traffic safety and operations suggests that the intersections affected by the operations associated with the new barge terminal facility will continue to safely operate with minimal delay and an acceptable LOS through at least 2042. It is recommended that the traffic volumes and operational LOS continue to be monitored into the future to ensure safety issues do not arise and traffic operations remain high.

4.20.1.5 Alternate Site Assessment

To develop the proposed barge terminal use at Izaak Walton Park, Maiden Avenue would have to be improved to allow for heavy truck traffic usage and all necessary measures would have to be developed to mitigate the increased traffic and safety concerns for the haul route crossing the emergency entrance/exit for St. Elizabeth's Hospital. Main Street and Bridge Avenue would have to be improved to allow for heavy truck traffic to use the Wabasha Municipal Dock as a barge terminal site.

To develop the proposed barge terminal use at the Mississippi Parkside Marina Campbell Avenue would have to be improved to allow for heavy truck traffic usage and all necessary measures would have to be developed to mitigate the increased traffic and safety concerns for the haul route crossing the emergency entrance/exit for St. Elizabeth's Hospital.

Angelique Avenue is not constructed, and 12th Street is not a designated truck route. Both roadways would have to be significantly improved to allow for the heavy truck traffic necessary to develop a barge terminal at the Wabasha Marina.

Dugan Avenue is not constructed, and River Street and 12th Street are not a designated truck routes. Both roadways would have to be significantly improved to allow for the heavy truck traffic necessary to develop a barge terminal at the Wabasha Marina.

For the three downtown sites, Izaak Walton Park, Wabasha Municipal Dock and the Mississippi Parkside Marina, development of a barge terminal with an estimated 100 heavy truck trips in and out per day would be significantly impactful to the residents of Wabasha and the adjacent land uses.

For the two southern alternative sites, Wabasha Marina and South Fitzgerald, the development of a barge terminal site and its accompanying traffic increase of 100 heavy trucks per day in and out of the site would be significantly impactful to the 85-95 residents along the haul route both in terms of increased noise and safety concerns.

4.20.2 Water-Based Transportation

4.20.2.1 Existing Conditions

Lower Pool 4 is a portion of the Upper Mississippi River and describes the region of the river between Lock and Dam 3, located near Hager City, Wisconsin and Lock and Dam 4, located near Alma, Wisconsin. It is an important part of the US Inland Navigation System. The river is an active commercial corridor, with major types of cargo on the river including grain, fertilizer, coal, and petroleum. Maintaining navigability through this reach of the Mississippi River is necessary to connect barge traffic moving between ports upstream as far as Minneapolis-Saint Paul, Minnesota, downstream as far as New Orleans, Louisiana, and to points east and west on the Illinois, Ohio and Missouri Rivers. USACE maintains the navigable river channel at dimensions suitable for commercial vessels drafting 9 feet. The depth of the channel is typically at least 12 feet with a minimum width of 300 feet.

If dredging activities were not to occur, the shipping channel would become unnavigable during periods of low water levels. This would have a large economic impact, as all river shipping would have to be shut down until the river is either high enough for boats to navigate or the river is dredged to allow boats to pass. It is the goal of the USACE to prevent these conditions from occurring.

The river is also heavily used for recreation purposes, with popular water activities including fishing, recreational boating, canoeing, and island beach use. Recreational use activities mostly occur on the river and within Refuge lands. The entire area of the river is very popular and entertains prominent levels of recreational use. This section of the river is part of the Upper Mississippi River National Wildlife and Fish Refuge, which provides high quality fish and wildlife habitat, which are further described in Sections 4.6.4 and 4.15.1.

4.20.2.2 No-Build Alternative Assessment

Sediment deposits, which are primarily deposited from the Chippewa River, gradually shrink the depth of the navigable channel. The USACE dredges and removes the sediment deposits from the river. In the no-build alternative, dredging activity will continue, but costs of this process will continue to increase. In recent years, costs have increased dramatically due to the increased distance the dredged material needs to be shipped along the river for long-term placement sites and the related transportation and logistics costs. The current system is not cost-effective and could lead to less dredging activity taking place and the potential for restricted water transportation during low water level events.

4.20.2.3 Preferred Alternative Assessment

With the preferred alternative, the proposed Barge Terminal Facility would be chosen by USACE as the onshore transfer site, as it is the best feasible location (per the DMMP) to offload barges on the Minnesota shore of Pool 4 of the Mississippi River. This would change the current process for removing sediment from trucking deposits from current sites adjacent to the river. As it provides a more convenient system for removing sediment for the USACE, this alternative would provide a minor beneficial effect to commercial navigation through its use in maintaining the navigation channel.

4.20.2.4 Preferred Alternative Mitigation Measures

As dredging activity is already being undertaken, there is very little that will change with water transportation and the dredging process beyond the change in the location of the onshore transfer site. As a result, no mitigation measures are proposed, other than potential signage to inform recreational watercraft of potential barge traffic in the vicinity of the project area. However, future operations should be monitored to ensure challenges do not arise.

4.20.2.5 Alternate Site Assessment

No mitigation measures are proposed for the alternative sites as water-based transportation is already occurring on Lower Pool 4 based on the USACE directive to maintain a navigable channel.

4.20.2.6. Alternate Design/Magnitude Assessment

While several of the alternatives reviewed for on-site development do not pose a significant issue for water-based recreation, the use of smaller barges making more trips may impact both recreational and commercial traffic in the vicinity of the Carrels Site. Smaller barges would require two to three times and many trips to move the same amount of material as a larger barge can move in one haul.

4.21 Cumulative Potential Effects

4.21.1 Geographic Scales and Timeframes

It is currently estimated that the port facility will operate for at least 20 years and continue to facilitate the transfer of materials, including but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract out the port operations and transportation of materials.

4.21.2 Future Projects

Future projects may include private land use developments in portions of the city planned for future development and redevelopment.

The current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021, lists the future land use of the project site as "Industrial." The Comprehensive Plan discusses Wabasha's unique location and opportunity for development of a commercial river port facility that would be used for commercial purposes.

Transportation projects are likely to be planned and programmed for construction may involve safety, capacity, pavement preservation, and active transportation modes (ped/bike). These projects will be conducted by MnDOT, Wabasha County, or the city.

4.21.3 Cumulative Effects

Impacts include changes in land cover type (e.g., increased impervious and vegetation/habitat loss), impacts to wetlands, disruption of aquatic and terrestrial species habitat, slight increases in traffic volumes, and adding side channel barge access to the project site. While not anticipated to involve significant social, economic, or environmental effects, all future projects would be subject to applicable local, state, and federal environmental reviews and permitting.

The construction and operation of the Wabasha Barge Facility, as outlined in this DEIS, has the potential to contribute to cumulative effects in the project area. While this DEIS primarily assesses the direct impacts of the proposed project, it is essential to consider its interactions with other past, present, and reasonably foreseeable actions in the region.

Cumulative effects may result from the combined impacts of the proposed project with other local developments, such as transportation infrastructure improvements, nearby land use changes, or other industrial activities. These effects could manifest in numerous ways, including alterations to traffic patterns, potential changes in air and water quality, habitat fragmentation, and socio-economic dynamics within the community.

While there are no known projects immediately adjacent to the proposed project, ongoing monitoring, consultation with stakeholders, and adaptive management strategies will be incorporated to comprehensively assess and address these cumulative impacts over time.

4.22 Other Potential Environmental Effects

No other potential environmental effects were identified in the development of this DEIS document.

5. MITIGATION MEASURES

Table 11: Mitigation Measures

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
Property and Right of Way Needs	Purchase of 8.2-acre Proposed Barge Facility site.	Prior to project construction, the City of Wabasha will collaborate with the current landowner, who is identified as a willing seller, to determine fair market value for purchase of the project site. While this DEIS addresses the entirety of the two parcels, the City only intends to purchase the 8.2-acre portion that is necessary for the Proposed Barge Facility. The remaining areas would remain under private ownership.
Land Use, Plans, Zoning, and Special Districts/Overlays	Impact to existing zoning and overlay zones.	Upon completion and approval of the EIS, the city will initiate a zoning amendment to change the parcels from "R1" to "I" in accordance with the city's future land use plans. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone. Upon completion and approval of the EIS, the City will initiate a traffic generator conditional use permit application to review the haul route and anticipated heavy truck traffic trips generated by the barge terminal use. Construction standards and specifications will ensure compliance with the City of Wabasha's Shoreland Overlay Zone.
Parks, Open Space, and Recreational Facilities	Impact to aquatic recreational users from an increase in barge traffic to and from the proposed project site.	Appropriate road and waterway signage will identify this area as increased truck and barge traffic, respectively. Additionally, the contracted operator of the facility will be required to comply with City of Wabasha noise ordinances, and to confine operations to set days and times during the regular work week. This information will be clearly articulated to the contracted facility construction personnel and operators. During the lifespan of the barge facility, the city will routinely audit operations through an impact assessment to identify future additional mitigation requirements and recommendations.
Soils and Topography	The proposed project will include dredging an access channel from the main Mississippi	All project-related construction activities will adhere to appropriate standards and applicable permitting requirements from MPCA and

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	River navigation channel as well as areas immediately adjacent to the shoreline where the proposed barge dock will be constructed. The current estimate is 37,000 CY of bottom sediment removed to facilitate barge access to the project site. This sediment will be used as fill – and augmented as needed – on the project site to raise access road and facility locations elevations outside of the 100-year floodplain.	MNDNR for grading and erosion control. MNDNR and/or BWSR-approved seed mixes and wildlife friendly erosion control mesh will be used to ensure soil stabilization. Additionally, a "No-Rise" review and certificate will be requested from FEMA to identify and facilitate any additional floodplain mitigation requirements. The project proposer and contracted companies shall comply with all permits and approvals and include mitigation and monitoring requirements as needed.
Floodplains	The site will be regraded and fill will be added within the floodplain for the preferred alternative construction. Stockpiled dredge material will be placed on the terminal docking site above the 100-year flood elevation. Impacts to flood elevations are described in the attached report "Preliminary No Rise Certification: USACE Dredge Material Management Plan – Wabasha Barge Facility" (Appendix C). The report details no appreciable impact to flood elevations or velocity due to the proposed barge facility design, and a standard No Rise certification is included.	Bank armoring along the barge dock area is proposed to reduce erosion potential during high flows. Permanent structural components are proposed along the river side of the barge facility to prevent bank erosion and sediment transport downstream. Dredging activities within the side channel to maintain the barge access lane are anticipated to decrease flood risk by increasing conveyance and flood volume storage within the floodplain.
Surface Water	The construction of the preferred alternative includes tree clearing and ground disturbance, leading to increased likelihood for sediment to be transported to downstream surface waters. With cumulative watershed impacts, turbidity may be added to the list of items contributing to the Mississippi River impairment considerations.	The EPA-approved impairments for the Mississippi River are considered non-construction related and all project activities will comply with the NPDES construction stormwater permit. Bank armoring along the proposed transfer site is proposed to reduce erosion potential during high flows and reduce the likelihood of additional impairment to the Mississippi River and adjacent wetland areas. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the NPDES Permit to reduce or eliminate the potential for

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	Furthermore, the site operator's equipment will require fuel (diesel and/or gasoline) and oils (lubricating and hydraulic). The use of these chemicals increases the likelihood of a spill on site that may flow to surface waters.	increased turbidity or other surface water impacts. Stormwater infiltration practices will filter runoff from the project site to offset sediment loading and treat runoff prior to discharging to surface waters. An Industrial Stormwater permit may be necessary, and all site construction activities and operations will comply with these additional permit requirements.
Wetlands	One wetland (Wetland 1) would be permanently impacted by the preferred alternative. Proposed impacts to Wetland 1 are due to filling a portion of the wetland for grading and construction of the barge facility. Wetland 1 is adjacent to the proposed barge/dock and off-loading area, which contains the material hauler, hopper, scale, and conveyor system. A portion of that wetland will not be filled, however, as a conservative estimate the entire wetland is considered permanently impacted. Permanent proposed impacts to Wetland 1 are 0.40 acres.	Mitigation efforts will be completed in accordance with local, state and federal regulations. Mitigation requirements will be met prior to construction activities impacting wetlands or streams at the site. The city will work closely with local (LGU), state (MNBWSR, MNDNR, and MPCA), and federal (USACE) agency staff to identify requirements and ensure all potential concerns are addressed. Permit applications and plan sets will be submitted to the appropriate agencies for review. The 120refered method of mitigation will be to purchase credits from a mitigation bank within the same BSA and major watershed as the site. It is anticipated that mitigation for the wetland impacts will occur at a minimum of a 2:1 ratio (i.e., 0.80 acres of wetland replacement for the 0.40 acres of impact) through a purchase of wetland credits within BSA 7.
Stormwater	The preferred design adds 3.3 acres of impervious surface to the site by providing an access road and barge docking station with associated infrastructure, increasing discharge rates, runoff volumes, sediment loading and increasing the flashiness of flows within the grading footprint, which discharges directly to the Mississippi River.	Ditches will be constructed around the perimeter of the active operations area to collect, store, and treat runoff prior to discharging to the Mississippi River. Areas not part of the facility operations will remain in natural or historically disturbed condition. An infiltration basin is proposed to mitigate impacts to stormwater runoff caused by the proposed alternative, catching stormwater from previously disturbed areas that are currently not receiving treatment. The design of the infiltration basin is described in the document "USACE Dredge Material Management Plan – Preliminary Drainage Memo" (Appendix E). The water quality volume would infiltrate and receive treatment prior to entering the Mississippi River via shallow subsurface flow. Offsite discharge rates are not increased after mitigation and the

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
		majority of stormwater flow throughout the year is treated prior to discharge. Sediment is captured via infiltration pretreatment in the form of rock check dams, mitigating potential sediment load increases due to impervious surface construction. During construction, the contractor will follow stormwater and erosion control best management practices as dictated by the MPCA NPDES Permit. The EPA-approved impairments for the Mississippi River are considered non-construction related and do not require any additional best management practices or plan review for compliance with the NPDES Construction Stormwater Permit.
Resources, Habitats, and Vegetation	The Wabasha Barge Facility project is expected to directly impact previously disturbed upland portions of the site, Wetland 1, and the Mississippi River. Approximately 2.7 acres of trees will be cleared for site grading. Increased traffic from hauling trucks can pose a hazard to wildlife attempting to cross the site. Increased noise at the site may cause wildlife sensitive to noise to relocate or avoid the site. Impacts to Wetland 1 are unlikely to cause loss of rare or protected species as this wetland represents a smaller and lower quality wetland habitat than Wetlands 2 or 3. Wetland 1 is also likely to be incidental in nature, caused by historic mining operations at the site. Animal species would no longer be able to use this wetland and would likely relocate to Wetland 2 or Wetland 3.	Preventing the spread of invasive species during construction and operation of the barge terminal facility will occur as part of BMPs measures that will be put in place to control and appropriately manage vegetation and invasive species. Disturbed areas on the site will primarily be replaced with gravel surfaces (access road, loading and stockpile areas). Reseeding and landscaping materials will be native seed mixes which are free of invasive plants or plant parts. Tree removals will be limited to winter timelines to reduce potential impact to bat and bird species. Based on direction from MNDNR (Correspondence # MCE 2022-00127) the following Best Management Practices (BMPs) will be implemented to minimize impacts to the MBS Site of Moderate Diversity, including the minimization of impacts to state-listed plant species of special concern. All equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species. Additional BMPs to mitigate impacts to resources, habitats, and vegetation include:

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	Impacts to vegetation within the MBS site of Moderate Biodiversity Significance are expected to be minimal and limited to construction of the barge facility infrastructure in uplands and Wetland 1.	• Vehicular disturbance will be minimized at the site. Vehicles are only to be allowed on the proposed access road. • Necessary equipment and supplies will be stored/stockpiled in designated areas. • Dredge material will only be placed in designated upland areas. • Construction will be conducted during the winter months when the ground is frozen. • Equipment will be cleaned and inspected prior to being brought to the site to prevent the introduction and spread of invasive species. • To the extent possible, operations will occur within already-disturbed areas. • Disturbed areas will be revegetated with native species suitable to the local habitat as soon as possible post-construction. • Weed-free seed mixes, topsoils, and mulches will be used for revegetation. • To prevent the release of plastic fibers to the aquatic resources, the use of erosion control blankets will be limited to bio-netting or natural netting that do not contain plastic components. Hydro-mulch products will also be limited to plastic-free types.
Rare, Threatened, and Endangered Species and Ecosystems	Aquatic Organisms: Existing mussel species may experience direct mortality and short-term impacts because of the proposed project (dredging activities). Based on the recent mussel survey conducted within the project area June 6th through June 8th, 2023, one state-listed threatened species, the mucket, may be present within the dredging area. Based on historical data and the results of the recent survey, the project would have no impacts on federally listed species.	Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 134) prohibit the take of threatened or endangered species without a permit. Prior to the take of a protected species, a USFWS permit to take will be approved. There are no critical habitats listed at the project site for the endangered species (USFWS 2023). The USFWS and MNDNR will be notified in the event of sighting or contact with protected species. Aquatic Organisms: Additional coordination with MNDNR will occur in order to determine the potential for impacts and/or takings of state-protected mussel species in the Mississippi River dredge areas. MNDNR is expected to provide

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	Fish may be affected by the removal and burial of sessile or less mobile organisms on which the fish feed. The extent of this effect on fish would be determined by the extent and presence of the existing benthic communities in the area and fish that prey on them. Habitat loss and alteration have been linked to the decline in population of numerous fish species within the Mississippi River, including the paddlefish. Human alteration of rivers has also been cited as one of the contributors to the decline of paddlefish populations in the Upper Mississippi River. Turbulence from barges has also been known to cause mortality of yolk-sac paddlefish larvae (UMRCC 2020). Based on the items listed above, the proposed dredging and barge operations could have an effect on the listed fish species, including paddlefish if present. Terrestrial Organisms: Transportation of construction equipment and materials associated with the project site carries the risk of spreading invasive plant species. Ground disturbance from construction activities also presents a chance for aggressive and opportunistic invasive species to spread. The spread of invasive species can have a detrimental effect on native plant communities and wildlife that use those communities. Impacts associated	guidance on potential mitigation measures associated with species that may be impacted by site activities. To prevent harm to spawning populations of paddlefish and other listed fish species, work within the water will be avoided from April to mid-June or further consultation and/or permitting with MN DNR will be required (MNDNR Correspondence # MCE 2022-00127). To mitigate impacts from dredging operations, standard Best Management Practices (BMPs) will be implemented for dredging activities which includes: • Dredging locations will be restricted to authorized locations • Dredging will be restricted to daytime operations during summer months • Dredging will abide by all applicable federal and/or state regulations which are designed to be protective of aquatic organisms Terrestrial Organisms: Erosion control BMPs will be used on newly exposed soils. These may include the use of wildlife friendly natural fiber, erosion control blankets, silt fencing, synthetic fiber-free hydro-mulch, and rock checks; specifications for BMPs and allowed materials would be included in construction contracts and specifications. Exposed areas of sediment would be stabilized as soon as possible and seeded with an approved BWSR seed mix to establish vegetative cover. Invasive plant species would be monitored and managed to ensure success of native species establishment. Surveys of nesting bald eagles will be performed prior to on-land construction activities at the site. If active nests are found, no construction activities will be completed within a buffer of 660-feet from the nest (USFWS 2007).

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	with the spread of invasive species will be mitigated through the use of BMPs as described in Section 4.15.2.4. Tree cutting has the potential to reduce the available habitat and nesting sites for bird species. Forested areas along the river at the site, including Wetlands 2 and 3 with eastern cottonwood and silver maple documented as dominant vegetation, have the potential for suitable nesting sites for the bald eagle. A survey of active bald eagle nests should be performed within the vicinity of the site prior to site disturbance which would take place in the nesting season. Buffer guidelines are given in Section 4.15.2.4. With the very large amount of habitat available in the general project area for the full variety of bird behaviors, impacts to the wading bird community are expected to be temporary and minimal. Potential summer foraging and roosting habitat for the NELB is present at the site. Wetlands 2 and 3, as well as forested uplands could provide habitat for the NELB. Construction at the site will not impact Wetlands 2 or 3. Tree clearing will be limited to 2.7 acres.	Tree cutting will be minimized at the site to preserve habitat. Minimizing areas of disturbance, including natural vegetation and tree removals, will be limited to the extent possible. Approximately 2.7 acres of trees will be cut. Tree removal will be limited to the winter months, between November 1 and March 31. Potential habitat for the timber rattlesnake may occur on site, however, direct impacts are not expected. Because this is a ground dwelling motile species, the potential does exist for vehicular impacts. To mitigate potential impacts to this species: • Erosion control blankets will be limited to “bio-netting” or other natural netting types • Working crews will be made aware of the potential to encounter the timber rattlesnake and instructed to not disturb • DNR will be contacted if rattlesnakes are encountered at the site
Visual Resources	The proposed project would alter the existing visual aesthetic of the project site with the	Barge facility operations will occur primarily during day-time working hours. Exterior lights, if installed at the facility, will be down-casting and

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	introduction of trucks, barges, other industrial equipment, storage facilities, and the temporary introduction of construction vehicles and equipment. This altered visual aesthetic would be visible from neighboring parcels, roadways, the Mississippi River, and from the surrounding hillside.	set on timers to reduce wildlife and aesthetic impacts during non-operating hours.
Noise	Construction-related noise effects from the proposed project would be minor and temporary in nature, generated by the use of construction vehicles and equipment, as well as barges, during the construction of the barge terminal pad, access road, dock/mooring piles, barge staging winch system, loading truck scale, and scale house/field office building. Noise resulting from the proposed project's operational activities—occurring between 7:00am and 6:00pm, Monday through Friday—would be generated by the loading and unloading of barges and trucks, from trucks and barges used to transport commercial and/or dredged materials to and from the project site, as well as from the personal vehicles of employees traveling to and from the project site, and internal site operations equipment (e.g., material haulers: hoppers, conveyors, etc.). The proposed project would generate traffic-related noise from trucks hauling construction materials during the	The proposed project would follow the noise regulations outlined in the project operator agreement, which limit construction and operational activities to 7:00am – 6:00pm, Monday through Friday. The project operator agreement is consistent with the State of Minnesota rules (MN Statute 7030.0020), which define daytime hours as 7am to 10pm, and nighttime hours as 10pm to 7am. All construction and operational activities associated with the proposed project would conform with the project operator agreement as well as the State of Minnesota noise standards.

SEE Factor	Anticipated Impact	Proposed Mitigation Measures
	construction of the proposed project, trucks hauling dredged materials during the operation of the proposed project, and from employees using personal vehicles to travel to and from the project site. However, because the proposed project would include no more than ten parking spaces for employee and operator parking and would generate less than 250 vehicle trips during peak hour operations and less than 2,500 daily trips, traffic congestion and traffic-related noise are not anticipated to adversely affect surrounding areas or sensitive receptors.	
All Other Factors	Minimal impact	Follow local, state, and federal permit and approval requirements.

6. PROJECT COORDINATION

6.1 Federal Agencies

Coordination with Federal Agencies includes the following:

- MARAD: Funding and Federal Environmental Assessment
- USACE: No-rise certification; river and wetland impacts; 217(d) Agreement (relative but beyond the scope of this review)
- USFWS: Threatened and endangered species and critical habitat areas; Wildlife Refuge areas.

All permits and approvals will be secured prior to construction activities.

Should future federal funding be applied to the project, additional environmental review documentation will meet any additional federal requirements.

6.2 State Agencies and Organizations

Coordination with State Agencies and Organizations includes the following:

- MDH: Unknown well sealing or repair
- MNDNR: Rare, threatened and endangered species and critical habitats; Floodplain and water resources
- MNDOT: Funding; Transportation
- MPCA: Industrial Stormwater permitting
- SHPO: Review of historic resources
-

All permits and approvals will be secured prior to construction activities.

6.3 Local Agencies and Organizations

Coordination with Local Agencies and Organizations includes the following:

- Wabasha County: Transportation; Water resources
- Izaak Walton League: Environmental concerns

All permits and approvals and continued coordination efforts will occur prior to construction activities.

6.4 Other Project Coordination

Other project coordination includes the following:

- Tribal Organizations

Continued coordination efforts will occur prior to construction activities.

7. UNRESOLVED OR CONTROVERSIAL ISSUES

7.1 Unresolved or Controversial Issues

There are no known unresolved or controversial issues that are not addressed in the previous sections.

APPENDIX A

Figures

APPENDIX B

EPA EJScreen Community Report

APPENDIX C

Preliminary No-Rise Certification

APPENDIX D

Wetlands

APPENDIX E

Preliminary Drainage Memo

APPENDIX F

Mussel Survey

APPENDIX G

MnDNR Correspondence

APPENDIX H

Traffic Impact Memorandum

APPENDIX I

Scoping EAW

APPENDIX J

Comments Received on Scoping EAW

APPENDIX K

USFWS Information for Planning and Consultation (IPaC)

APPENDIX L

217(d) Agreement between USACE and the City of Wabasha

APPENDIX M

Draft EIS Comments and Responses

APPENDIX P

Draft EIS Comments and Response Tracker

Comment Number	Date Received	Agency / Commenter	Comments	Response to Comments	Final EIS Section	Page Numbers
1	11/6/2023	USFWS	The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to comment on the Draft Environmental Impact Statement (EIS) for the Wabasha Barge Facility. This project will have direct and indirect impacts to the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), which is a unit of the National Wildlife Refuge System and managed by the Service. Refuge staff were not directly informed of this public notice and comment period and learned of the release through our state partner Minnesota Department of Natural Resources (DNR). As an adjacent landowner and trustee of federal wildlife and fisheries resources in the area, we request that we be directly contacted regarding any future action on this project. Refuge staff provided comments on this project in July 2022 during the initial scoping period. The Service also has jurisdiction and responsibility for regulating the Endangered Species Act. A search of our records shows that this project and its proponents have not sufficiently consulted on threatened and endangered species and have not completed the obligations required under Section 7 of the Endangered Species Act.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee-title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. While there are no anticipated direct impacts to USFWS lands, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property. Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A USFWS IPaC determination key found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. No federally-listed mussels were identified as part of mussel surveys for the proposed project. Any relocation of state-listed mussels will be coordinated with MnDNR.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15.2 Appendix A	97-108 Figure 10
2	11/6/2023	USFWS	Page 9 – Project Description – “other commodities” are listed here and throughout the document but never discussed. Please describe any additional uses for this facility beyond dredged sand management and what other commodities may be offloaded in this area.	The City of Wabasha and the Wabasha Port Authority may utilize the port for other dry commodities, such as gravel, grains, and cement at some point in the future, however, the 10-year agreement between the Port Authority and the port operator will restrict movement of commodities other than dredge-material for at least the first 10-years. This agreement specifically precludes the use of the barge facility for other products. In addition, the physical design of the port facility limits the port to a maximum of 2 barges per day and 100 trucks per day, so the potential environmental impact of other products would be no different that dredged material as proposed. This is further described in 2.4 Purpose and Need for Proposed Action under "Other Products".	Chapter 2 "Project Description" Section 2.4 Purpose and Need, "Other Products". Appendix M	9-10
3	11/6/2023	USFWS	Page 10 – Potential Environmental Effects – There is no discussion of the impacts, including erosion, that facility operations, barge traffic and wave action would cause to the nearby island and neighboring lands owned in fee title by the Service managed as Refuge. Please describe the presence/location of the Refuge and any anticipated impacts to these federal conservation lands.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. To avoid potential indirect impacts to refuge properties from “nose-in” barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40” prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Land Use" Section 6.2.4 "Preferred Alternative Mitigation Measures"	50-51
4	11/6/2023	USFWS	Page 11 – Permits and Approvals – Any activity that may occur on Refuge fee title land may not be allowed under Federal law if not determined to be compatible with Refuge purposes and will at a minimum require a Special Use Permit from the Refuge. If mussels are relocated to or dredging takes place on fee title lands additional compliance will be required.	There are no anticipated activities occurring on USFWS Refuge fee-title lands. Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A determination key that was completed in the USFWS IPaC system found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. No federally-listed mussels were identified as part of mussel surveys for the proposed project. Any relocation of state-listed mussels will be coordinated with MnDNR.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15.2	97, 105-107

Comment Number	Date Received	Agency / Commenter	Comments	Response to Comments	Final EIS Section	Page Numbers
5	11/6/2023	USFWS	Page 12 – Project Description – There is no discussion on what types and sizes of barges that will be used to “facilitate the transfer of materials, including but not limited to dredge material and other commodities” and what impacts and erosion that may be caused to the nearby island owned in fee title by the Service. Please identify the types and sizes of barges, define “other commodities”, and identify the associated impacts.	The proposed barge terminal is designed and sized to allow only one 195’x35’ hopper barge (1,000 CY capacity) at a time to maneuver through the channel and the dredged maneuvering area adjacent to the dock. The proposed mooring system for the dock is designed and sized to allow for two loaded hopper barges to be moored abreast of each other at the dock, with only a single hopper barge being unloaded at any given time. The mooring system will also allow for one empty hopper barge to be moored to the side of the dock, while it waits to be removed. The port operator estimates that it will take the proposed material handler approximately 4 hours to unload a 1,000 CY hopper barge. Therefore, the proposed barge facility is designed and sized to accommodate a maximum of two loaded 195’x35’, 1,000 CY hopper barges in an 8-hour working day. The City of Wabasha and the Wabasha Port Authority may utilize the port for other dry commodities, such as gravel, grains, and cement at some point in the future, however, the 10-year agreement between the Port Authority and the port operator will restrict movement of commodities other than dredge-material for at least the first 10-years. This agreement specifically precludes the use of the barge facility for other products. In addition, the physical design of the port facility limits the port to a maximum of 2 barges per day and 100 trucks per day, so the potential environmental impact of other products would be no different that dredged material as proposed. This is further described in 2.4 Purpose and Need for Proposed Action under "Other Products".	Chapter 2 "Project Description" Section 2	9-10
6	11/6/2023	USFWS	Page 12 – Project Description – The Service is concerned about potential future expansion of the site and believes that the EIS lacks description of evaluation of this potential, and instead only refers to it as a decision would “be visited at a future time if warranted”. As a adjacent landowner to the “Project Site” there has been little communication with the Service. Any plans for this site, including future plans, should include communication and discussion with the Service regarding any potential impacts to the Refuge.	The City of Wabasha and the Wabasha Port Authority have no plans to expand the proposed facility. Any future expansion of the site would be require coordination through additional permitting and review requirements. The proposed project's design and size are the most limiting factors and the site's maximum threshold would only accommodate up to two (2) barges and approximately 100 truck loads per day for facility access. The City of Wabasha and the Wabasha Port Authority may utilize the port for other dry commodities, such as gravel, grains, and cement at some point in the future, however, the 10-year agreement between the Port Authority and the port operator will restrict movement of commodities other than dredge-material for at least the first 10-years. This agreement specifically precludes the use of the barge facility for other products. In addition, the physical design of the port facility limits the port to a maximum of 2 barges per day and 100 trucks per day, so the potential environmental impact of other products would be no different that dredged material as proposed. This is further described in 2.4 Purpose and Need for Proposed Action under "Other Products".	Chapter 2 "Project Description" Section 2	9-10
7	11/6/2023	USFWS	Page 12 – Project Description – Before “Dredging an access channel” can occur, documentation/determination of the ownership of the river shoreline and river bottom in the areas planned for dredging will be required. If any proposed dredging is planned to occur within Refuge ownership, that action would not be allowed.	There are no anticipated activities occurring on USFWS Refuge fee-title lands. Following acquisition, the portion of the river shoreline that is located within the project site would be owned by the City of Wabasha. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs. We are unaware of any fee-title ownership of the river bottom by the USFWS. According to the MnDNR (MnDNR Website, Water Law Basics, Who owns the bed of a lake, marsh, or stream?), "When a water basin or watercourse is "navigable" under the federal test, the State of Minnesota owns the bed below the natural ordinary low water level (see: Lamprey v. State (PDF), 52 Minn. 1981, 53 NW 1139 [1893]; and United States v. Holt State Bank (PDF), 270 U.S. 49 [1926]). The federal test used for navigability is: "when they are used, or are susceptible of being used, in their natural and ordinary condition, as highways for commerce, over which trade or travel are or may be conducted" (see: State v. Longyear Holding Co. (PDF) 224 Minn 451, 29 NW 2d 657 [1947]). If a court has found that a lake is non-navigable and meandered, the shoreland owners own the bed of a lake in severalty (see: Schmidt v. Marschel. (PDF), 211 Minn 543, NW 2d 121 [1942]). If a stream is non-navigable but has been meandered, the shoreland owners own to the thread (centerline) of the stream. If a lake or stream is non-navigable and not meandered, ownership of the bed is as indicated on individual property deeds."	Figure 10	Figure 10

Comment Number	Date Received	Agency / Commenter	Comments	Response to Comments	Final EIS Section	Page Numbers
8	11/6/2023	USFWS	Page 12 – Project Description – There is no discussion of the impacts and erosion that “barge maneuvering”, prop wash and wave action would have to the island owned in fee title by the Service and managed as part of the National Wildlife Refuge System that is located directly adjacent to this location. Please acknowledge the presence of Refuge lands and describe the potential impact to these lands.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on USFWS fee-title land. To avoid potential indirect impacts to refuge properties from “nose-in” barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40” prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Land Use" Section 6.2.4	50-51
9	11/6/2023	USFWS	Page 15 – Purpose and Need for the Proposed Action – The statement “the Proposed Barge Facility site is the only feasible, cost-effective location for offloading barges” is misleading as per the Corps’ Final Lower Pool 4 DMMP describes “a modern port facility is not required for the placement of dredged material at this site.” “…dredged material could be offloaded via a simple temporary work platform…”. Please describe more in depth why this statement is in direct conflict with the Corps’ DMMP and how circumstances have changed that would facilitate this complete re-direction of approach to managing this material.	Section 2.4, "Purpose and Need for the Proposed Action," and Chapter 3, "Alternatives," have been updated to clarify the proposed project's relationship with the Corps' DMMP, identify the economic developmental potential for the proposed project, and further describe the process that was undertaken to evaluate alternate locations. While temporary features could be used to facilitate onshore transfer of dredged material, it would not be cost-effective over a 10-year period to use such temporary features. The cost of constructing temporary features to facilitate onshore transfer at the proposed project site over the 10-year Section 217(d) agreement period would amount to approximately $1.8 million. This is more than the estimated construction cost of the permanent dock proposed as a part of the barge facility, which is approximately $980,000.	Chapter 2 "Project Description" Section 2.4	8-9
10	11/6/2023	USFWS	Page 23 – Permits and Approvals – Consultation under Section 7 of the Endangered Species Act must be completed with the Service’s Ecological Services office in Bloomington, MN. Any impacts to Refuge lands may require additional consultation and a permit if those impacts are allowable under federal law.	Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A determination key found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. No federally-listed mussels were identified as part of mussel surveys for the proposed project. Any relocation of state-listed mussels will be coordinated with MnDNR. No project activities will occur on USFWS fee-title land.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15.2	97-108
11	11/6/2023	USFWS	Page 26 – Mitigation Measures – No discussion on the economic impacts to Refuge users on the river. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers and other recreational users on the Refuge may be impacted by this project. A description of those impacts should be incorporated into this document.	There are no anticipated adverse economic impacts to Refuge users as a result of the proposed project. Mitigation measures for barge traffic include no wake, restricting "nose-in" maneuvering, and other actions to reduce potential impacts to boaters, hunters, and anglers.	Chapter 3 "Alternatives" Section 2.2 Chapter 4 "Transportation" Section 20.2	35-36, 117
12	11/6/2023	USFWS	Page 28 & 29 – Zoning – the project is located within an area zoned for S1 Shoreland Overlay Zone which has, among others, the goal of protecting surface water quality which is in direct contradiction to this project. What are the “Construction standards and specifications to ensure compliance…”? Describe how this project will comply with this zoning.	The Project Site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha. These two parcels are zoned R-1, “Low-Density Residential” and RC “Residential Conservancy, but will be rezoned to industrial to match the City-approved land use designation of industrial. The site is located in the S-1 and S-2 Shoreland Overlay Zones. The proposed development will comply with all the standards within the Shoreland Overlay Zone. The Project Site is located within the FEMA 100-Year floodplain and will be raised to comply with all FEMA standards.	Chapter 4 "Land Use" Section 6	47-52
13	11/6/2023	USFWS	Page 29 – Environmental Consequences – In addition to the four wetland basins delineated on the upland, the entire area to be dredged for access is a wetland and impacts to this area need to be acknowledged and accounted for in the document.	Chapter 4 Section 13. 1, "Surface Water," and Exhibit 1 of Appendix D has been updated to clarify the anticipated dredging approval process and associated mitigation measures for the proposed project.	Chapter 4 "Water Resources" Section 13.1 Exhibit 1 of Appendix D	81
14	11/6/2023	USFWS	Page 30 – Recreational Facilities - The Nelson-Trevino Bottoms is owned in fee-title by the Service. Labeling it as a Natural Area suggests that it is State ownership. Please update ownership of adjacent lands and properly label as such.	Figure 10, "Outdoor Recreation," and Section 4.6.4 "Parks, Open Space, and Recreation Facilities" have been updated to show and describe adjacent property ownership including fee-title land owned by USFWS.	Chapter 4 "Land Use" Section 6.4.1 Figure 10	54 Figure 10

Comment Number	Date Received	Agency / Commenter	Comments	Response to Comments	Final EIS Section	Page Numbers
15	11/6/2023	USFWS	Page 31 – Recreational Facilities – Refuge property not only “begins just up-river” but the Service is the fee-title landowner to the island directly north of the project site which may be impacted by this facility as well as the shoreline owner adjacent to the tract that will host this project. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers and other recreational users on the Refuge may be impacted by this project. A description of the Refuge designations and potential impacts should be incorporated into this document.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. Several factors inherent with the final design of the access channel dredging, the specifications of the marine equipment that will navigate the channel, and the dock wall face will minimize or preclude prop wash, wave action and barge “nose-in” damages to the adjacent Upper Mississippi River National Wildlife & Fish Refuge lands. To mitigate potential impacts to refuge properties from “nose-in” barge maneuvering and prop wash/wave action from the barge tug, the preferred design includes a narrowed cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Thus, it will not be possible for barges or tugs to close to within 120 feet of the island during operations. Due to the narrowed cut, it will not be possible for barge fleeting to occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge entering/departing the channel and dock. Because only a single barge will be handled at a time at the Wabasha terminal, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Once entering the access channel, barge towing will necessarily be at idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40” prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Figure 10	Figure 10
16	11/6/2023	USFWS	Page 32 – Environmental Consequences – “For aquatic recreational users, an increase in barge traffic to and from the proposed project area will require increased vigilance to reduce impacts between barges and other boat traffic.” This statement warrants additional discussion and consideration. The burden of these impacts should not be placed on the recreational user. There should be plans outlined on a realistic approach to address these impacts beyond a simple acknowledgement.	Due to the narrowed cut, it will not be possible for barge fleeting to occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge entering and departing the channel and dock. Because only a single barge will be handled at a time at the facility, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Once entering the access channel, barge towing will necessarily be at idle speed. Barge tow pilots will maintain vigilance when maneuvering towards the proposed barge facility and will comply with all local, state, and federal laws and guidelines for the safe operation of barges. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property. The proposed facility only has the capacity to serve a maximum of 2 barges per day. Based on this, there is no expected impact to recreational activity in the area. There will be no restrictions on recreational access to the channel or dock area imposed as a part of this project. Recreational users of the river are used to interacting with existing barge traffic on the river already. Barge operators and recreational users are required to conform with river navigation laws. The addition of 2 barges per day is not expected to be a significant change for recreational users of the river.	Chapter 3 "Alternatives" Section 2.2 Chapter 4 "Transportation" Section 20.2	35-36, 117
17	11/6/2023	USFWS	Page 57 – Floodplains – Mitigation Measures – “Dredging activities within the side channel…are anticipated to decrease flood risk by increasing conveyance and flood volume storage…”. This is a misleading comment. The dredged area is a very small area in comparison to the larger floodplain and very little decrease in flood risk would occur. Please provide additional data and analysis to define this statement.	This section has been updated to describe the negligible effect on flood conveyance and floodplain storage, per the findings of the No-Rise Certification that was included in Appendix C.	Chapter 4 "Floodplains" Section 10	77-78
18	11/6/2023	USFWS	Page 65 – Stormwater – the description of stormwater “ditches” states that the water will be treated prior to release to the Mississippi River. A description of how that treatment will occur and how compliance will be monitored is needed.	This section has been updated to specify the ultimate discharge point of the ditches is the infiltration basin. The processes for pollutant removal within the system are described. Monitoring and maintenance schedules and methods are summarized. Inspection of construction erosion and sediment control measures are described.	Chapter 4 "Stormwater" Section 13.3.4	85
19	11/6/2023	USFWS	Page 71- Resources, Habitats, and Vegetation – “The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project.” The Service also owns and manages the island directly north of the project. Please identify the Refuge lands adjacent to this project and acknowledge how they will be impacted.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	92-93

Comment Number	Date Received	Agency / Commenter	Comments	Response to Comments	Final EIS Section	Page Numbers
20	11/6/2023	USFWS	Page 72- Resources, Habitats, and Vegetation – There is no mention of floodplain forest, a key habitat managed by the Service in the adjacent area of the project. This section also provides no discussion regarding aquatic plant communities within the river and instead, only identifies that the area is a Lake of Outstanding Biological Significance as defined by MN Department of Natural Resources. Please further describe what that means to the aquatic plant communities and address the floodplain forest resources that exist in the area.	Section 4.15.2, "Resources, Habitats, and Vegetation," has been updated to address aquatic plant communities and floodplain forest resources that exist in the area.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	92
21	11/6/2023	USFWS	Page 86 – Northern Long-Eared Bat – Under the Mitigation Measures the document states “Prior to the take of a protected species, a USFWS permit to take will be approved.” That statement seems pre-decisional at best. This section does not reflect the recent uplisting of the Northern Long-eared Bat and the subsequent consultation requirements. Consultation under Section 7 of the Endangered Species Act has not been fulfilled. Please initiate proper Section 7 Consultation. Additionally, conducting a regulatory review and completing Section 7 Consultation through the Service’s Ecological Services office utilizing the Information for Planning and Consultation (IPaC) system may be adequate for a determination on properties located outside of the Refuge boundary, however, the findings are not sufficient for determinations for activities within the Refuge boundary or for obtaining a Special Use Permit (SUP). National Wildlife Refuges have higher standards for considering/allowing impacts to threatened and endangered species.	Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A determination key that was completed in the USFWS IPaC system found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. For more information, refer to Section 4.15.2, "Rare, Threatened, and Endangered Species and Ecosystems."	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	97-108
22	11/6/2023	USFWS	Page 86 – Mitigation measures for aquatic species – If dredging is occurring within the boundaries of the Refuge, coordination must also take place with the Service. No dredging will be allowed on Refuge owned lands. Please confirm ownership of lands (including river bottoms) that will be impacted by dredging.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee-title land owned by USFWS. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs. No project activities will occur on fee-title land owned by USFWS.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	107-108
23	11/6/2023	USFWS	Page 94 – Water-Based Transportation – Mitigations measures must be taken to protect the integrity of the Refuge island north of the project. Increased barge traffic will cause wave action and prop wash which will lead to erosion of the southern bank of the island and degradation of floodplain forest habitats. Please describe these impacts and how they will be addressed.	Several factors inherent with the final design of the access channel dredging, the specifications of the marine equipment that will navigate the channel, and the dock wall face will minimize or preclude prop wash, wave action and barge “nose-in” damages to the adjacent Upper Mississippi River National Wildlife & Fish Refuge lands. To mitigate potential impacts to refuge properties from “nose-in” barge maneuvering and prop wash/wave action from the barge tug, the preferred design includes a narrowed cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Thus, it will not be possible for barges or tugs to close to within 120 feet of the island during operations. Due to the narrowed cut, it will not be possible for barge fleeting to occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge entering/departing the channel and dock. Because only a single barge will be handled at a time at the Wabasha terminal, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Once entering the access channel, barge towing will necessarily be at idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40” prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Chapter 3 "Alternatives, Purpose and Need" Section 2.2 Chapter 4 "Transportation" Section 20.2	35-36, 117
24	11/6/2023	USFWS	The 2022 Draft Scoping Decision Document “Modified Designs or Layouts” section included a statement that “modified design or layout alternatives were evaluated… along with the location, size, and orientation of the dredge material storage areas were considered.” Neither of the referenced documents during scoping, nor the Site Plan map address dredge material storage by location or quantity. Material storage has the potential to significantly impact the site and must be addressed. These items were not found to be described or addressed in the EIS so the comments provided by the Service during Scoping are assumed to remain unaddressed. Please advise why this was not included or addressed in this document.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the process that was undertaken to evaluate alternate site locations.	Chapter 3 "Alternatives, Purpose and Need" Section 2.2	35-40

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25	11/6/2023	USFWS	Finally, as was addressed in comments to USACE regarding the Pool 4 Dredge Material Management Plan (DMMP) the use of this property was identified and evaluated as the "Carrels Site" which has led to confusion on this project. The DMMP noted that 18 acres of this Project Area are approved in the Channel Maintenance Management Plan (CMMP). A discussion regarding how this pre-determined use will impact the development of a barge terminal needs to be addressed. As was expressed to USACE, the Refuge has concern over the development of a barge terminal at this location. As indicated on your Site Plan there is limited area for barges to maneuver and an expectation that they will enter the terminal at an angle. It is likely that the island directly in-front (riverward) of the proposed terminal, which is Service fee-title ownership, will become a pivot point for barges to nose-in which leads to damaged or downed trees and erosion which will be exaggerated by propwash and wave action from barges turning and passing.	Several factors inherent with the final design of the access channel dredging, the specifications of the marine equipment that will navigate the channel, and the dock wall face will minimize or preclude prop wash, wave action and barge "nose-in" damages to the adjacent Upper Mississippi River National Wildlife & Fish Refuge lands. To mitigate potential impacts to refuge properties from "nose-in" barge maneuvering and prop wash/wave action from the barge tug, the preferred design includes a narrowed cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Thus, it will not be possible for barges or tugs to close to within 120 feet of the island during operations. Due to the narrowed cut, it will not be possible for barge fleeting to occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge entering/departing the channel and dock. Because only a single barge will be handled at a time at the Wabasha terminal, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Once entering the access channel, barge towing will necessarily be at idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40" prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Chapter 3 "Alternatives, Purpose and Need" Section 2.2 Chapter 4 "Water-Based Transportation" Section 20.2	35-36, 117
26	11/1/2023	USACE	The purpose of this letter is to inform you that based on the Draft Environmental Impact Statement (DEIS) for the project referenced above, a Department of the Army (DA) permit would be required for your proposed activity under Section 10 of the Rivers and Harbors Act of 1899 and under Section 404 of the Clean Water Act.	Comment noted. All required permits and approvals will be obtained prior to commencing construction and dredging activities.	Chapter 1 "Permits and Approvals" Section 7	3
27	11/1/2023	USACE	As an application for a Corps permit has not yet been submitted, we recommend requesting a pre-application consultation meeting with the Corps to discuss an appropriate permitting pathway and obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process.	A pre-application meeting was coordinated between the city's consultant and USACE to discuss the proposed project and identify any additional requirements.	Chapter 1 "Permits and Approvals" Section 7	3
28	11/1/2023	USACE	We recommend that you reach out to the United States Coast Guard and the River Industry Action Committee to ensure that any concerns they might have are addressed.	Comment noted. Communications with USCG are complete and no additional requirements are needed at this point.	Chapter 6 "Project Coordination" Section 1	130
29	11/1/2023	USACE	As this area is located in a high potential area for Tribal resources, we recommend reaching out to any Tribes that may have an interest in this area.	Additional Section 106 consultation will be addressed through the federal environmental review process. Tribal coordination and consultation will occur as part of this process to comply with federal regulatory requirements working with and through the Maritime Administration (MARAD).	Chapter 6 "Project Coordination" Section 1	130
30	11/1/2023	USACE	As this area is located near a United States Fish and Wildlife (FWS) Refuge, we recommend reaching out the FWS to ensure that any concerns they might have are addressed.	Coordination with USFWS is ongoing and will continue through the entirety of the project's permitting and approvals process.	Chapter 6 "Project Coordination" Section 1	130
31	11/1/2023	USACE	To ensure compliance with Section 10 of the Rivers and Harbors Act of 1899: when an application is submitted, please provide the dimensions and configuration of all proposed structures located in the Mississippi River (such as the dock, sheet pile dock wall, dolphin structures, and guide pile).	Comment noted. Design plans will be reviewed and submitted with permit applications.	Chapter 1 "Permits and Approvals" Section 7	3
32	11/1/2023	USACE	Will this facility be used for other purposes than maintenance dredging?	Although the barge facility could be used in the future for the transfer of other products such as agricultural and other dry commodities, the City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time. The 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products. Additional details are provided in Section 2.4, "Purpose and Need for the Proposed Action."	Chapter 2 "Project Description" Section 4	7-10
33	11/1/2023	USACE	Are there other alternatives than construction of a barge facility that would meet the project purpose and need?	Chapter 3, "Alternatives," has been updated to further describe the process that was undertaken to evaluate alternatives and site locations.	Chapter 3 "Alternatives, Purpose and Need"	13-18
34	11/1/2023	USACE	Are there other locations near the Lower Pool 4 that would meet the purpose and need?	Chapter 3, "Alternatives," has been updated to further describe the process that was undertaken to evaluate alternatives and site locations.	Chapter 3 "Alternatives, Purpose and Need" Section 2.1	18-34
35	11/1/2023	USACE	Please let us know if you determine that this project would receive funding or require approval from additional federal agencies, such as the United States Maritime Administration.	Federal funding through MARAD has been confirmed since the publishing of the draft EIS. The federal environmental review process will commence following completion of the state-level EIS process.	Chapter 1 "Permits and Approvals" Section 7	3

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36	10/31/2023	MnDNR	Our previous July 21, 2022 comment letter (attached) described the importance of clearly articulating the purpose and need that is not so narrow as to preclude the analysis of meaningful alternatives. The purpose and need identified in the DEIS does not appear to align with historic restoration orders, permit application proposals, section 7.8 of the city's Comprehensive Plan, and Port Development Assistance Program grant requirements. As the activity described in the DEIS would constitute a permanent and perpetual impact to the Mississippi River, adequately identifying the purpose and need is important to both the environmental review process as well as for DNR's subsequent consideration of a Public Waters Work permit application. The Minnesota Environmental Policy Act (MEPA) more specifically (Minn. Stat. § 116D.04, subd. 6) precludes "state actions significantly affecting the quality of the environment" if there is a "feasible and prudent alternative consistent with the reasonable requirement of the public health, safety, and welfare of the state's paramount concern for the protection of its air, water, land, and other natural resources from pollution, impairment, or destruction." The alternative analysis used in the DEIS directly cites (quotes) the U.S. Army Corps of Engineers' (USACE) Pool 4 Dredged Material Management Plan (DMMP) and tentatively selected plan in an attempt to satisfy the alternative analysis component of the DEIS. The DMMP is an integrated federal Environmental Assessment and National Environmental Policy Act document that uses a federal process based on screening criteria that does not automatically meet the requirements of MEPA and criteria necessary to inform State permitting decisions. The DMMP carried forward several feasible alternatives, and it is unclear from the analysis completed so far in the DEIS that the barge facility would represent the least environmentally impactful and feasible alternative that could meet the standards for DNR Public Waters Work Permitting. For the reasons outlined below, unless the DEIS more thoroughly evaluates project alternatives, the document will likely be of limited use in the permit review process.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate alternate site locations. The Purpose and Need and Alternatives sections were updated to address comments and questions received by agency stakeholders. The Alternatives address the requirements outlined in MN Rules 4410.2300, G, and Minn. Stat. § 116D.04, subd. 6.	Chapter 3 "Alternatives, Purpose and Need" Section 2.1	18-34
37	10/31/2023	MnDNR	If the primary or exclusive purpose and need for the project is to transfer dredged material to the storage site, there appear to be other alternatives that should be considered. These alternatives might include the use of hydraulic dredging with a pipeline to the storage site (such as that proposed at Read's Landing), that could minimize environmental impacts. If the barge facility is determined to be the least impactful feasible alternative, then alternatives that seek to minimize the size and scope of the impacts should also be considered. Economic considerations are relevant to feasibility, but do not solely determine the selected alternative.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate alternate site locations. The four (4) project goals including safety, strategic location, environmental stewardship, and balancing needs with opportunities can be found in Section 2.4.1. Economic Impacts and project costs are also factors in the decision leading to the best alternative to build a permanent facility and can be found in Section 2.5.	Chapter 3 "Alternatives, Purpose and Need" Chapter 2 "Project Description" Section 4 and 5	7-11, 13-41
38	10/31/2023	MnDNR	Additionally, there are still significant questions regarding the future use of the facility and potential plans for development of a commercial port beyond the stated use of the facility by USACE for the transport of dredged material.	Although the barge facility could be used in the future for the transfer of other products such as agricultural and commercial commodities, the City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time, and the 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products. Additional details are provided in Section 2.4, "Purpose and Need for the Proposed Action."	Chapter 2 "Project Description" Section 4	7-10
39	10/31/2023	MnDNR	Section 1.2; Section 2.1, Project Description. These sections state, "The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities." This is an expansion of the previous description, which only focused on the USACE's purpose, to utilize the barge facility for other activities.	Chapter 2, "Project Description" has been updated to clarify anticipated project activities and the purpose and need for the proposed project. The City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time, and the 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products.	Chapter 2 "Project Description" Section 4	7-10
40	10/31/2023	MnDNR	Section 1.3; Section 2.4, Purpose and Need for the Proposed Action. These sections do not mention the "other commodities" beyond the USACE's proposed use.	The City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time, and the 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products. Section 2.4, "Purpose and Need for the Proposed Action," has been revised accordingly.	Chapter 2 "Project Description" Section 4	7-10
2/10/1900	10/31/2023	MnDNR	Section 1.4, Alternatives. This section says that alternative sites were considered in the Pool 4 DMMP. This does not account for alternatives considered to meet the "other commodities" needs. The Pool 4 DMMP carried forward several alternatives for consideration including the Pipeline C: Lock and Dam 4 Embankment To Zumbro River Flats South alternative (Section 8.9, page 126 of the DMMP). This was not selected as the preferred alternative by the USACE, but it was carried forward as a Tier 2 option. Because of the different permitting criteria and MEPA considerations, this option should be considered as an alternative in the DEIS.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate alternate site locations and scale/magnitude considerations.	Chapter 3 "Alternatives, Purpose and Need" Section 1	13-18

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42	10/31/2023	MnDNR	Section 1.5, Potential Environmental Effects. There is no mention of impacts to federally and state-listed species, nor of any disruption to neighboring land use such as the National Wildlife Refuge.	Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A determination key that was completed in the USFWS IPaC system found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. No federally-listed mussels were identified as part of mussel surveys for the proposed project. Any relocation of state-listed mussels will be coordinated with MnDNR. No project activities will occur on fee-title land owned by USFWS, and continued coordination will occur with adjacent property owners throughout the project.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15.2	97-108
43	10/31/2023	MnDNR	Section 1.6, Project Cost and Funding Source. The Port Development Assistance Program grant funding obtained for this project is specifically designated by Minn. Rule 8895.0300 to fund commercial projects. This Rule states: “To be eligible for the program, a project must benefit Minnesota's shippers and receivers by improving or developing a commercial navigation facility or its components. Eligible projects include dock and terminal repair, capital improvement to a commercial navigation facility, supporting equipment directly related to loading or off-loading cargo to or from a vessel, disposal facility construction or repair, and dredging to open a new commercial navigation facility.” The funding appears to require use for a commercial facility beyond what is needed for USACE purposes described in the DMMP.	The proposed facility is in compliance with the Port Development Assistance Program.	Chapter 1 "Project Cost and Funding Source" Section 6	3
44	10/31/2023	MnDNR	Section 3.2, Alternatives Considered but Dismissed from Consideration. This section summarizes the criteria used by the USACE for their process in identifying sites for dredged material management plans, but does not address the alternative analysis needed for the public waters work permitting process, which requires the state to permit the least environmentally impactful feasible alternative. Economic considerations are pertinent to feasibility, but do not determine the selected alternative.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate the proposed project alternatives.	Chapter 1 "Permits and Approvals" Section 7	3
45	10/31/2023	MnDNR	Section 3.2, Alternatives Considered but Dismissed from Consideration. In the Pool 4 DMMP (Section 9.3.1), USACE states: “Under the tiered approach of the Recommended Plan, the preferred option for placement of dredged material will be the development of a Section 217(d) agreement between the Corps and the City of Wabasha. The city of Wabasha, in conjunction with the Wabasha Port Authority, is independently working to develop a port facility at the Carrels site to accept dredged material as well as other commodities using river transportation. The procurement and development of this port would be separate from the Corps’ federal action and a modern port facility is not required for the placement of dredged material at this site. If a port was built, it may facilitate the movement of dredged material there off the river, but dredged material could be offloaded via a simple temporary work platform as discussed in 6.3.3. If a port is developed, the city of Wabasha would be required to obtain all applicable permitting and comply with environmental laws and regulations separately from this DMMP and integrated EA.” Based on this description by USACE, the purpose for building a modern barge facility is not to facilitate the transfer of dredged material for USACE, but rather to install a new port for the City of Wabasha. The purpose and need for such a facility has not been discussed, and alternatives for the City’s use have not been addressed. It would be difficult to declare this alternative as the least impactful feasible alternative.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate alternate site locations. The Alternatives section was updated to better address Alternate Locations, Alternate Design/Layout and Magnitude/Scale, and other considerations received during the public comment periods and coordination meetings with stakeholders. As well as updating to clarify the USACE for building barge facility and other alternatives.	Chapter 3 "Alternatives, Purpose and Need" Section 1 Section 2.1	13-32
46	10/31/2023	MnDNR	Section 4.2.2.4; Section 4.13.1.4; Section 4.13.2.4, Mitigation Measures; Table 11. Wetland impacts are discussed, but the proposed impacts to the bed of the Mississippi River are not described or addressed. Mitigation will be required for this impact to a public water and a mitigation plan is necessary to consider whether or not this project can be permitted. Currently, no mitigation plan is proposed.	Section 4.13.1, "Surface Water," and Section 4.15.1, "Resources, Habitats, and Vegetation," have been updated with additional discussion of potential impacts and mitigation measures for the bed of the Mississippi River.	Chapter 4 "Water Resources / Natural Resources" and "Surface Water" Section 13.1 and 15.1	81-83, 92-97

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47	10/31/2023	MnDNR	Section 4.3.3, Economic Environment, Environmental Consequences: Preferred Alternative. This section states: "The current Wabasha Comprehensive Plan (2016-2035) last amended July 6, 2021, lists the future land use of the project site as "Industrial." The Comprehensive Plan discusses Wabasha's unique location and opportunity for development of a commercial river port facility that would be used for commercial purposes including, but not limited to, the ongoing efforts by the Corps of Engineers in maintaining the Mississippi River 9-foot navigation channel. The implementation of the Proposed Project would support these goals outlined in the City of Wabasha's Comprehensive Plan and is anticipated to increase the community's economic vitality." The City of Wabasha's 2016-2035 Comprehensive Plan (Section 7.8) was updated in 2021 to also include the following section: "Mississippi River Barge Terminal and Port Facility Wabasha's location on the Mississippi River provides a relatively unique opportunity to parlay that location into economic benefits to the City, as well as to the Region and the State by development of a commercial river port facility. Not only will such a facility potentially provide a solution to the ongoing efforts of maintaining the 9 foot river channel by the Corps of Engineers in an acceptable manner, but also enhance city employment opportunities, as well as provide economic benefits to local businesses providing goods and services to river port customers. This would also address enhanced emphasis toward mitigating the impacts of climate change. With water transport of commodities the transportation mode producing the least carbon footprint, the development of a commercial port facility would also contribute to both local and national efforts to reduce carbon emissions. Over 30 acres of land has been identified in the Northeast corner of the City on which a river port terminal could be located." The City Comprehensive Plan identifies a commercial port facility as a desired land use, but this purpose and need is not addressed in the DEIS, and alternatives for this use are not considered. If this is a future goal of the City at this site, which it is according to the Economic Development Goals, Objectives and Policies table in Section 7.9 of the updated 2016-2035 Comprehensive Plan, then the Final EIS should address and incorporate this goal into the purpose and need for the project proposal and include alternatives that fully examine this goal.	The Purpose and Need and Alternatives sections were updated to address comments and questions received by agency stakeholders. The Alternatives address the requirements outlined in MN Rules 4410.2300, G. The proposed development of a barge port facility under the Preferred Alternative is consistent with the current Wabasha Comprehensive Plan (2016-2035), last amended July 6, 2021. The Comprehensive Plan designates the future land use of the project site as "Industrial" and discusses Wabasha's unique location and opportunity for development of a river port facility that would be used for commercial purposes. Of the 26.8- acre Study Area, approximately 8.2 acres would be used and developed for the proposed project, leaving the remaining area in its current undeveloped state. Chapter 7 of the Comprehensive Plan outlines the Mississippi Barge Terminal as a future economic development opportunity for the City. Allowing the residents to determine the haul routes through the city for the necessary USACE dredged sand, increase local jobs, and reduce the impacts of climate change by lower the carbon footprint.	Chapter 4 "Economic Environment" and "Land Use" Sections 4.3.3 and 6.2.3	44, 50-53
48	10/31/2023	MnDNR	Section 4.6.2.3, Environmental Consequences: Preferred Alternative. This section should discuss the compatibility and impacts related to Land Use, Plans, Zoning, and Special Districts/Overlays. There is no discussion of the neighboring National Wildlife Refuge, how the proposed project complies with shoreland or floodplain ordinances.	Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee-title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. Additional updates to the Land Use and Zoning portion of this section have been updated and addressed in further detail.	Chapter 4 "Parks, Open Space and Recreation Facilities" Section 6.4	54-56
49	10/31/2023	MnDNR	Section 4.9.2.3, Soil/Geology, Environmental Consequences: Preferred Alternative. The potential for recurrent sedimentation is not adequately described or addressed in the DEIS. The DNR Public Waters Work permitting process would require analysis of recurrent sedimentation, and addressing this in the Final EIS would assist in permitting.	All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs. To ensure future operations of the proposed facility, ongoing maintenance dredging activities are anticipated. These activities will be addressed during the permitting process.	Chapter 4 "Soil and Topography" Section 9.2	73-77
50	10/31/2023	MnDNR	Section 4.10.3, Floodplain, Environmental Consequences: Preferred Alternative. The City intends to use the Preliminary No Rise Certification from the Pool 4 DMMP. It is unclear if the City must obtain a No Rise certification for their own facility.	The No Rise report naming has been revised and cross references to the No-Rise Certification (Appendix C) have been updated. The No-Rise certification applies to the facility discussion in the preferred alternative.	Chapter 4 "Floodplain" Section 10	77-78
51	10/31/2023	MnDNR	Section 4.15.2, Rare, Threatened, and Endangered Species and Ecosystems. It is not possible to state whether or not these rare plant species exist at the site without conducting a rare plant survey. The wetlands are not labeled on Figure 8, making it difficult to understand the references to Wetlands 1, 2, and 3. The Final EIS should address the potential loss of fish spawning habitat, disruption of fish movement to the side channel, the resuspension of sediments as barges are maneuvered, and possible entrainment of fish in barge propellers. It is likely that the proposed project and any other project alternatives involving dredging will also require future dredging to maintain functionality of the site. As a result, the impacts of sedimentation and future site disturbance should be described for each alternative involving dredging.	Figure 8, "Wetlands," has been updated to clarify the location and acreage of each delineated wetland. Section 4.15.1, "Resources, Habitats, and Vegetation," and Section 4.15.2, "Rare, Threatened, and Endangered Species and Ecosystems," have been updated to provide additional discussion of potential impacts and mitigation for aquatic species. To ensure future operations of the proposed facility, ongoing maintenance dredging activities are anticipated. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs.	Chapter 4 "Rare, Threatened, and Endangered Species Ecosystems" Section 15.2	97-108
52	10/31/2023	MnDNR	Section 4.15.2.4, Mitigation measures. Please note that Minnesota's Endangered Species Statute and associated Rules do not regulate federally-listed species.	Comment noted. Federal species evaluation was conducted with and through the USFWS and the IPaC evaluation tool.	Chapter 4 "Rare, Threatened, and Endangered Species Ecosystems" Section 15	97-108

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53	10/31/2023	MnDNR	The previous July 21, 2022 DNR comment letter described how one of the fundamental purposes of the EIS is to inform entities that will ultimately need to make permitting decisions of the environmental impacts of the proposed project and its alternatives. Under Minnesota law, the alternatives analysis is a particularly important part of this EIS and subsequent DNR Public Waters Work permitting decisions. The DEIS has not fully addressed the prohibitions of Minn. Rules 6115.0200, especially as it pertains to alternatives and recurrent sedimentation. The site currently provides high quality wetland habitat on the Mississippi River. As part of DNR Public Waters Work permit application 2017-3659, the current property owner was asked to explain why an inland barge slip and wharf were needed instead of using the existing road that extends to the shoreline. This request for an alternatives analysis adequate to address the prohibition of 6115.0200 Subp 3. A. was not responded to, and the application was subsequently withdrawn. Since the DMMP cited in the current DEIS development specifically identifies that the scale of facility that is proposed is not necessary, the EIS must provide specific justification that refutes the USACE's conclusion in the DMMP. The technical sections of the EIS should provide an analysis of the potential for recurrent sedimentation in the dredged access channel. The DNR is required to evaluate an application for a DNR Public Waters Work Permit for consistency with Minnesota Statutes 103G and Minnesota Rules 6115.0150 through 6115.0280. Therefore, the EIS should address the following relevant Rules: 1. 6115.0200 Excavation of PW Subp 3. Prohibited excavation 2. 6115.0200 Excavation of PW Subp 5. Permits required 3. 6115.0210 Structures in PW Subp 3. Prohibited placement of structures. 4. 6115.0210 Structures in PW Subp 5. Permits required 5. 6115.0211 Subp 4a. Mooring Facilities 6. 6115.0211 Subp 7. Other facilities 7. 6115.0240 Subp 2. Who may apply. Applications shall be submitted by the riparian owner of the land on which a project is proposed, 8. 6115.0240 Subp 3. Information required 9. The DNR permit decision must be consistent with Minn. Rule 6115.0250. If the project is consistent with all public waters requirements and a permit is issued, it must include requirements for mitigation. Therefore, to inform permit decision-making, the EIS should address mitigation strategies. The DNR requests that the Section 217(d) agreement between USACE and the City of Wabasha be included within the appendix of the EIS. It is important that we understand the agreement and potential future restrictions for site	All required permits and approvals will be secured, through ongoing coordination with USACE and MnDNR, before any public waters dredging occurs. Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the alternatives analysis that complies with the MN Rules 4410.	Chapter 1 "Permits and Approvals" Section 7 Chapter 3 "Alternatives" Appendix L	3, 13-18
54	10/30/2023	USCG	From what I have read, it appears that the new facility will be servicing barges used in the dredging of the river, and transporting that material to trucks to take offsite. Is this accurate? If not, please clarify the intent of the operations.	That is correct. This facility is primarily being constructed to move dredged material from Upper Mississippi River temporary storage locations to follow-on areas for other beneficial uses. The Wabasha Port Authority has enacted an agreement with the barge facility operator for a 10-year period and this agreement specifically precludes the use of the barge facility for products other than dredge material during that time.	Chapter 2 "Project Description"	5
55	10/30/2023	USCG	If there is an intent to conduct business with barges subject to the U.S. Code of Federal Regulations Title 46, Chapter I, and/or Subchapters D or O, further discussion may be required.	No materials relevant to CFR Title 46, Chapter I, and/or Subchapters D or O are anticipated to be moved through the proposed facility.	Chapter 6 "Project Coordination" Section 1	130
56	10/27/2023	MPCA	Construction Stormwater • A SWPPP narrative will need to be made for full comments from the MPCA Construction Stormwater team to comment. • Total water quality volume requirements will be met with their current plans. • Topsoil preservation in stockpiles will be important for this site. • The infiltration practice will need to have a soil boring log associated with the area that it will be installed in. • Preventing nuisance conditions from soil spillage into the Mississippi will be important during construction practices. • It is unclear if the new design is adding 3.3 acres (pdf pages 48, 65, 99) of impervious surface or 2.99 acres (pdf pages 436, 438).	Construction stormwater and industrial NPDES/SDS permits with an associated SWPPP will be completed and approved prior to construction. These permit requirements are annotated in Section 1.7, "Permits and Approvals."	Chapter 4, "Water Resources" Section 13.1	81-83
57	10/4/2023	Lori Cox, RRHF LLC	Where is [the dredged material] going after storage? Who is contracted to remove or use it, and will they only take it away once per year so more can be deposited and stored, or ? There were no real plans revealed in this notification hence all of my questions.	Dredged material is anticipated to move from the proposed facility to the Wabasha Sand and Gravel pit located near the Dairy Queen as reclamation for the sand and gravel mining operation and/or for additional beneficial reuse as construction or fill material.	Chapter 2 "Project Description"	5-12
58	10/3/2023	Lori Cox, RRHF LLC	I'm responding to the recent EQB notification for the Wabasha Barge Facility. In those plans, is the dredge material storage supposed to be coming directly from the Mississippi near that location, or from upstream, or can you explain where its derived from?	The dredge material anticipated to move through this facility will be moved from temporary upland storage sites within Lower Pool 4. These temporary storage locations are where the USACE places dredged material for dewatering prior to onward movement for other beneficial purposes.	Chapter 2 "Project Description"	5-12
59	10/6/2023	Wabasha County Engineer	The document incorrectly references 5th Grant Blvd as Wabasha County Road 10 on multiple pages. 5th Grant Blvd is Wabasha County Highway 59. Wabasha County Highway 10 lies west of the intersection of County Highway 59/US Hwy 61/County Highway 10.	Comment noted. The EIS document has been revised accordingly.	Chapter 4 "Transportation" Section 4.20	All locations within the document.
60	10/6/2023	Wabasha County Engineer	The latest traffic volume data AADT adjacent to the proposed development and measured/provided by MnDOT for year 2018 is 870; the document states "approximately 525". Using a traffic volume to the 2018 level may or may not have any effect on the traffic analysis performed for this document.	Comment noted. 2022 ADT was provided at 525. There are no anticipated or significant changes to the traffic information based on this AADT update.	Chapter 4 "Transportation" Section 4.20	116
61	10/6/2023	Wabasha County Engineer	The MnDOT Commissioner authorized speed limit issued 11/24/2010 on County Highway 59 (5th Grant Blvd) adjacent to the proposed development is "Statutory"; which according to Minn. Stat. 169.14subd.2 would be 55mph. It is incorrectly stated in the document as 40mph.	Comment noted. The document has been revised accordingly.	Appendix H	Appendix H

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62	10/6/2023	Wabasha County Engineer	There is no speed limit listed for Shields Ave in Appendix H page 2; the correct speed limit is 30mph.	Comment noted. Appendix H has been updated with this information.	Appendix H	Appendix H
63	10/6/2023	Wabasha County Engineer	An approved “Application for Access to County Highways” will be required from the Wabasha County Highway Department for the new proposed access.	Comment noted. Section 1.7, "Permits and Approvals," has been updated to include an Application for Access to County Highways.	Chapter 1 "Permits and Approvals" Section 7	3
64	10/4/2023	SHPO	We noticed in quick scan of the EIS that a Phase I archaeological survey and report was completed for the proposed project. In September 2021 we recommended to Bolton & Menk to proceed with the Phase I survey (see attached letter), but we’ve never received the survey report for review and comment. Please submit the Phase I archaeological survey report to our office for concurrent review of the draft EIS. Submit to ENReviewSHPO@state.mn.us referencing SHPO# 2021-2504.	The Phase I archaeological survey was submitted to SHPO on October 5, 2023. No historic properties will be impacted during the construction and operation of the proposed project, and no additional historic properties surveys are required.	Chapter 4 "Historic Resources" Section 16	109
65	10/3/2023	USACE	We have received your submittal described below. You may contact the Project Manager with questions regarding the evaluation process. The Project Manager may request additional information necessary to evaluate your submittal. Please note that initiating work in waters of the United States prior to receiving Department of the Army authorization could constitute a violation of Federal law. If you have any questions, please contact the Project Manager.	Comment noted. All required permits and approvals will be secured before construction occurs.	Chapter 1 "Permits and Approvals" Section 7	3
66	10/2/2023	Betsy Sylvester (Facebook)	Have there been any Native American burial mounds identified in this proposed area?	Cultural resources surveys in this proposed area identified no Native American burial mounds.	Chapter 4 "Historic Resources" Section 16	109
67	Public Meeting, 10/19/23	Constituent	What will you do about noise and impacts to adjacent landowners? How will the increased truck traffic, noise, and other effects at the site be addressed to reduce disturbance to neighbors?	A screening berm will be installed to mitigate potential visual and noise impacts for adjacent landowners.	Chapter 4 "Visual Resources" Section 17 and "Noise" Section 19	111-113
68	Public Meeting, 10/19/23	Constituent	Will garbage or any other materials be transported through the facility?	The City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time, and the 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products. Section 2.4, "Purpose and Need for the Proposed Action," has been revised accordingly.	Chapter 3 "Alternatives, Purpose and Need" Section 1	13-18
69	Public Meeting, 10/19/23	Lucas Youngsma, Public	Consider holding public meetings not during MEA and other holiday weeks.	Comment noted.	Comment only, not annotated in the Final EIS.	N/A
70	Public Meeting, 10/19/23	Lucas Youngsma, DNR	Update and address Alternatives requirements for state-level EIS. The USACE DMMP relies heavily on the USACE DMMP which analyzed alternatives based on federal requirements and regulations. Only focusing on USACE DMMP does not address state-level requirements and statutory obligations.	Chapter 2, "Project Description," and Chapter 3, "Alternatives," have been updated to clarify the purpose and need for the proposed activities and the process that was undertaken to evaluate alternate site locations, per MN rules 4410.2300.	Chapter 3 "Alternatives, Purpose and Need"	7, 13-41
71	Public Meeting, 10/19/23	Lucas Youngsma, DNR	Address maintenance dredging requirements and how this will occur. We will address concerns related to sedimentation in our written comment letter.	To ensure future operations of the proposed facility, ongoing maintenance dredging activities are anticipated. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs.	Chapter 2 "Project Description" Section 2	6-12
72	Agency Coordination Meeting, 04/23/2024	MnDNR	Any thought of building new roads or road improvements that could make alternate site locations more feasible?	Due to the high development density surrounding all but the preferred location (Carrels Site) and the South Fitzgerald site, there are no opportunities for roadway improvements to those areas. Road alignment to the South Fitzgerald Site was reviewed, although would require significant construction plans and operations, and would still align through residential areas.	Chapter 3 "Alternatives" Section 2	13-41
73	Agency Coordination Meeting, 04/23/2024	MnDNR	Have public water impacts been considered across different alternatives?	Chapter 3, "Alternatives," has been updated to clarify the process that was undertaken to evaluate alternate site locations including impacts to pubic waters.	Chapter 3 "Alternatives" Section 2	13-41
74	Agency Coordination Meeting, 04/23/2024	MnDNR	Dredging quantities and species impacts across different alternatives should also be considered.	Chapter 3, "Alternatives," has been updated to estimate dredging quantities and species impacted on all alternative sites.	Chapter 3 "Alternatives" Section 2	13-41
76	Agency Coordination Meeting, 04/23/2024	MnDNR	The restrictions/parameters for the proposed facility should also be made clear - i.e., what is the minimum amount needed for storage, dredged area, and so on.	The proposed project description was updated to better identify the project's purpose and goals. The proposed facility design identifies the anticipated project site amenities. Final plans will be developed after completion of the environmental review process and will clearly identify these parameters, as well as mitigation measures to comply with all permits and approvals.	Chapter 2 "Project Description" Section 4	7-10

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77	Agency Coordination Meeting, 04/23/2024	MnDNR	Has a bond or other control measure (tangible assurance) excluding future uses been considered?	The city is ensuring future uses of the proposed project site comply with activities outlined in the 217(d) agreement and the operations agreement. Through the city's zoning and approval processes, no additional or adjacent activities will occur without additional public review and permitting requirements. The Project Site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha. These two parcels are scheduled for a public hearing to be rezoned from residential to industrial on June 11, 2024. To operate any use that requires more than 60 heavy trucks per day will require a conditional use permit which will trigger a pubic hearing and comments from the MnDNR and City approval. In addition, only industrial service, industrial warehousing distribution or storage, and light industrial are permitted uses. Both parcels are also part of the S1 and S2 Overlay Zones and any future development must meet those additional standards outlined in the City Zoning Ordinance.	Chapter 4 "Land Use" Section 6	47-52
78	Agency Coordination Meeting, 04/23/2024	MnDNR	If the Preferred Alternative is not selected, what happens to the Section 217d agreement?	As described in the no-build alternative in the DMMP, if the tiered system in the Recommended Plan is not pursued, currently approved and available sites in Lower Pool 4 project area would not be expected to accommodate dredge material placement needs for the next 20 years. If approved DMMP sites are not available when dredging is required in Lower Pool 4 due to navigation emergency situations, dredged material may need to be placed at non-DMMP designated placement locations. Non-designated placement sites would likely include temporarily placing dredged material in the aquatic main channel border areas (in-water placement). The use of non-designated placement sites may result in higher costs and greater environmental or social impacts. Presumably, these instances would be short-term, and USACE would initiate a new planning effort to identify the most acceptable dredged material management methods for the pool.	Chapter 2 "Project Description" Section 4.2	8-9
79	Agency Coordination Meeting, 04/23/2024	USFWS	The financial cost of continually building temporary sites should be clearly compared to the cost of building a permanent facility.	Section 2.4.2 describes the use of temporary structures to facilitate the onshore transfer of dredged materials from barges to trucks and the dredging of channel for barge access to the Carrels Site. While temporary features could be used to facilitate onshore transfer of dredged material, it would not be cost-effective over a 10-year period to use such temporary features. The cost of constructing temporary features to facilitate onshore transfer at the proposed project site over the 10-year Section 217(d) agreement period would amount to approximately $1.8 million. This is more than the estimated construction cost of the permanent dock proposed as a part of the barge facility, which is approximately $980,000.	Chapter 2 "Project Description" Section 4	7-10
80	Agency Coordination Meeting, 04/23/2024	USFWS	The original alternative vs. the current preferred (reduced/minimum) alternative should be clearly shown and compared in your documentation.	Early iterations for the proposed site layout and design included additional infrastructure, and expansion of the existing maintenance trail for truck access has been updated.	Chapter 3 "Alternatives" Section 2	35-40
81	Agency Coordination Meeting, 04/23/2024	MnDNR	For rare species impacts, State-listed species must be included and analyzed for each alternative.	Chapter 3, "Alternatives," has been updated to include all listed rare, threatened and endangered species impacted on all alternative sites.	Chapter 3 "Alternatives" Section 2	18-30
82	Agency Coordination Meeting, 04/23/2024	MnDNR	An expanded site footprint is not necessary for alternatives analyses, but reasonable future uses for the site (such as transfer of corn, fertilizer, etc.) should be acknowledged.	The City of Wabasha and the Wabasha Port Authority have no plans to utilize the port for other products at this time, and the 10-year agreement the Wabasha Port Authority has enacted with the operator of the barge facility specifically precludes the use of the barge facility for other products. The city has received no plans or proposals for adjacent development or expansion or use of the port for other purposes from the current landowner or any other party. In addition, the design and size of the facility are the most limiting factors for the proposed project, and the transfer of dredged material represents the highest expected level of barge and truck traffic from the facility. Therefore, the use of the port facility in this EIS will focus on the transfer of dredged material under the Section 217(d) Agreement which anticipates a total of two (2) barges a day and approximately 100 truck trips in and out of the facility per day, representing the maximum threshold from barge and truck traffic from the site for any likely commodity to be considered at the facility in the future. Additional details are provided in Section 2.4, "Purpose and Need for the Proposed Action."	Chapter 2 "Project Description" Section 4	7-10

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83	7/2/2024	USFWS	Page 2 – 1.5 Potential Environmental Effects – There is no discussion of the impacts, including erosion, that facility operations, barge traffic and wave action would cause to the nearby island and neighboring lands owned in fee title by the Service managed as Refuge. Please describe any anticipated impacts to these federal conservation lands.	**See Comment Number 3:** Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. To avoid potential indirect impacts to refuge properties from “nose-in” barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40” prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Land Use" Section 6.2.4	50-51
84	7/2/2024	USFWS	Page 3 – 1.7 Permits and Approvals – Any activity that may occur on Refuge fee title land may not be allowed under Federal law if not determined to be compatible with Refuge purposes and will at a minimum require a Special Use Permit from the Refuge. If mussels are relocated or dredging takes place on fee title lands additional compliance will be required.	**See Comment Number 4:** There are no anticipated activities occurring on USFWS Refuge fee-title lands. Pursuant to Section 7 of the Endangered Species Act, USFWS IPaC consultation was initiated in November 2023. A determination key that was completed in the USFWS IPaC system found the proposed project "May Affect, Not Likely to Adversely Affect," the NLEB. Tree removal will be limited to the winter months, between November 1 and March 31. No federally-listed mussels were identified as part of mussel surveys for the proposed project. Any relocation of state-listed mussels will be coordinated with MnDNR.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15.2	97, 105-107
85	7/2/2024	USFWS	Page 5 – 2.1 Project Description – The Service is concerned about potential future expansion of the site. As an adjacent landowner to the “Project Site” any plans for this site, including future plans, should include communication and discussion with the Service regarding any potential impacts to the Refuge.	**See Comment Number 6:** The City of Wabasha and the Wabasha Port Authority have no plans to expand the proposed facility. The city has received no plans or proposals from the current landowner or any other party for any adjacent development or future expansion of the barge terminal. Any future expansion of the site would be require coordination through additional permitting and review requirements. The proposed project's design and size are the most limiting factors and the site's maximum threshold would only accommodate up to two (2) barges and approximately 100 truck loads per day for facility access. While the initial 10-year operational timeframe would only authorize the transfer of dredged material per the USACE 217(d) agreement, other dry commodities may be authorized at a future date. After further analysis, the transfer of dredge-material is the most efficient commodity option for the proposed facility. If the city authorizes other dry commodities, it is anticipated the maximum threshold would reduce to only one barge per day.	Chapter 2 "Project Description" Section 4.2	9-10
86	7/2/2024	USFWS	Page 5 - 2.1 Project Description – Before “Dredging an access channel” can occur, documentation/determination of the ownership of the river shoreline and river bottom in the areas planned for dredging will be required. If any proposed dredging is planned to occur within Refuge ownership, that action would not be allowed.	**See Comment Number 7:** There are no anticipated activities occurring on USFWS Refuge fee-title lands. Following acquisition, the portion of the river shoreline that is located within the project site would be owned by the City of Wabasha. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs.	Figure 10	Figure 10

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87	7/2/2024	USFWS	Page 5 – 2.1 Project Description – There is no discussion of the impacts and erosion that "barge maneuvering", prop wash and wave action would have to the island owned in fee title by the Service and managed as part of the National Wildlife Refuge System that is located directly adjacent to this location. Please describe the potential impact to these lands.	**See Comment Number 8:** Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on USFWS fee-title land. To avoid potential indirect impacts to refuge properties from "nose-in" barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40" prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Land Use" Section 6.2.4	50-51
88	7/2/2024	USFWS	Page 18 – 3.2 Alternatives Considered – There is no discussion of impacts associated with this project relative to general recreational river users along the shoreline or on the water. Please evaluate the impacts of each alternative to recreational river users.	**See Comment Number 11:** There are no anticipated adverse economic impacts to Refuge users as a result of the proposed project. Mitigation measures for barge traffic include no wake, restricting "nose-in" maneuvering. The proposed facility only has the capacity to serve a maximum of 2 barges per day. Based on this, there is no expected impact to recreational activity in the area. There will be no restrictions on recreational access to the channel or dock area imposed as a part of this project. Recreational users of the river are used to interacting with existing barge traffic on the river already. Barge operators and recreational users are required to conform with river navigation laws. The addition of 2 barges per day is not expected to be a significant change for recreational users of the river.	Chapter 3 "Alternatives" Section 2.2 Chapter 4 "Transportation" Section 20.2	35-36, 117
89	7/2/2024	USFWS	Page 39 – 4.2 Cover Types – In addition to the four wetland basins delineated on the upland, the entire area to be dredged for access is a wetland and impacts to this area need to be acknowledged and accounted for in the document.	**See Comment Number 13:** Chapter 4 Section 13. 1, "Surface Water," and Exhibit 1 of Appendix D has been updated to clarify the anticipated dredging approval process and associated mitigation measures for the proposed project.	Chapter 4 "Water Resources" Section 13.1 Exhibit 1 of Appendix D	81
90	7/2/2024	USFWS	Page 51 – 4.6.4 Parks, Open Spaces, and Recreational Facilities – The Service is the fee-title landowner to the island directly north of the project site which may be impacted by this facility as well as the shoreline owner adjacent to the tract that will host this project. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers, and other recreational users on the Refuge may be impacted by this project. A description of the potential impacts to the Refuge should be incorporated into this document.	**See Comment Numbers 8 and 87:** To avoid potential indirect impacts to refuge properties from "nose-in" barge maneuvering and prop wash/wave action, the preferred design includes a narrow dredge cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Barges and/or tugs will stay outside 120 feet from the USFWS Refuge island during operations. Due to the narrowed cut, barge fleeting will not occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge accessing the facility. Since only a single barge will access the facility at a time, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Upon entering the access channel, barge towing will require idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40" prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Land Use" Section 6.2.4	50-51
91	7/2/2024	USFWS	Page 90 – 4.15.1 Resources, Habitats, and Vegetation – "The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project." The Service also owns and manages the island directly north of the project. Please identify the Refuge lands adjacent to this project and acknowledge how they will be impacted	**See Comment Number 19:** Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee title land owned by USFWS. No project activities will occur on fee-title land owned by USFWS. As the riverbed is a navigable water, the State of Minnesota "owns" it subject to Federal jurisdiction related to navigation.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	92-93 Revised Figure 10
92	7/2/2024	USFWS	Page 90 – 4.15.1 Resources, Habitats, and Vegetation – There is no mention of floodplain forest, a key habitat managed by the Service in the adjacent area of the project. Please address the floodplain forest resources that exist in the area and on the island.	**See Comment Number 20:** Section 4.15.2, "Resources, Habitats, and Vegetation," has been updated to address aquatic plant communities and floodplain forest resources that exist in the area.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	92

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93	7/2/2024	USFWS	Page 104 – Mitigation measures for aquatic species – If dredging is occurring within the boundaries of the Refuge, coordination must also take place with the Service. No dredging will be allowed on Refuge owned lands. Please confirm ownership of lands (including river bottoms) that will be impacted by dredging.	**See Comment Number 22:** Figure 10, "Outdoor Recreation," has been updated to show adjacent property ownership including fee-title land owned by USFWS. All required permits and approvals will be secured, through coordination with USACE and MnDNR, before any public waters dredging occurs. No project activities will occur on fee-title land owned by USFWS.	Chapter 4 "Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources" Section 15	Revised Figure 10
94	7/2/2024	USFWS	Page 115 – 4.20.2.4 Water-Based Transportation Preferred Alternative Mitigation Measures – Mitigations measures must be taken to protect the integrity of the Refuge island north of the project. Increased barge traffic will cause wave action and prop wash which will lead to erosion of the southern bank of the island and degradation of floodplain forest habitats. Please describe these impacts and how they will be addressed.	**See Comment Number 23:** Several factors inherent with the final design of the access channel dredging, the specifications of the marine equipment that will navigate the channel, and the dock wall face will minimize or preclude prop wash, wave action and barge "nose-in" damages to the adjacent Upper Mississippi River National Wildlife & Fish Refuge lands. To mitigate potential impacts to refuge properties from "nose-in" barge maneuvering and prop wash/wave action from the barge tug, the preferred design includes a narrowed cut that will extend no closer than 120 feet from the refuge islands and adjacent properties. Thus, it will not be possible for barges or tugs to close to within 120 feet of the island during operations. Due to the narrowed cut, it will not be possible for barge fleeting to occur in the access channel during the navigation season. This reduces the potential for channel congestion and assures simplified maneuvering for the small tug and single barge entering/departing the channel and dock. Because only a single barge will be handled at a time at the Wabasha terminal, any tug entering the channel and servicing the dock will be smaller in length (less than 60 feet), width (less than 25 feet), and horsepower (less than 800 hp), than generally seen in typical barge terminals. Once entering the access channel, barge towing will necessarily be at idle speed. That coupled with the smaller prop diameter of the tug to be used (likely a 40" prop turning less than 100 RPM at idle), compared with river line towboats and most harbor tugs of 1200 HP or more, will result in little to no wave action and prop wash reaching any of the refuge islands or other property. In addition, operational requirements to be included in the final agreement with the port operator, such as no wake and no nose-in maneuvering, will offset any potential indirect impacts to this property.	Chapter 4 "Water-Based Transportation" Section 20.2	117
95	7/2/2024	MnDNR	Section 2.1, Project Description: Section 3.3 Description of Preferred Alternative: The last two bullet points under the project description (page 5; page 38) mention that electric, sewer and water utilities will be installed as a part of the project, and that a field office building could be proposed as a future action. This creates a sense of uncertainty for the extent of the size and scope of the project.	Electric utilities will be extended to the site and are required to power conveyors used to offload material from the barges. Sewer and water utilities may be extended to the site to serve a bathroom in a small field office if it is determined by the Port Authority in the future that the use of off-site bathroom facilities is no longer feasible to serve employees working at the site. The purpose, use, size, and scope of the facility would not change as a result of the construction of a small field office with bathroom facilities and sewer and water extensions to the site.	Chapter 3 "Alternatives" Section 3	41
96	7/2/2024	MnDNR	We understand that site plan details are being developed. It will be very important to have those details for comparison between alternatives in order to fully comprehend the scope and limits of each alternative. The only site plan included in project figures appears to be Figure 4, which was taken from the U.S. Army Corps of Engineers' (USACE) Dredged Material Management Plan (DMMP). Figure 4 does not appear to represent the project area outline as depicted in other figures, the area proposed to be dredged, or the extent of structural improvements on the property such as scale booth, and field house. It would be helpful for reviewers to have more detailed site plans representing each alternative that reflect the differences in project design/footprint and the size of the dredging area.	Figure 4 represents the full planned buildout of the project necessary to accommodate the purpose and need for the facility. No expansion of the facility is necessary or is being considered to accommodate the purpose and need for the facility. No proposals for expansion of the facility have been submitted to the City or the Port Authority by the existing property owner or any other party. The alternatives analysis includes a similar size footprint for the proposed facility in other locations that were considered for the facility. Final project design will occur between September 2024 and February 2025 with design iterations provided during the permitting process.	Figure 4, Appendix A	Appendix A
97	7/2/2024	MnDNR	Section 2.4.2, Other Products: The description of the proposed facility's barge capacity is very helpful in clarifying the scope of the project.	The City of Wabasha and the Wabasha Port Authority may utilize the port for other dry commodities, such as gravel, grains, and cement. The 10-year 217(d) agreement between the Wabasha Port Authority and USACE will restrict movement of commodities other than dredge-material for at least the first 10-years. This agreement specifically precludes the use of the barge facility for other products.	Chapter 2 "Project Description" Section 4.2 Appendix L	9-10 Appendix L
98	7/2/2024	MnDNR	Section 2.5, Project Cost, Funding, and Schedule: It would be helpful if this section provided more details on the breakdown of projects costs and how the final $4.6 million total was calculated.	A detailed cost estimate has been added to the Appendix N	Appendix N	Appendix N
99	7/2/2024	MnDNR	Section 3.2, Alternate Locations: Please include impacts to state-listed species and sensitive ecological areas such as Minnesota Biological Survey (MBS) Sites of Biodiversity Significance and/or DNR Native Plant Communities, in the natural resource summary for each location. Also, please include river use and access impacts in the evaluation of recreational issues.	MnDNR Natural Heritage reviews are available in Appendix Q for the alternate site locations.	Chapter 3 "Alternatives" Appendix Q	19-24 Appendix Q
100	7/2/2024	MnDNR	Table 1-Alternate Sites Assessment: It is not clear in the listed species comparisons if the species totals are referring to state-listed species or federally-listed species.	Additional clarity on alternate location impacts to state and/or federally listed species were added to Table 1 in the Final EIS document.	Chapter 3 "Alternatives" Section 1	29

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101	7/2/2024	MnDNR	Table 1-Alternate Sites Assessment: This section does not explicitly say that any of these alternative sites were removed from further consideration, or explain why the Carrel's Site is the preferred location based on all the assessment factors. It is important to clearly rate the level of each type of impact. For example, some projects have used low, medium, and high, or assigned numerical values to compare impact levels for each assessment factor based on consistent criteria applied across all alternatives. This allows each alternative to be ranked based on the total impacts in a way that identifies viable alternatives to be carried forward for detailed analysis in the EIS, while others are rejected and removed from consideration.	A ranking system of no impacts, low, medium, or high impacts was added to each of the assessment factors shown on Table 1. High impacts have an overall score of 3, medium impacts a rating of 2, low impacts a rating of 1, and no impacts a rating of 0. The preferred alternative had the lowest impact score of 18. All other built alternatives were between 27 and 31.	Chapter 3 "Alternatives" Section 1	26-30
102	7/2/2024	MnDNR	Section 3.2.2, Onsite Alternative 3-Alternative Site Layout: This section states that the City desired to use an existing road in order to reduce tree clearing by almost an acre. The road location was moved so that the current landowner could reserve the land for future development. Section 4.2.1.3 explains that the City is only purchasing 8.2 acres of the total 26.8 acre site, please address.	The road was relocated because the current landowner would not sell the land to the City if the access road for the new facility was to be located in the same location as the existing driveway. This would result in a small severed parcel (i.e. the existing parcel would be split into two parts, one larger and one smaller) which the existing landowner indicated would limit their ability to develop the property for any allowable future use. The existing landowner has not submitted any plans to the City for any future use of the land at this time. Any future use of the land would need to conform to any allowable or conditions use under City zoning requirements in place at the time of development. The City is purchasing approximately 13 acres of land from the existing landowner, of which the project will occur on just over 8 acres. That is the minimum amount of land necessary to construct the proposed facility that will accommodate the stated purpose and need.	Chapter 3 "Alternatives" Section 3	41
103	7/2/2024	MnDNR	If the current landowner, who we understand will be operating the barge facility, chooses to utilize his own property in a manner that supports the barge facility, it carries implications for the size and scope of the project. It is unclear how this proposed project may be connected to future development projects on the property. When multiple projects are owned or operated by the same entity, they may meet the definition of a connected and phased action under Minnesota Rule 4410.2000, Subpart 4	The City has asked the existing landowner what their plans are for the remaining adjacent property, however, to date, the City has received no development proposals or plans from the existing landowner or any other party for any proposed development on the remaining property. Therefore, there are no connected or phased actions in existence at this time. Any future use of the land would need to conform to any allowable or conditions use under City zoning requirements in place at the time of development. Any development of the property within these uses would be required to obtain any and all permits from federal, state, and local agencies prior to development.	Chapter 4 "Future Projects" Section 21.2	119
104	7/2/2024	MnDNR	The rezoning of both parcels within the Carrel's Site alternative to Industrial allows for development of the entire 26.8 acres that are currently zoned RC (Residential Conservancy) and R1 (Low Density Residential), in addition to the 8.2 acres the City is proposing for the project footprint. This appears to meet the definition of a "cumulative impact" under Minnesota Rule 4410.0200, Subpart 11	The rezoning is in conformance with the City's adopted Comprehensive Plan and Future Land Use Plan. The City has received no development proposals or plans from the existing landowner or any other party for any proposed development on the remaining property. There are only three permitted uses within the Carrells site Industrial zone that could proceed without additional review from the City of Wabasha and comments from the MNDNR. These uses are *Industrial Service* which is primarily involved in the repair and servicing of machinery, equipment, and some sales, *Industrial warehousing distribution* or storage, and *Light Industrial* which is involved in the processing or assembly of products with relatively clean and nuisance-free products. Any development of the property within these uses would be required to obtain any and all permits from federal, state, and local agencies prior to development. If any of these uses require the use of more than 60 heavy trucks per day to operate the use, a conditional use permit will be required under the City's major traffic generator ordinance.	Chapter 4 "Future Projects" Section 21.2	119-120
105	7/2/2024	MnDNR	Are there agreements in place for the purchase of the property that create limitations for the project design	The Port Authority has approved a purchase agreement for the property but the agreement as of 8/14/24 the purchase agreement has not been fully executed. The purchase agreement has no limitations on the project design. However, the Port Authority has executed an Operations Agreement with the proposed operator of the facility that significantly limits the use of the facility by both the operator and the port authority. Following completion of the EIS, the city and operator plan to modify the agreement to include additional restrictions to address USFWS concerns regarding potential impacts to USFW Refuge lands from barge traffic wave action, etc., including a "no wake" zone requirement within the channel. In addition, a conditional use permit will be necessary because the proposed use includes a volume of truck traffic that is considered to be a major traffic generator under City Code, and requires a permit from the City. This permit requires an evaluation of the impacts of truck traffic and the inclusion of any conditions that may be necessary to mitigate any impacts that may result. Such conditions, if any, will be determined as a part of that permitting process which includes a public hearing. The traffic analysis that was completed as a part of this EIS indicates that there are no impacts requiring mitigation, however, public comment will be received as a part of the permitting process and the City will consider including any conditions that may be warranted based on public comment. The MnDNR will have the opportunity to review and comment as a part of the major traffic generator permitting process.	Chapter 1 "Executive Summary" Section 7	3

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106	7/2/2024	MnDNR	Is purchasing the entire property an option?	At this time, neither the city nor the current landowner wants to include the entire two parcels in the property purchase agreement. The City has no need for additional property to construct the facility that serves the state purpose and need for the project. The landowner does not wish to sell any additional property to the City. Neither the existing landowner or any other party has submitted any plans or proposals for development on the remainder of the property. Any future development adjacent to the proposed project location would need to conform with permitted or conditional uses allowed under City zoning requirements at the time of development and would be required obtain any required permits from federal, state, or local agencies for whatever type of development is proposed.	Chapter 3 "Alternatives" Section 3.3	41
107	7/2/2024	MnDNR	Would the current owner have access to or use of the barge facility?	The Port Authority plans to subcontract port operations and material transportation through an Operations agreement between the Port and the contracted operator. The Port Authority currently has an agreement in place that significantly limits the use of the facility by both the operator and the Port Authority. Following completion of the EIS, the Port Authority and operator plan to modify the agreement to include additional restrictions to address USFWS concerns regarding potential impacts to USFW Refuge lands from barge traffic wave action, etc., including a "no wake" zone requirement within the channel.	Appendix M	Appendix M
108	7/2/2024	MnDNR	Would the landowner be included in the sewer and utilities extensions that are proposed for the site? If so, is that a factor in the scope of the project design?	Since there have been no plans or proposals for development of adjacent land submitted to the city, the city is unable to determine whether the adjacent property will require sewer and water service at this time. Whether the adjacent property would require sewer or water service would not be a factor in the project design. The sewer and watermain sizes and the route proposed for extension would not change whether or not the adjacent property required service. The route is based on existing right-of-way and pipe sizes are the minimum size for sewer and watermain in this location. Upsizing of the mains beyond what is planned is either not required or not possible based on existing pipe sizes and system requirements.	Chapter 4 "Utilities" Section 5	46
109	7/2/2024	MnDNR	Is this type of property division allowed under current zoning and local ordinances?	Yes. The proposed project lot will meet all standards found in Section 162.070 of the City of Wabasha's Zoning Code for an industrial lot.	Chapter 4 "Land Use" Section 6.2	51
110	7/2/2024	MnDNR	Was the landowner's future development plan for the remainder of the site a factor in the 2021 rezoning of the area as "industrial?"	There were no future development plans for the Carrels site in 2021, outside of the proposed barge terminal, when the previous land use plan amendment showing the two Carrels parcels as Industrial, was reviewed and approved by the City Council. The City included the future barge terminal project on the proposed site and the City updated its Comprehensive Plan to include the future land use for the sites as industrial as well as outlined the potential future use in the text of that document. The City has received no development proposals or plans for the remaining or adjacent properties from the existing landowner or any other party.	Chapter 4 "Future Projects" Section 21.2	119
111	7/2/2024	MnDNR	Section 4.5.3, Preferred Alternative Assessment: It is not clear why sewer and water would be required for the project.	Sewer and water utilities may be extended to the site to serve a bathroom in a small field office if it is determined by the Port Authority in the future that the use of off-site bathroom facilities is no longer feasible to serve employees working at the site.	Chapter 4 "Utilities" Section 5	46
112	7/2/2024	MnDNR	Section 4.6.2.5, Alternate Site Land Use and Zoning Assessment: This assessment of each alternate site concludes that the project proposed is not compatible with existing land use and zoning. While relevant, these considerations were not barriers to the selection of the Carrel's site that required a Comprehensive Plan amendment and rezoning of the project area. These factors should be applied consistently when comparing alternatives.	A ranking system was added to Table 1 to better evaluate the Alternate Sites and see how these areas compared to the Preferred Alternative.	Chapter 3 "Alternatives" 2.1	26-30
113	7/2/2024	MnDNR	Section 4.13.1.3 Preferred Alternative Assessment: A more detailed analysis of recurrent sedimentation will be required as part of the DNR Public Water Work Permitting process.	**See Comment Number 26:** Comment noted. All required permits and approvals will be obtained prior to commencing construction and dredging activities. Maintenance dredging activities will be addressed during the public waters work permit process.	Chapter 1 "Permits and Approvals" Section 7	3
114	7/2/2024	MnDNR	Section 4.13.3.3, Preferred Alternative Assessment: This description indicates that there will be no stormwater treatment for the site despite the increase in impervious surfaces within the shoreland of the Mississippi River. Section 5 does list specific stormwater BMP's and these should be discussed in this section. Also, how will the site be managed in the winter? Will road salt be applied to the impervious surfaces? Table 1.7, Permits and Approvals shows that a National Pollutant Discharge Elimination System Construction General Stormwater Permit, as well as an Industrial Stormwater Permit will be required for the project. The stormwater treatment infrastructure of the site should be described in greater detail. Will a Stormwater Pollution Prevention Plan also be required?	Stormwater infiltration facilities will be constructed as a part of the project, as described in Section 4.13.3.4. The site is not proposed to be utilized in the winter time because the river is frozen and there will be no use of the dock during the winter. There is no need to describe the proposed stormwater infiltration facility in greater detail. The design of the facility will conform to the requirements of the MPCA NPDES Construction Stormwater Permit and a Stormwater Pollution Prevention Plan will be prepared as a part of the construction documents as required by that permit. The MPCA NPDES Industrial Stormwater Permit will include any requirements for management of stormwater runoff for the site.	(Draft) Chapter 4 "Stormwater" Section 13.3	86
115	7/2/2024	MnDNR	Section 4.15.1.5, Alternative Site Assessment: Listing the number of state-listed species present within a mile can be informative, but does not represent the level of impact to these species as a result of project activities in a way that allows for accurate comparison between alternatives. We recommend that any alternatives being carried forward for analysis complete a Natural Heritage Review.	MnDNR Natural Heritage reviews are available in Appendix Q for the alternate site locations.	Chapter 4 "Social, Economic, and Environmental Impacts" Section 15.1.5 Appendix Q	29, 96-97 Appendix Q

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116	7/2/2024	MnDNR	Section 4.17, Visual Resources: Because the project area is within an Important Bird Area, a National Wildlife Refuge, and migratory bird corridor, lighting for the facility will be especially important to limit impacts to wildlife. Animals depend on the daily cycle of light and dark for behaviors such as hunting, migrating, sleeping, and protection from predators. Light pollution can affect their sensitivity to the night environment and alter their activities. In addition to the undesirable effects of upward facing lighting, the hue of lights can also affect wildlife. LED lighting has become increasingly popular due to its efficiency and long lifespan. However, these bright lights tend to emit blue light, which can be harmful to birds, insects, and fish. The DNR recommends that any projects using LED luminaries follow the MnDOT Approved Products for luminaries, which limits the Uplight rating to 0. A nominal color temperature below 2700K is preferable for wildlife, and so we recommend choosing products that have the lowest number for backlight and glare (all approved products should already be 0 for Uplight). We also recommend that all non-essential lighting be turned off during the Mayfly hatch as well as follow the Audubon Society's Lights Out program. This program advocates for darkening all buildings and structures during the bird migration from midnight until dawn March 15 - May 31 and August 15 - Oct 31. Information on this program can be found at: http://mn.audubon.org/conservation/lights-out-faq.	Barge facility operations will occur primarily during day-time working hours. Exterior lights, if installed at the facility, will be down-casting and set on timers to reduce wildlife and aesthetic impacts during non-operating hours.	Chapter 4 "Visual Resources" Section 17.4	111
117	7/2/2024	MnDNR	Section 4.18, Dust and Odors: Products containing calcium chloride or magnesium chloride are often used for dust control. The DNR advises that chloride products that are released into the environment do not break down and can accumulate to levels that are toxic to plants and wildlife. We recommend that the document discuss the avoidance of chemical dust suppressants containing chloride.	Due to the potential for chloride containing dust suppressants to build up in the environment at levels that can be harmful to plants and wildlife, chloride containing dust suppressants will not be used.	Chapter 4 "Dust and Odors" Section 18	112
118	7/2/2024	MnDNR	Section 5, Mitigation Measures: Please note that mitigation will be required for the recreational impacts to public waters (reducing access for the public to a public resource).	The proposed facility only has the capacity to serve a maximum of 2 barges per day (one at a time) traveling at idle/no-wake speeds when entering the channel. This will be outlined in the Operations Agreement. Based on this, there is no expected impact to recreational activity in the area. There will be no restrictions on recreational access to the channel imposed as a part of this project. Recreational users of the river are typically used to interacting with existing barge traffic on the Mississippi River. Barge operators and recreational users are required to conform with river navigation laws.	Section 5 "Mitigation Measures"	121-122

DEPARTMENT OF NATURAL RESOURCES

Division of Ecological and Water Resources
Region 3 Headquarters
1200 Warner Road
Saint Paul, MN 55106

October 31, 2023

Caroline Gregerson, City Administrator
Wabasha Port Authority
900 Hiawatha Drive E
Wabasha, Minnesota 55981

Dear Ms. Gregerson:

Thank you for the opportunity to review the Wabasha Barge Facility Draft Environmental Impact Statement (DEIS). The Minnesota Department of Natural Resources (DNR) has reviewed the DEIS with future permitting considerations in mind. We offer these comments with the goal of meeting State permitting needs and satisfying the state environmental review process. We would also like to express DNR's commitment to continuing to work with the Wabasha Port Authority as the Responsible Governmental Unit (RGU) on this environmental review.

Our previous July 21, 2022 comment letter (attached) described the importance of clearly articulating the purpose and need that is not so narrow as to preclude the analysis of meaningful alternatives. The purpose and need identified in the DEIS does not appear to align with historic restoration orders, permit application proposals, section 7.8 of the city's Comprehensive Plan, and Port Development Assistance Program grant requirements. As the activity described in the DEIS would constitute a permanent and perpetual impact to the Mississippi River, adequately identifying the purpose and need is important to both the environmental review process as well as for DNR's subsequent consideration of a Public Waters Work permit application. The Minnesota Environmental Policy Act (MEPA) more specifically (Minn. Stat. § 116D.04, subd. 6) precludes "state actions significantly affecting the quality of the environment" if there is a "feasible and prudent alternative consistent with the reasonable requirement of the public health, safety, and welfare of the state's paramount concern for the protection of its air, water, land, and other natural resources from pollution, impairment, or destruction."

The alternative analysis used in the DEIS directly cites (quotes) the U.S. Army Corps of Engineers' (USACE) Pool 4 Dredged Material Management Plan (DMMP) and tentatively selected plan in an attempt to satisfy the alternative analysis component of the DEIS. The DMMP is an integrated federal Environmental Assessment and National Environmental Policy Act document that uses a federal process based on screening criteria that does not automatically meet the requirements of MEPA and criteria necessary to inform State permitting decisions.

The DMMP carried forward several feasible alternatives, and it is unclear from the analysis completed so far in the DEIS that the barge facility would represent the least environmentally impactful and feasible alternative that could meet the standards for DNR Public Waters Work Permitting. For the reasons outlined below, unless the DEIS more thoroughly evaluates project alternatives, the document will likely be of limited use in the permit review process.

If the primary or exclusive purpose and need for the project is to transfer dredged material to the storage site, there appear to be other alternatives that should be considered. These alternatives might include the use of hydraulic dredging with a pipeline to the storage site (such as that proposed at Read's Landing), that could minimize environmental impacts. If the barge facility is determined to be the least impactful feasible alternative, then alternatives that seek to minimize the size and scope of the impacts should also be considered. Economic considerations are relevant to feasibility, but do not solely determine the selected alternative.

Additionally, there are still significant questions regarding the future use of the facility and potential plans for development of a commercial port beyond the stated use of the facility by USACE for the transport of dredged material.

Draft EIS Comments

1. Section 1.2; Section 2.1, Project Description. These sections state, "The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and **other commodities**, from river barges to trucks for transport to off-site facilities." This is an expansion of the previous description, which only focused on the USACE's purpose, to utilize the barge facility for other activities.
2. Section 1.3; Section 2.4, Purpose and Need for the Proposed Action. These sections do not mention the "other commodities" beyond the USACE's proposed use.
3. Section 1.4, Alternatives. This section says that alternative sites were considered in the Pool 4 DMMP. This does not account for alternatives considered to meet the "other commodities" needs.

   The Pool 4 DMMP carried forward several alternatives for consideration including the *Pipeline C: Lock and Dam 4 Embankment To Zumbro River Flats South* alternative (Section 8.9, page 126 of the DMMP). This was not selected as the preferred alternative by the USACE, but it was carried forward as a *Tier 2* option. Because of the different permitting criteria and MEPA considerations, this option should be considered as an alternative in the DEIS.
4. Section 1.5, Potential Environmental Effects. There is no mention of impacts to federally and state-listed species, nor of any disruption to neighboring land use such as the National Wildlife Refuge.
5. Section 1.6, Project Cost and Funding Source. The Port Development Assistance Program grant funding obtained for this project is specifically designated by Minn. Rule 8895.0300 to fund commercial projects. This Rule states:

   > "To be eligible for the program, a project must benefit Minnesota's shippers and receivers by improving or developing a commercial navigation facility or its components. Eligible projects include dock and terminal repair, capital improvement to a commercial navigation facility, supporting equipment directly related to loading or off-loading cargo

to or from a vessel, disposal facility construction or repair, and dredging to open a new commercial navigation facility."

The funding appears to require use for a commercial facility beyond what is needed for USACE purposes described in the DMMP.

6. Section 3.2, Alternatives Considered but Dismissed from Consideration. This section summarizes the criteria used by the USACE for their process in identifying sites for dredged material management plans, but does not address the alternative analysis needed for the public waters work permitting process, which requires the state to permit the least environmentally impactful feasible alternative. Economic considerations are pertinent to feasibility, but do not determine the selected alternative.

7. Section 3.2, Alternatives Considered but Dismissed from Consideration. In the Pool 4 DMMP (Section 9.3.1), USACE states:

> "Under the tiered approach of the Recommended Plan, the preferred option for placement of dredged material will be the development of a Section 217(d) agreement between the Corps and the City of Wabasha. The city of Wabasha, in conjunction with the Wabasha Port Authority, is independently working to develop a port facility at the Carrels site to accept dredged material as well as other commodities using river transportation. The procurement and development of this port would be separate from the Corps' federal action and **a modern port facility is not required for the placement of dredged material at this site. If a port was built, it may facilitate the movement of dredged material there off the river, but dredged material could be offloaded via a simple temporary work platform as discussed in 6.3.3.** If a port is developed, the city of Wabasha would be required to obtain all applicable permitting and comply with environmental laws and regulations separately from this DMMP and integrated EA."

Based on this description by USACE, the purpose for building a modern barge facility is not to facilitate the transfer of dredged material for USACE, but rather to install a new port for the City of Wabasha. The purpose and need for such a facility has not been discussed, and alternatives for the City's use have not been addressed. It would be difficult to declare this alternative as the least impactful feasible alternative.

8. Section 4.2.2.4; Section 4.13.1.4; Section 4.13.2.4, Mitigation Measures; Table 11. Wetland impacts are discussed, but the proposed impacts to the bed of the Mississippi River are not described or addressed. Mitigation will be required for this impact to a public water and a mitigation plan is necessary to consider whether or not this project can be permitted. Currently, no mitigation plan is proposed.

9. Section 4.3.3, Economic Environment, Environmental Consequences: Preferred Alternative. This section states:

> "The current Wabasha Comprehensive Plan (2016-2035) last amended July 6, 2021, lists the future land use of the project site as "Industrial." The Comprehensive Plan discusses Wabasha's unique location and **opportunity for development of a commercial river port facility that would be used for commercial purposes including, but not limited to,** the ongoing efforts by the Corps of Engineers in maintaining the Mississippi River 9-foot navigation channel. **The implementation of the Proposed Project would support these**

goals outlined in the City of Wabasha's Comprehensive Plan and is anticipated to increase the community's economic vitality."

The City of Wabasha's 2016-2035 Comprehensive Plan (Section 7.8) was updated in 2021 to also include the following section:

> "Mississippi River Barge Terminal and Port Facility Wabasha's location on the Mississippi River provides a relatively unique opportunity to parlay that location into economic benefits to the City, as well as to the Region and the State by development of a commercial river port facility. Not only will such a facility potentially provide a solution to the ongoing efforts of maintaining the 9 foot river channel by the Corps of Engineers in an acceptable manner, but also enhance city employment opportunities, as well as **provide economic benefits to local businesses providing goods and services to river port customers.** This would also address enhanced emphasis toward mitigating the impacts of climate change. With water transport of commodities the transportation mode producing the least carbon footprint, the development of a commercial port facility would also contribute to both local and national efforts to reduce carbon emissions. Over 30 acres of land has been identified in the Northeast corner of the City on which a river port terminal could be located."

The City Comprehensive Plan identifies a commercial port facility as a desired land use, but this purpose and need is not addressed in the DEIS, and alternatives for this use are not considered. If this is a future goal of the City at this site, which it is according to the Economic Development Goals, Objectives and Policies table in Section 7.9 of the updated 2016-2035 Comprehensive Plan, then the Final EIS should address and incorporate this goal into the purpose and need for the project proposal and include alternatives that fully examine this goal.

10. Section 4.6.2.3, Environmental Consequences: Preferred Alternative. This section should discuss the compatibility and impacts related to *Land Use, Plans, Zoning, and Special Districts/Overlays.* There is no discussion of the neighboring National Wildlife Refuge, how the proposed project complies with shoreland or floodplain ordinances.

11. Section 4.9.2.3, Soil/Geology, Environmental Consequences: Preferred Alternative. The potential for recurrent sedimentation is not adequately described or addressed in the DEIS. The DNR Public Waters Work permitting process would require analysis of recurrent sedimentation, and addressing this in the Final EIS would assist in permitting.

12. Section 4.10.3, Floodplain, Environmental Consequences: Preferred Alternative. The City intends to use the Preliminary No Rise Certification from the Pool 4 DMMP. It is unclear if the City must obtain a No Rise certification for their own facility.

13. Section 4.15.2, Rare, Threatened, and Endangered Species and Ecosystems. It is not possible to state whether or not these rare plant species exist at the site without conducting a rare plant survey. The wetlands are not labeled on Figure 8, making it difficult to understand the references to Wetlands 1, 2, and 3.

    The Final EIS should address the potential loss of fish spawning habitat, disruption of fish movement to the side channel, the resuspension of sediments as barges are maneuvered, and possible entrainment of fish in barge propellers. It is likely that the proposed project and any other project alternatives involving dredging will also require future dredging to maintain

functionality of the site. As a result, the impacts of sedimentation and future site disturbance should be described for each alternative involving dredging.

14. Section 4.15.2.4, Mitigation measures. Please note that Minnesota's Endangered Species Statute and associated Rules do not regulate federally-listed species.

DNR Work in Public Waters Permitting Needs

The previous July 21, 2022 DNR comment letter described how one of the fundamental purposes of the EIS is to inform entities that will ultimately need to make permitting decisions of the environmental impacts of the proposed project and its alternatives. Under Minnesota law, the alternatives analysis is a particularly important part of this EIS and subsequent DNR Public Waters Work permitting decisions.

The DEIS has not fully addressed the prohibitions of Minn. Rules 6115.0200, especially as it pertains to alternatives and recurrent sedimentation. The site currently provides high quality wetland habitat on the Mississippi River. As part of DNR Public Waters Work permit application 2017-3659, the current property owner was asked to explain why an inland barge slip and wharf were needed instead of using the existing road that extends to the shoreline. This request for an alternatives analysis adequate to address the prohibition of 6115.0200 Subp 3. A. was not responded to, and the application was subsequently withdrawn. Since the DMMP cited in the current DEIS development specifically identifies that the scale of facility that is proposed is not necessary, the EIS must provide specific justification that refutes the USACE's conclusion in the DMMP. The technical sections of the EIS should provide an analysis of the potential for recurrent sedimentation in the dredged access channel.

The DNR is required to evaluate an application for a DNR Public Waters Work Permit for consistency with *Minnesota Statutes* 103G and *Minnesota Rules* 6115.0150 through 6115.0280. Therefore, the EIS should address the following relevant Rules:

1. 6115.0200 Excavation of PW Subp 3. Prohibited excavation
2. 6115.0200 Excavation of PW Subp 5. Permits required
3. 6115.0210 Structures in PW Subp 3. Prohibited placement of structures.
4. 6115.0210 Structures in PW Subp 5. Permits required
5. 6115.0211 Subp 4a. Mooring Facilities
6. 6115.0211 Subp 7. Other facilities
7. 6115.0240 Subp 2. Who may apply. Applications shall be submitted by the riparian owner of the land on which a project is proposed,
8. 6115.0240 Subp 3. Information required
9. The DNR permit decision must be consistent with Minn. Rule 6115.0250. If the project is consistent with all public waters requirements and a permit is issued, it must include requirements for mitigation. Therefore, to inform permit decision-making, the EIS should address mitigation strategies.

The DNR requests that the Section 217(d) agreement between USACE and the City of Wabasha be included within the appendix of the EIS. It is important that we understand the agreement and

potential future restrictions for site use. Please note that any deviation from the agreement that may alter the nature or scope of the project must remain consistent with the EIS. Any potential future uses should be fully explored within the purpose and need and alternative analysis of the EIS.

Thank you again for the opportunity to review this document. We look forward to further coordination with the City of Wabasha and the US Army Corps of Engineers. Please let me know if you have any questions.

Sincerely,

Katie Smith
Division Director | Ecological and Water Resources
Minnesota Department of Natural Resources

Enclosure: July, 21 2022 DNR Scoping EAW and DSDD Comment Letter

CC:

Equal Opportunity Employer

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Upper Mississippi River National Wildlife and Fish Refuge
102 Walnut Street, Suite 204
Winona, Minnesota 55987

November 6, 2023

Caroline Gregerson
City Administrator
City of Wabasha
PO Box 268
900 Hiawatha Drive East
Wabasha, MN 55981

RE: Draft Environmental Impact Statement, Wabasha Barge Facility, Wabasha County

Dear Ms. Gregerson,

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to comment on the Draft Environmental Impact Statement (EIS) for the Wabasha Barge Facility. This project will have direct and indirect impacts to the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), which is a unit of the National Wildlife Refuge System and managed by the Service. Refuge staff were not directly informed of this public notice and comment period and learned of the release through our state partner Minnesota Department of Natural Resources (DNR). As an adjacent landowner and trustee of federal wildlife and fisheries resources in the area, we request that we be directly contacted regarding any future action on this project. Refuge staff provided comments on this project in July 2022 during the initial scoping period. The Service also has jurisdiction and responsibility for regulating the Endangered Species Act. A search of our records shows that this project and its proponents have not sufficiently consulted on threatened and endangered species and have not completed the obligations required under Section 7 of the Endangered Species Act.

The Service provides the following comments regarding the draft EIS.

Page 9 – Project Description – “other commodities” are listed here and throughout the document but never discussed. Please describe any additional uses for this facility beyond dredged sand management and what other commodities may be offloaded in this area.

Page 10 – Potential Environmental Effects – There is no discussion of the impacts, including erosion, that facility operations, barge traffic and wave action would cause to the nearby island and neighboring lands owned in fee title by the Service managed as Refuge. Please describe the presence/location of the Refuge and any anticipated impacts to these federal conservation lands.

Page 11 – Permits and Approvals – Any activity that may occur on Refuge fee title land may not be allowed under Federal law if not determined to be compatible with Refuge purposes and will at a minimum require a Special Use Permit from the Refuge. If mussels are relocated to or dredging takes place on fee title lands additional compliance will be required.

Page 12 – Project Description – There is no discussion on what types and sizes of barges that will be used to "facilitate the transfer of materials, including but not limited to dredge material and other commodities" and what impacts and erosion that may be caused to the nearby island owned in fee title by the Service. Please identify the types and sizes of barges, define "other commodities", and identify the associated impacts.

Page 12 – Project Description – The Service is concerned about potential future expansion of the site and believes that the EIS lacks description of evaluation of this potential, and instead only refers to it as a decision would "be visited at a future time if warranted". As a adjacent landowner to the "Project Site" there has been little communication with the Service. Any plans for this site, including future plans, should include communication and discussion with the Service regarding any potential impacts to the Refuge.

Page 12 – Project Description – Before "Dredging an access channel" can occur, documentation/determination of the ownership of the river shoreline and river bottom in the areas planned for dredging will be required. If any proposed dredging is planned to occur within Refuge ownership, that action would not be allowed.

Page 12 – Project Description – There is no discussion of the impacts and erosion that "barge maneuvering", prop wash and wave action would have to the island owned in fee title by the Service and managed as part of the National Wildlife Refuge System that is located directly adjacent to this location. Please acknowledge the presence of Refuge lands and describe the potential impact to these lands.

Page 15 – Purpose and Need for the Proposed Action – The statement "the Proposed Barge Facility site is the only feasible, cost-effective location for offloading barges" is misleading as per the Corps' Final Lower Pool 4 DMMP describes "a modern port facility is not required for the placement of dredged material at this site." "…dredged material could be offloaded via a simple temporary work platform…". Please describe more in depth why this statement is in direct conflict with the Corps' DMMP and how circumstances have changed that would facilitate this complete re-direction of approach to managing this material.

Page 23 – Permits and Approvals – Consultation under Section 7 of the Endangered Species Act must be completed with the Service's Ecological Services office in Bloomington, MN. Any impacts to Refuge lands may require additional consultation and a permit if those impacts are allowable under federal law.

Page 26 – Mitigation Measures – No discussion on the economic impacts to Refuge users on the river. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers and other recreational users on the Refuge may be impacted by this project. A description of those impacts should be incorporated into this document.

Page 28 & 29 – Zoning – the project is located within an area zoned for S1 Shoreland Overlay Zone which has, among others, the goal of protecting surface water quality which is in direct contradiction to this project. What are the "Construction standards and specifications to ensure compliance…"? Describe how this project will comply with this zoning.

Page 29 – Environmental Consequences – In addition to the four wetland basins delineated on the upland, the entire area to be dredged for access is a wetland and impacts to this area need to be acknowledged and accounted for in the document.

Page 30 – Recreational Facilities - The Nelson-Trevino Bottoms is owned in fee-title by the Service. Labeling it as a Natural Area suggests that it is State ownership. Please update ownership of adjacent lands and properly label as such.

Page 31 – Recreational Facilities – Refuge property not only "begins just up-river" but the Service is the fee-title landowner to the island directly north of the project site which may be impacted by this facility as well as the shoreline owner adjacent to the tract that will host this project. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers and other recreational users on the Refuge may be impacted by this project. A description of the Refuge designations and potential impacts should be incorporated into this document.

Page 32 – Environmental Consequences – "For aquatic recreational users, an increase in barge traffic to and from the proposed project area will require increased vigilance to reduce impacts between barges and other boat traffic." This statement warrants additional discussion and consideration. The burden of these impacts should not be placed on the recreational user. There should be plans outlined on a realistic approach to address these impacts beyond a simple acknowledgement.

Page 57 – Floodplains – Mitigation Measures – "Dredging activities within the side channel…are anticipated to decrease flood risk by increasing conveyance and flood volume storage…". This is a misleading comment. The dredged area is a very small area in comparison to the larger floodplain and very little decrease in flood risk would occur. Please provide additional data and analysis to define this statement.

Page 65 – Stormwater – the description of stormwater "ditches" states that the water will be treated prior to release to the Mississippi River. A description of how that treatment will occur and how compliance will be monitored is needed.

Page 71- Resources, Habitats, and Vegetation – "The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project." The Service also owns and manages the island directly north of the project. Please identify the Refuge lands adjacent to this project and acknowledge how they will be impacted.

Page 72- Resources, Habitats, and Vegetation – There is no mention of floodplain forest, a key habitat managed by the Service in the adjacent area of the project. This section also provides no discussion regarding aquatic plant communities within the river and instead, only identifies that the area is a Lake of Outstanding Biological Significance as defined by MN Department of Natural Resources. Please further describe what that means to the aquatic plant communities and address the floodplain forest resources that exist in the area.

Page 86 – Northern Long-Eared Bat – Under the Mitigation Measures the document states "Prior to the take of a protected species, a USFWS permit to take will be approved." That statement seems pre-decisional at best. This section does not reflect the recent uplisting of the Northern Long-eared Bat and the subsequent consultation requirements. Consultation under Section 7 of the Endangered Species Act has not been fulfilled. Please initiate proper Section 7 Consultation. Additionally, conducting a regulatory review and completing Section 7 Consultation through the Service's Ecological Services office utilizing the Information for Planning and Consultation (IPaC) system may be adequate for a determination on properties located outside of the Refuge boundary, however, the findings are not sufficient for determinations for activities within the Refuge boundary or for obtaining a Special Use Permit (SUP).

National Wildlife Refuges have higher standards for considering/allowing impacts to threatened and endangered species.

Page 86 – Mitigation measures for aquatic species – If dredging is occurring within the boundaries of the Refuge, coordination must also take place with the Service. No dredging will be allowed on Refuge owned lands. Please confirm ownership of lands (including river bottoms) that will be impacted by dredging.

Page 94 – Water-Based Transportation – Mitigations measures must be taken to protect the integrity of the Refuge island north of the project. Increased barge traffic will cause wave action and prop wash which will lead to erosion of the southern bank of the island and degradation of floodplain forest habitats. Please describe these impacts and how they will be addressed.

The 2022 Draft Scoping Decision Document "Modified Designs or Layouts" section included a statement that "modified design or layout alternatives were evaluated… along with the location, size, and orientation of the dredge material storage areas were considered." Neither of the referenced documents during scoping, nor the Site Plan map address dredge material storage by location or quantity. Material storage has the potential to significantly impact the site and must be addressed. These items were not found to be described or addressed in the EIS so the comments provided by the Service during Scoping are assumed to remain unaddressed. Please advise why this was not included or addressed in this document.

Finally, as was addressed in comments to USACE regarding the Pool 4 Dredge Material Management Plan (DMMP) the use of this property was identified and evaluated as the "Carrels Site" which has led to confusion on this project. The DMMP noted that 18 acres of this Project Area are approved in the Channel Maintenance Management Plan (CMMP). A discussion regarding how this pre-determined use will impact the development of a barge terminal needs to be addressed. As was expressed to USACE, the Refuge has concern over the development of a barge terminal at this location. As indicated on your Site Plan there is limited area for barges to maneuver and an expectation that they will enter the terminal at an angle. It is likely that the island directly in-front (riverward) of the proposed terminal, which is Service fee-title ownership, will become a pivot point for barges to nose-in which leads to damaged or downed trees and erosion which will be exaggerated by propwash and wave action from barges turning and passing.

Thank you for the opportunity to comment on the Draft Environmental Impact Statement. If there are questions regarding these comments, please contact Winona District Manager Wendy Woyczik at wendy_woyczik@fws.gov or 507-494-6229. For proper Endangered Species Act consultation, please contact Nick Utrup at nick_Utrup@fws.gov or (612) 600-6122. Any future coordination/communication on this project should include at a minimum the two previously mentioned Service employees. If you would like to contact me directly on this or any Refuge related topic, I can be reached via email at sabrina_chandler@fws.gov or via phone at 507-458-0144.

Sincerely,

Sabrina Chandler

Sabrina Chandler
Refuge Manager

From:	Caroline Gregerson
To:	Dietrich Flesch
Cc:	Brian Malm; Angie Smith
Subject:	RE: Public Review of Draft Environmental Impact Statement
Date:	Friday, October 6, 2023 11:14:33 AM

Thanks Dietrich- appreciate this!

Brian/Angie- For our records.

Caroline Gregerson
Office Line: 651-560-4860
Work Mobile: 651-412-5553

From: Flesch, Dietrich <dflesch@co.wabasha.mn.us>
Sent: Friday, October 6, 2023 9:44 AM
To: Caroline Gregerson <cityadmin@wabasha.org>
Subject: RE: Public Review of Draft Environmental Impact Statement

Caroline
I have reviewed the "Wabasha Barge Facility - Draft Environmental Impact Statement" and have the following comments:

- The document incorrectly references 5th Grant Blvd as Wabasha County Road 10 on multiple pages. 5th Grant Blvd is Wabasha County Highway 59. Wabasha County Highway 10 lies west of the intersection of County Highway 59/US Hwy 61/County Highway 10.
- The latest traffic volume data AADT adjacent to the proposed development and measured/provided by MnDOT for year 2018 is 870; the document states "approximately 525". Using a traffic volume to the 2018 level may or may not have any effect on the traffic analysis performed for this document.
- The MnDOT Commissioner authorized speed limit issued 11/24/2010 on County Highway 59 (5th Grant Blvd) adjacent to the proposed development is "Statutory"; which according to Minn. Stat. 169.14subd.2 would be 55mph. It is incorrectly stated in the document as 40mph.
- There is no speed limit listed for Shields Ave in Appendix H page 2; the correct speed limit is 30mph.
- An approved "Application for Access to County Highways" will be required from the Wabasha County Highway Department for the new proposed access.

Regards,

Dietrich Flesch
Wabasha County Engineer
821 Hiawatha Drive West
Wabasha, MN 55981
Phone 651.565.3366 ext.2

From: Caroline Gregerson [mailto:cityadmin@wabasha.org]

Sent: Monday, October 2, 2023 2:01 PM
To: stephan.roos@state.mn.us; raymond.kirsch@state.mn.us; health.review@state.mn.us; jill.townley@state.mn.us; pamela.foster@state.mn.us; melissa.king@state.mn.us; katherine.lind@state.mn.us; mn.osa@state.mn.us; melissa.cerda@state.mn.us; ENReviewSHPO@state.mn.us; govdoc@hclib.org; Shauna_Marquardt@fws.gov; usace_requests_mn@usace.army.mil; R5NEPA@epa.gov; reference@rochester.lib.mn.us; Caroline Gregerson <cityadmin@wabasha.org>; Tony Johnson <PWDirector@wabasha.org>; Wendy Busch <clerk@wabasha.org>; Branden.Villalona@dot.gov; nancy.s.komulainen-dillenburg@usace.army.mil; bradley.e.perkl@usace.army.mil; david.a.studenski@usace.army.mil; Tina_Shaw@fws.gov; Georgia_Parham@fws.gov; neil.rude@state.mn.us; Lucas.Youngsma@state.mn.us; suzanne.jiwani@state.mn.us; Daniel.Petrik@state.mn.us; megan.moore@state.mn.us; heather.lukes@state.mn.us; alyssa.core@state.mn.us; matt.kempinger.wabashaswcd@gmail.com; Flesch, Dietrich <dflesch@co.wabasha.mn.us>; Paul.R.Machajewski@usace.army.mil; Robert.k.edstrom@usace.army.mil; sarah.beimers@state.mn.us; Melissa.Collins@state.mn.us; Mary_Stefanski@fws.gov; jlkreye@gmail.com; julieostrom1@gmail.com; brianjraney@gmail.com
Cc: Angie.Smith@bolton-menk.com; Brian Malm <Brian.Malm@bolton-menk.com>; Lucas.Bulger@bolton-menk.com; Emily Durand <mayor@wabasha.org>; John Friedmeyer <CouncilMember3@wabasha.org>
Subject: Public Review of Draft Environmental Impact Statement

CAUTION: This email came from outside the county

Dear Interested Party,

The City of Wabasha invites public review of the Draft Environmental Impact Statement (DEIS) regarding the proposed Mississippi River Barge Facility Project located in the City of Wabasha, Wabasha County, MN. The project will include dredging a side access channel from the main Mississippi River navigation channel and constructing a truck access road, barge dock, and loading/unloading infrastructure.

The DEIS, which documents the purpose and need for the project, along with the anticipated social, economic, and environmental impacts, is available for review beginning October 2, 2023, at the following locations:

- (Digital) City of Wabasha website: https://www.wabasha.org/bargeterminaleis/
- (Digital) Environmental Quality Board website: https://www.eqb.state.mn.us/eqb-monitor (published tomorrow)
- (Hard Copy) Wabasha City Hall, 900 Hiawatha Drive E, Wabasha, MN 55981

A public meeting will be held on Thursday, October 19, 2023, at 5:30 p.m. at Wabasha City Hall. Written comments will be accepted through November 1, 2023, and should be submitted to Caroline Gregerson, City Administrator, 900 Hiawatha Drive E, Wabasha, MN 55981, or cityadmin@wabasha.org.

Kind Regards,

Caroline Gregerson
Caroline Gregerson, City Administrator
City of Wabasha

Office Line: 651-560-4860
Work Mobile: 651-412-5553
Email: cityadmin@wabasha.org
900 Hiawatha Dr. E, Wabasha, MN 55981

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North | St. Paul, Minnesota 55155-4194 | 651-296-6300

800-657-3864 | Use your preferred relay service | info.pca@state.mn.us | Equal Opportunity Employer

October 27, 2023

Caroline Gregerson
City Administrator
Wabasha Port Authority
900 Hiawatha Drive E
Wabasha, MN 55981
cityadmin@wabasha.org

Re: Wabasha Barge Facility – Draft Environmental Impact Statement

Dear Caroline Gregerson:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement (EIS) located in Wabasha County, Minnesota. The Project consists of The City of Wabasha, in cooperation with the Wabasha Port Authority, proposing to construct a commercial port facility ("Wabasha Barge Facility") at Upper Mississippi River mile 760 in Wabasha, Minnesota. The project site is located on tax parcels R27.00004.00 and R27.00005.03 within the City of Wabasha, Wabasha County, Minnesota (Section 30, Township 111N, Range 010W). Regarding matters for which the Minnesota Pollution Control Agency (MPCA) has regulatory responsibility and other interests, the MPCA staff has the following comments for your consideration.

Construction Stormwater

- A SWPPP narrative will need to be made for full comments from the MPCA Construction Stormwater team to comment.
- Total water quality volume requirements will be met with their current plans.
- Topsoil preservation in stockpiles will be important for this site.
- The infiltration practice will need to have a soil boring log associated with the area that it will be installed in.
- Preventing nuisance conditions from soil spillage into the Mississippi will be important during construction practices.
- It is unclear if the new design is adding 3.3 acres (pdf pages 48, 65, 99) of impervious surface or 2.99 acres (pdf pages 436, 438).

We appreciate the opportunity to review this Project. Please be aware that this letter does not constitute approval by the MPCA of any or all elements of the Project for the purpose of pending or future permit actions by the MPCA. Ultimately, it is the responsibility of the Project proposer to secure any required permits and to comply with any requisite permit conditions. If you have any questions concerning our review of this Draft EIS, please contact me by email at Chris.Green@state.mn.us or by telephone at 507-476-4258.

Sincerely,

Chris Green

This document has been electronically signed.

Chris Green
Project Manager
Environmental Review Unit
Resource Management and Assistance Division

CG:rs

cc: Dan Card, MPCA Metro
Aaron Hinz, MPCA Metro
Randall Hukriede, MPCA Marshall

From: Caroline Gregerson
To: Angie Smith; Brian Malm
Subject: FW: Proposed Wabasha facility
Date: Friday, October 6, 2023 4:24:53 PM

Below is another question to address in the final EIS.

From: RRHF LLC <rootsreturn@gmail.com>
Sent: Wednesday, October 4, 2023 5:01 PM
To: Caroline Gregerson <cityadmin@wabasha.org>
Subject: Re: Proposed Wabasha facility

Thank you very much Caroline.
The remaining question is: where is it going after storage? Who is contracted to remove or use it, and will they only take it away once per year so more can be deposited and stored, or ? There were no real plans revealed in this notification hence all of my questions.

Thanks, and feel free if you need to pass me to whomever can help.

On Wed, Oct 4, 2023 at 4:46 PM Caroline Gregerson <cityadmin@wabasha.org> wrote:

> Hi Lori, Each comment we received will be addressed in the final EIS but broadly speaking, most of the sand is coming off the river near Read's Landing, by where the Chippewa River intersects the Mississippi and it's expected to happen once a year. Thanks! -Caroline
>
> ---
>
> **From:** RRHF LLC <rootsreturn@gmail.com>
> **Sent:** Tuesday, October 3, 2023 6:33 PM
> **To:** Caroline Gregerson <cityadmin@wabasha.org>
> **Subject:** Proposed Wabasha facility
>
> Hello Caroline,
>
> I'm responding to the recent EQB notification for the Wabasha Barge Facility. In those plans, is the dredge material storage supposed to be coming directly from the Mississippi near that location, or from upstream, or can you explain where its derived from?
>
> How often is dredging expected and stored (i.e. once per year, once per 5 yrs, or ?)? Are there plans for contracts to move it off, who is that contractor, and where else does it go?
>
> ## Wabasha Barge Facility

Location (city/township; county): Wabasha; Wabasha
Process: EIS
Step: Draft EIS
End of comment period: October 17, 2023

Project description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the City of Wabasha, Minnesota. The 8.2-acre Wabasha Barge Facility would facilitate the transfer of materials, to include but not limited to dredge material and other commodities, from river barges to trucks for transport to off-site facilities. The City of Wabasha would own the project site and contract out the port operations and transportation of materials.

Location of public documents: Wabasha City Hall, 900 Hiawatha Drive East, Wabasha, MN 55981

Public meeting date, time, location: October 17, 2023, 5:30 p.m., Wabasha City Hall, 900 Hiawatha Drive East, Wabasha, MN, 55981

Responsible governmental unit and contact: Wabasha Port Authority, Caroline Gregerson, 651-565-4568

Thank you,

--

Lori D. Cox, Owner/Operator

Roots Return Heritage Farm, LLC

Carver, MN

Consulting, Mentoring, Advocating New/Emerging Farmers

2017 Carver Cty SWCD Outstanding Conservationist

NACD Soil Health Champion Network Farm

Board of Water and Soil Resources ***(Citizen rep)***

MN Ag Water Quality Certified Farm ***(Adv Board)***

Carver County Water Mgmt Org ***(Adv Board)***

MN Institute for Sustainable Ag (MISA) ***(BOD)***

UMN CFANS Mentor Program

Climate Land Leaders

--

Lori D. Cox, Owner/Operator

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MN Ag Water Quality Certified Farm ***(Adv Board)***
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MN Institute for Sustainable Ag (MISA) ***(BOD)***
UMN CFANS Mentor Program
Climate Land Leaders

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

September 15, 2021 **VIA E-MAIL**

Angie Smith
Bolton & Menk
7533 Sunwood Drive NW
Ramsey MN 55303

RE: Wabasha Barge Terminal
T111N R10W S30 NE
Wabasha, Wabasha County
SHPO Number: 2021-2509

Dear Ms. Smith,

Thank you for consulting with our office regarding the above referenced project. Information received in our office on July 19 and August 19, 2021 has been reviewed pursuant to the responsibilities of the State Historic Preservation Office under Minnesota Statutes 138.665-666 and 138.40.

We have completed a review of your submission dated July 16, 2021 as well as the report titled *Phase IA Archaeological Literature Review for Wabasha Barge Facility Project, City of Wabasha, Wabasha County, Minnesota* (Bolton & Menk, August 2021) which was received in our office on August 19, 2021.

Based upon information presented in the Phase IA report and the status of project design, we agree with the recommendations made on page 13 as it pertains to moving forward with sub-surface testing and possibly deep testing in areas identified by the consulting archaeologist.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. We understand by your August 2nd letter that this project will likely require a permit from the U.S. Army Corps of Engineers. As such, Section 106 consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this review under state statutes may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

If you have any questions regarding our review of this project, please contact me at (651) 201-3290 or sarah.beimers@state.mn.us.

Sincerely,

Sarah J. Beimers
Environmental Review Program Manager

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
332 MINNESOTA STREET, SUITE E1500
ST. PAUL, MN 55101-1323

10/03/2023

Regulatory File No. MVP-2020-01306-ACM

THIS IS NOT A PERMIT

Caroline Gregerson
P.O. Box 268
900 Hiawatha Drive East
Wabasha, MN 55981

To: Caroline Gregerson:

We have received your submittal described below. You may contact the Project Manager with questions regarding the evaluation process. The Project Manager may request additional information necessary to evaluate your submittal.

File Number: MVP-2020-01306-ACM

Applicant: Caroline Gregerson

Project Name: Wabasha Barge Terminal

Project Location: Section 30 of Township 111 N, Range 10 W, Wabasha County, Minnesota (Latitude: 44.3916768632004; Longitude: -92.0540865390121)

Received Date: 10/03/2023

Project Manager: Alex Meincke
(651) 290-5485
Alexander.C.Meincke@usace.army.mil

Additional information about the St. Paul District Regulatory Program can be found on our web site at http://www.mvp.usace.army.mil/missions/regulatory.

Please note that initiating work in waters of the United States prior to receiving Department of the Army authorization could constitute a violation of Federal law. If you have any questions, please contact the Project Manager.

Thank you.

U.S. Army Corps of Engineers
St. Paul District
Regulatory Branch

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, ST. PAUL DISTRICT
332 MINNESOTA STREET, SUITE E1500
ST. PAUL, MN 55101-1323

November 1, 2023

Regulatory File No. MVP-2020-01306

City of Wabasha
c/o Caroline Gregerson, City Administrator
900 Hiawatha Drive E
Wabasha, MN 55981

Dear Caroline Gregerson:

This letter is in response to correspondence we received from you regarding the Mississippi River Barge Facility Project. This letter contains our initial comments on this project for your consideration. The purpose of this letter is to inform you that based on the Draft Environmental Impact Statement (DEIS) for the project referenced above, a Department of the Army (DA) permit would be required for your proposed activity under Section 10 of the Rivers and Harbors Act of 1899 and under Section 404 of the Clean Water Act.

Please consider the comments concerning our regulatory program that may apply to the proposed project:

1. As an application for a Corps permit has not yet been submitted, we recommend requesting a pre-application consultation meeting with the Corps to discuss an appropriate permitting pathway and obtain information regarding the data, studies or other information that will be necessary for the permit evaluation process.

2. We recommend that you reach out to the United States Coast Guard and the River Industry Action Committee to ensure that any concerns they might have are addressed.

3. As this area is located in a high potential area for Tribal resources, we recommend reaching out to any Tribes that may have an interest in this area.

4. As this area is located near a United States Fish and Wildlife (FWS) Refuge, we recommend reaching out the FWS to ensure that any concerns they might have are addressed.

5. To ensure compliance with Section 10 of the Rivers and Harbors Act of 1899: when an application is submitted, please provide the dimensions and configuration of all proposed structures located in the Mississippi River (such as the dock, sheet pile dock wall, dolphin structures, and guide pile).

6. The project purpose and need in the DEIS state that periodic removal of sediment material (dredging) deposited within the Lower Pool 4 navigation channel and placement of the material on temporary upland locations is necessary to maintain the navigation channel requirements for commercial vessels.

    a. Will this facility be used for other purposes than maintenance dredging?

b. Are there other alternatives than construction of a barge facility that would meet the project purpose and need?

c. Are there other locations near the Lower Pool 4 that would meet the purpose and need?

7. Please let us know if you determine that this project would receive funding or require approval from additional federal agencies, such as the United States Maritime Administration.

If you have any questions, please contact me in our St. Paul office at (651) 290-5485 or (952) 679-0744 or alexander.c.meincke@usace.army.mil. In any correspondence or inquiries, please refer to the Regulatory file number shown above.

Sincerely,

Alex Meincke

Alex Meincke
Project Manager, Regulatory Division

Cc:
Brandon Bohks (Bolton & Menk)

From: Caroline Gregerson
To: Angie Smith; Brian Malm
Subject: FW: Port Authority Attn: Caroline Gregerson
Date: Monday, October 30, 2023 11:15:02 AM

Angie, Brian: Can you help me address these comments received? Or how do you want to handle this? -Caroline

---

From: Ruelle, Danielle M CPO USCG SEC UPPER MISS (USA) <Danielle.M.Ruelle@uscg.mil>
Sent: Monday, October 30, 2023 11:00 AM
To: Caroline Gregerson <cityadmin@wabasha.org>
Subject: Port Authority Attn: Caroline Gregerson

Good Day,

It has been brought to my attention that the City of Wabasha is proposing the construction of a new Barge Facility.

As the local United States Coast Guard, we have an interest in this project. I have read portions of the environmental impact statement and I'm hoping to clarify some information.

From what I have read, it appears that the new facility will be servicing barges used in the dredging of the river, and transporting that material to trucks to take offsite.
Is this accurate? If not, please clarify the intent of the operations.

If there is an intent to conduct business with barges subject to the U.S. Code of Federal Regulations Title 46, Chapter I, and/or Subchapters D or O, further discussion may be required.

Any additional information would be welcomed.
Please feel free to contact me at this email or at the phone number listed below.

Thank you!

Very Respectfully,

MSTC Danielle Ruelle
United States Coast Guard
Marine Safety Detachment St. Paul
5600 American Blvd West, Suite 660
Bloomington, MN 55437
952-806-0021 x 2601

7:03

City of Wabasha, MN
Posted by Caroline Neilsen Gregerson
4h ·



wabasha.org
Wabasha Barge Facility – Environmental Impact Statement Available for Public Comment

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Most relevant

Betsy Gosse Sylvester
Have there been any Native American burial mounds identified in this proposed area?

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DEPARTMENT OF NATURAL RESOURCES

Division of Ecological and Water Resources
Region 3 Headquarters
1200 Warner Road
Saint Paul, MN 55106

July 1, 2024

Caroline Gregerson, City Administrator
Wabasha Port Authority
900 Hiawatha Drive E
Wabasha, Minnesota 55981

Dear Ms. Gregerson:

Thank you for the opportunity to review the Updated May 2024 Wabasha Barge Facility Draft Environmental Impact Statement (DEIS). The Minnesota Department of Natural Resources (DNR) greatly appreciates the City of Wabasha's willingness to engage with stakeholders and to revise the proposed size of scope of the project alternatives in order to limit impacts to natural resources. The agency meeting held on April 23, 2024 was productive, and gave our agency a better understanding of the project. Our goal has been to inform an EIS that can meet State permitting needs and satisfy the state environmental review process. We are committed to continuing to work with the Wabasha Port Authority as the Responsible Governmental Unit (RGU) while the project moves forward. With that in mind, we respectfully submit the following comments for your consideration:

1. Section 2.1, Project Description; Section 3.3, Description of Preferred Alternative: The April 23, 2024 agency meeting presentation was very helpful in clarifying the proposed project and limits to the size and scope of the preferred alternative. This information is not as clearly conveyed in the EIS. The last two bullet points under the project description (page 5; page 38) mention that electric, sewer and water utilities will be installed as a part of the project, and that a field office building could be proposed as a future action. This creates a sense of uncertainty for the extent of the size and scope of the project.

   For the EIS to best inform the permitting process and permit the least environmentally impactful feasible alternative, there must be sufficient definitions or limits to each alternative in order to effectively evaluate and compare them. Once a project scope and design has been identified, the environmental review process completed, and has been permitted, any substantial changes to the project in the future may require additional environmental review or permitting.

   We understand that site plan details are being developed. It will be very important to have those details for comparison between alternatives in order to fully comprehend the scope and limits of each alternative. The only site plan included in project figures appears to be Figure 4,

which was taken from the U.S. Army Corps of Engineers' (USACE) Dredged Material Management Plan (DMMP). Figure 4 does not appear to represent the project area outline as depicted in other figures, the area proposed to be dredged, or the extent of structural improvements on the property such as scale booth, and field house. It would be helpful for reviewers to have more detailed site plans representing each alternative that reflect the differences in project design/footprint and the size of the dredging area.

2. Section 2.4.2, Other Products: The description of the proposed facility's barge capacity is very helpful in clarifying the scope of the project.
3. Section 2.5, Project Cost, Funding, and Schedule: It would be helpful if this section provided more details on the breakdown of projects costs and how the final $4.6 million total was calculated.
4. Section 3.2, Alternate Locations: Please include impacts to state-listed species and sensitive ecological areas such as Minnesota Biological Survey (MBS) Sites of Biodiversity Significance and/or DNR Native Plant Communities, in the natural resource summary for each location. Also, please include river use and access impacts in the evaluation of recreational issues.
5. Table 1-Alternate Sites Assessment: It is not clear in the listed species comparisons if the species totals are referring to state-listed species or federally-listed species.
6. Table 1-Alternate Sites Assessment: This section does not explicitly say that any of these alternative sites were removed from further consideration, or explain why the Carrel's Site is the preferred location based on all the assessment factors. It is important to clearly rate the level of each type of impact. For example, some projects have used low, medium, and high, or assigned numerical values to compare impact levels for each assessment factor based on consistent criteria applied across all alternatives. This allows each alternative to be ranked based on the total impacts in a way that identifies viable alternatives to be carried forward for detailed analysis in the EIS, while others are rejected and removed from consideration.
7. Section 3.2.2, Onsite Alternative 3-Alternative Site Layout: This section states that the City desired to use an existing road in order to reduce tree clearing by almost an acre. The road location was moved so that the current landowner could reserve the land for future development. Section 4.2.1.3 explains that the City is only purchasing 8.2 acres of the total 26.8 acre site, which raises some questions:
    a. If the current landowner, who we understand will be operating the barge facility, chooses to utilize his own property in a manner that supports the barge facility, it carries implications for the size and scope of the project. It is unclear how this proposed project may be connected to future development projects on the property. When multiple projects are owned or operated by the same entity, they may meet the definition of a connected and phased action under *Minnesota Rule 4410.2000, Subpart 4*, concerning the handling of complex projects composed of multiple phases:
        - Subp. 4. **Connected actions and phased actions.** Multiple projects and multiple stages of a single project that are connected actions or phased actions must be considered in total when determining the need for an EIS and in preparing the EIS.

In connected actions and phased actions where it is not possible to adequately address all the project components or stages at the time of the initial EIS, a supplemental EIS must be completed before approval and construction of each subsequent project component or stage. The supplemental EIS must address the impacts associated with the particular project component or stage that were not addressed in the initial EIS.

b. The rezoning of both parcels within the Carrel's Site alternative to Industrial allows for development of the entire 26.8 acres that are currently zoned RC (Residential Conservancy) and R1 (Low Density Residential), in addition to the 8.2 acres the City is proposing for the project footprint. This appears to meet the definition of a "cumulative impact" under *Minnesota Rule 4410.0200, Subpart 11*, which states:

    - Subp. 11. **Cumulative impact.** "Cumulative impact" means the impact on the environment that results from incremental effects of the project in addition to other past, present, and reasonably foreseeable future projects regardless of what person undertakes the other projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

c. Are there agreements in place for the purchase of the property that create limitations for project design?
d. Is purchasing the entire property an option?
e. Would the current owner have access to or use of the barge facility?
f. Would the landowner be included in the sewer and utilities extensions that are proposed for the site? If so, is that a factor in the scope of the project design?
g. Is this type of property division allowed under current zoning and local ordinances?
h. Was the landowner's future development plan for the remainder of the site a factor in the 2021 rezoning of the area as "Industrial?"

8. Section 4.5.3, Preferred Alternative Assessment: It is not clear why sewer and water would be required for the project.

9. Section 4.6.2.5, Alternate Site Land Use and Zoning Assessment: This assessment of each alternate site concludes that the project proposed is not compatible with existing land use and zoning. While relevant, these considerations were not barriers to the selection of the Carrel's site that required a Comprehensive Plan amendment and rezoning of the project area. These factors should be applied consistently when comparing alternatives.

10. Section 4.13.1.3 Preferred Alternative Assessment: A more detailed analysis of recurrent sedimentation will be required as part of the DNR Public Water Work Permitting process.

11. Section 4.13.3.3, Preferred Alternative Assessment: This description indicates that there will be no stormwater treatment for the site despite the increase in impervious surfaces within the shoreland of the Mississippi River. Section 5 does list specific stormwater BMP's and these should be discussed in this section. Also, how will the site be managed in the winter? Will road salt be applied to the impervious surfaces?

    Table 1.7, Permits and Approvals shows that a National Pollutant Discharge Elimination System Construction General Stormwater Permit, as well as an Industrial Stormwater Permit will be

required for the project. The stormwater treatment infrastructure of the site should be described in greater detail. Will a Stormwater Pollution Prevention Plan also be required?

12. Section 4.15.1.5, Alternative Site Assessment: Listing the number of state-listed species present within a mile can be informative, but does not represent the level of impact to these species as a result of project activities in a way that allows for accurate comparison between alternatives. We recommend that any alternatives being carried forward for analysis complete a Natural Heritage Review.
13. Section 4.17, Visual Resources: Because the project area is within an Important Bird Area, a National Wildlife Refuge, and migratory bird corridor, lighting for the facility will be especially important to limit impacts to wildlife. Animals depend on the daily cycle of light and dark for behaviors such as hunting, migrating, sleeping, and protection from predators. Light pollution can affect their sensitivity to the night environment and alter their activities. In addition to the undesirable effects of upward facing lighting, the hue of lights can also affect wildlife. LED lighting has become increasingly popular due to its efficiency and long lifespan. However, these bright lights tend to emit blue light, which can be harmful to birds, insects, and fish. The DNR recommends that any projects using LED luminaries follow the MnDOT Approved Products for luminaries, which limits the Uplight rating to 0. A nominal color temperature below 2700K is preferable for wildlife, and so we recommend choosing products that have the lowest number for backlight and glare (all approved products should already be 0 for Uplight).

    We also recommend that all non-essential lighting be turned off during the Mayfly hatch as well as follow the Audubon Society's Lights Out program. This program advocates for darkening all buildings and structures during the bird migration from midnight until dawn March 15 - May 31 and August 15 - Oct 31. Information on this program can be found at: http://mn.audubon.org/conservation/lights-out-faq.
14. Section 4.18, Dust and Odors: Products containing calcium chloride or magnesium chloride are often used for dust control. The DNR advises that chloride products that are released into the environment do not break down and can accumulate to levels that are toxic to plants and wildlife. We recommend that the document discuss the avoidance of chemical dust suppressants containing chloride.
15. Section 5, Mitigation Measures: Please note that mitigation will be required for the recreational impacts to public waters (reducing access for the public to a public resource).

Thank you again for the opportunity to review this document. Please let me know if you have any questions.

Sincerely,



Melissa Collins
Regional Environmental Assessment Ecologist | Ecological and Water Resources
Minnesota Department of Natural Resources

1200 Warner Road
St. Paul, MN 55106
Phone: 651-259-5755
Email: melissa.collins@state.mn.us

CC: Megan Moore, DNR South District Supervisor
Lucas Youngsma, DNR Area Hydrologist
Angie Smith, Bolton & Menk, Inc.

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Upper Mississippi River National Wildlife and Fish Refuge
102 Walnut Street, Suite 204
Winona, Minnesota 55987

June 28, 2024

Caroline Gregerson
City Administrator
City of Wabasha
PO Box 268
900 Hiawatha Drive East
Wabasha, MN 55981

RE: Updated Draft Environmental Impact Statement, Wabasha Barge Facility, Wabasha County

Dear Ms Gregerson,

The U.S. Fish and Wildlife Service (Service) appreciates the opportunity to comment on the updated draft Environmental Impact Statement (EIS) for the Wabasha Barge Facility. This project will have direct and indirect impacts to the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), which is a unit of the National Wildlife Refuge System and managed by the Service. The Service also has jurisdiction and responsibility for regulating the Endangered Species Act. According to Ecological Services staff reviewing files submitted in consultation for Endangered Species at, it appears the wrong documents for the IPaC were attached to the updated draft EIS. The output letters that are automatically generated by IPaC are the required documents to show the consultation number and allow for proper review by our staff. Without these documents this project and its proponents have not officially completed the obligations required under Section 7 of the Endangered Species Act. Please work with staff to provide the correct uploaded documents.

The Service provides the following comments regarding the updated draft EIS.

Page 2 – 1.5 Potential Environmental Effects – There is no discussion of the impacts, including erosion, that facility operations, barge traffic and wave action would cause to the nearby island and neighboring lands owned in fee title by the Service managed as Refuge. Please describe any anticipated impacts to these federal conservation lands.

Page 3 – 1.7 Permits and Approvals – Any activity that may occur on Refuge fee title land may not be allowed under Federal law if not determined to be compatible with Refuge purposes and will at a minimum require a Special Use Permit from the Refuge. If mussels are relocated or dredging takes place on fee title lands additional compliance will be required.

Page 5 – 2.1 Project Description – The Service is concerned about potential future expansion of the site. As an adjacent landowner to the "Project Site" any plans for this site, including future plans, should include communication and discussion with the Service regarding any potential impacts to the Refuge.

Page 5 – 2.1 Project Description – Before "Dredging an access channel" can occur, documentation/determination of the ownership of the river shoreline and river bottom in the areas planned for dredging will be required. If any proposed dredging is planned to occur within Refuge ownership, that action would not be allowed.

Page 5 – 2.1 Project Description – There is no discussion of the impacts and erosion that "barge maneuvering", prop wash and wave action would have to the island owned in fee title by the Service and managed as part of the National Wildlife Refuge System that is located directly adjacent to this location. Please describe the potential impact to these lands.

Page 18 – 3.2 Alternatives Considered – There is no discussion of impacts associated with this project relative to general recreational river users along the shoreline or on the water. Please evaluate the impacts of each alternative to recreational river users.

Page 39 – 4.2 Cover Types – In addition to the four wetland basins delineated on the upland, the entire area to be dredged for access is a wetland and impacts to this area need to be acknowledged and accounted for in the document.

Page 51 – 4.6.4 Parks, Open Spaces, and Recreational Facilities – The Service is the fee-title landowner to the island directly north of the project site which may be impacted by this facility as well as the shoreline owner adjacent to the tract that will host this project. The Refuge welcomes nearly 3 million visitors a year. Boaters, hunters, anglers, and other recreational users on the Refuge may be impacted by this project. A description of the potential impacts to the Refuge should be incorporated into this document.

Page 90 – 4.15.1 Resources, Habitats, and Vegetation – "The USFWS also owns and manages adjacent land northwest of the Wabasha Barge Facility project." The Service also owns and manages the island directly north of the project. Please identify the Refuge lands adjacent to this project and acknowledge how they will be impacted.

Page 90 – 4.15.1 Resources, Habitats, and Vegetation – There is no mention of floodplain forest, a key habitat managed by the Service in the adjacent area of the project. Please address the floodplain forest resources that exist in the area and on the island.

Page 104 – Mitigation measures for aquatic species – If dredging is occurring within the boundaries of the Refuge, coordination must also take place with the Service. No dredging will be allowed on Refuge owned lands. Please confirm ownership of lands (including river bottoms) that will be impacted by dredging.

Page 115 – 4.20.2.4 Water-Based Transportation Preferred Alternative Mitigation Measures – Mitigations measures must be taken to protect the integrity of the Refuge island north of the project. Increased barge traffic will cause wave action and prop wash which will lead to erosion of the southern bank of the island

and degradation of floodplain forest habitats. Please describe these impacts and how they will be addressed.

Thank you for the opportunity to comment on the Updated Draft Environmental Impact Statement. If there are questions regarding these comments, please contact Winona District Manager Wendy Woyczik at wendy_woyczik@fws.gov or 507-494-6229. For proper Endangered Species Act consultation, please contact Nick Utrup at nick_utrup@fws.gov or (612) 600-6122. Any future coordination/communication on this project should include at a minimum the two previously mentioned Service employees. If you would like to contact me directly on this or any Refuge related topic, I can be reached via email at sabrina_chandler@fws.gov or via phone at 507-458-0144.

Sincerely,

Sabrina Chandler
Refuge Manager

APPENDIX Q

Additional Alternatives Analysis

Wabasha Barge Facility

City of Wabasha, MN

Alternative Site Locations in Wabasha

May 2024

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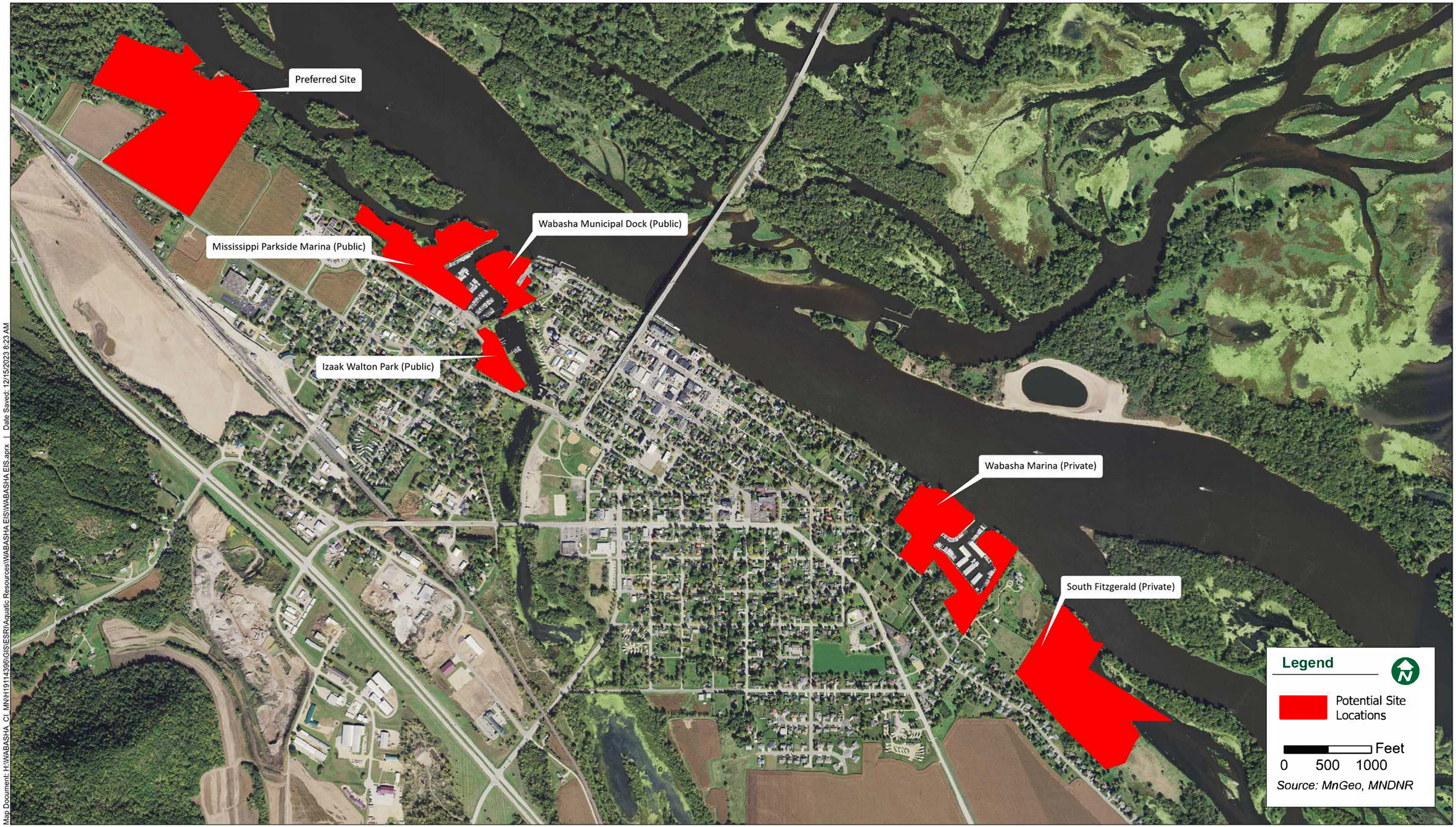

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Wabasha Barge Facility

City of Wabasha, MN

Tree Clearing Alternatives

May 2024

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Locations	Approximate Trees Needed to Clear (acres)
Proposed Location (Carrels)	2.7
Izaak Walton Park	0.25
Wabasha Municipal Dock	0.49
Mississippi Parkside Marina	0.42
Wabasha Marina	0
Southside Fitzgerald	0

Legend

- Proposed Location (Carrels)
- Izaak Walton Park
- Wabasha Municipal Dock
- Mississippi Parkside Marina
- Wabasha Marina
- Southside Fitzgerald
- Alternative Site Layouts
- Approximate Tree Clearing

0 500 1000 Feet

Source: MnGeo, MNDNR

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CITY OF WABASHA

Wabasha Barge Facility

City of Wabasha, MN

Wetland and Stream Impacts - Alternative Site Locations

May 2024

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Locations	Wetland Impacts (acres)	Shoreline/Stream Impacts (linear feet)
Proposed Location (Carrels)	0.40	130
Izaak Walton Park	0.05	130
Wabasha Municipal Dock	0.17	130
Mississippi Parkside Marina	0.3	130
Wabasha Marina	0	130
Southside Fitzgerald	0.17	130

Legend

- Proposed Location (Carrels)
- Izaak Walton Park
- Wabasha Municipal Dock
- Mississippi Parkside Marina
- Wabasha Marina
- Southside Fitzgerald
- Alternative Site Layouts
- USFWS NWI
- PWI Basins
- PWI Watercourse
- Approximate Wetland Impacts

0 500 1000 Feet

Source: MnGeo, MNDNR, USFWS

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Wabasha Barge Facility

City of Wabasha, MN

Alternate Site - Fitzgerald

December 2023

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Wabasha Barge Facility

City of Wabasha, MN

Alternative Locations Dredging Needs

May 2024

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Locations	Approximate Dredging (acres)
Proposed Location (Carrels)	10.2
Izaak Walton Park	7.39
Wabasha Municipal Dock	0.49
Mississippi Parkside Marina	7.65
Wabasha Marina	4.42
Southside Fitzgerald	13.02

Legend

- Carrels
- Isaak Walton Park
- MS Parkside Marina and Wabasha Municipal Dock
- Southside Fitzgerald
- Wabasha Marina

Feet

0 500 1000

Source: MnGeo, MNDNR

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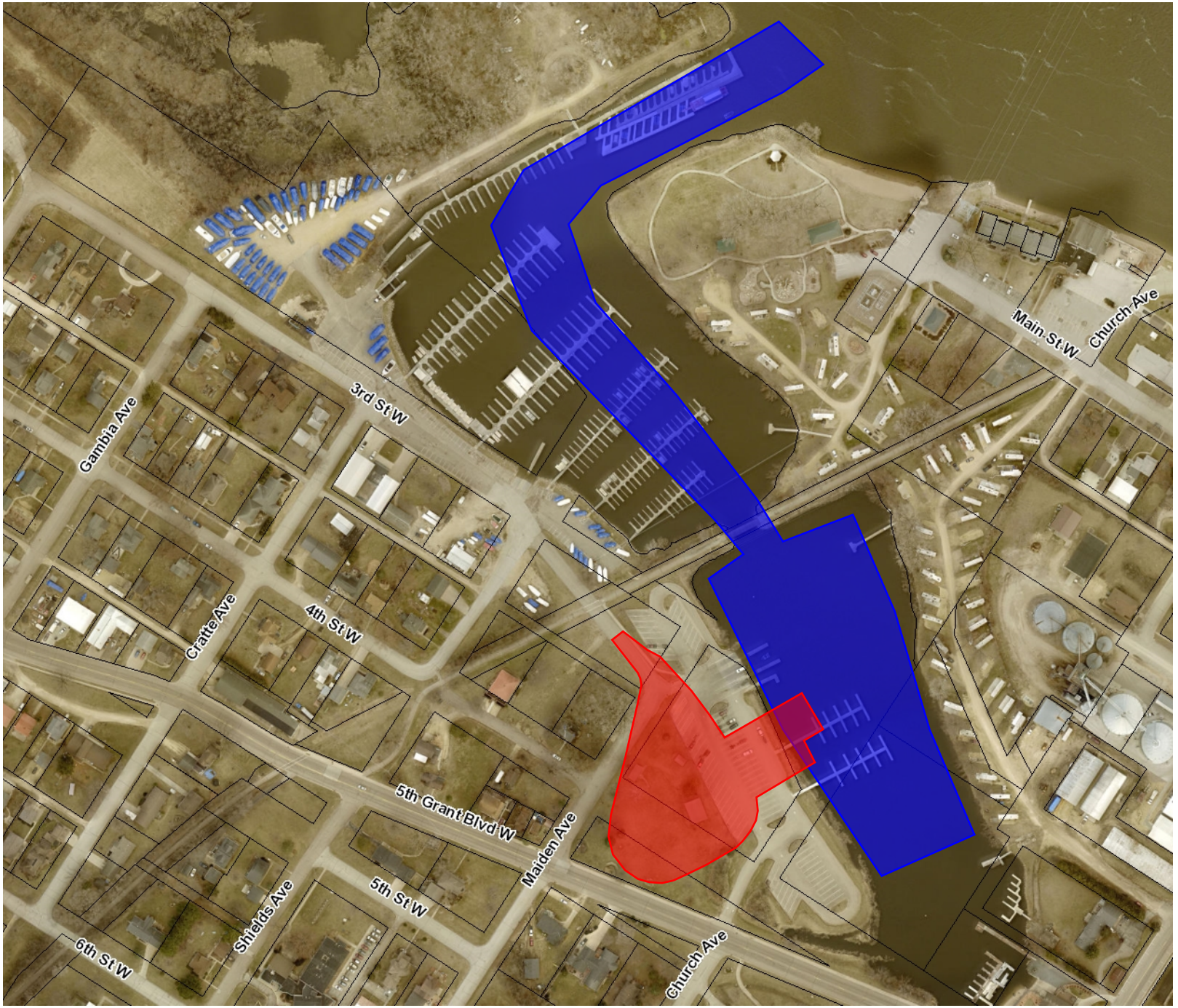

CITY OF WABASHA

Legend

- City Limits
- Parcels (02/26/24)
- Facility Footprint
- Dredge Area

Dredging Volume
Izaak Walton Park

Disclaimer:

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information, and data located in various city, county, and state offices, and other sources affecting the area shown, and is to be used for reference purposes only. The City of Wabasha is not responsible for any inaccuracies herein contained.

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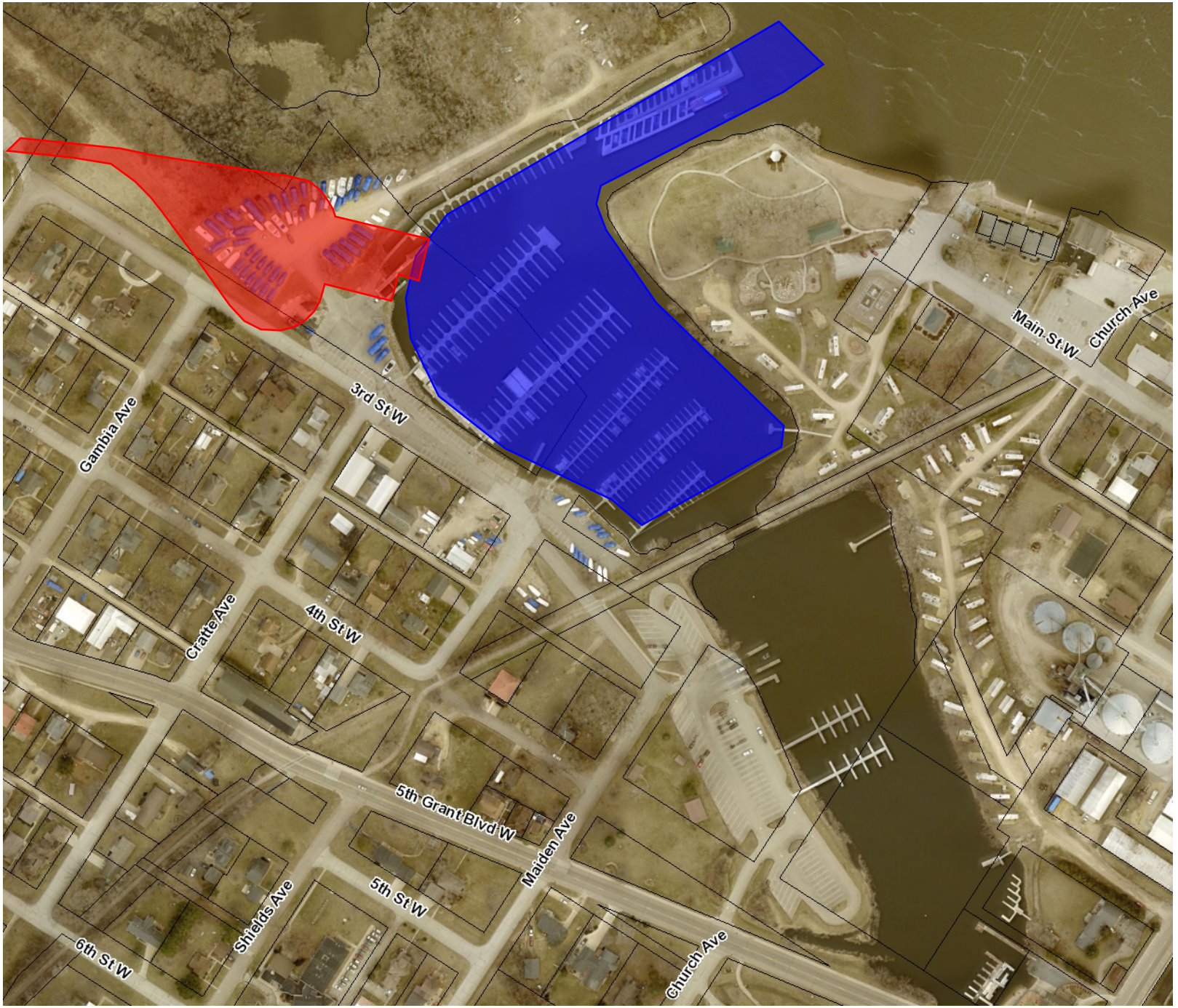

CITY OF WABASHA

Legend

- City Limits
- Parcels (02/26/24)
- Facility Footprint
- Dredge Area

Dredging Volume
Mississippi Parkside
Marina

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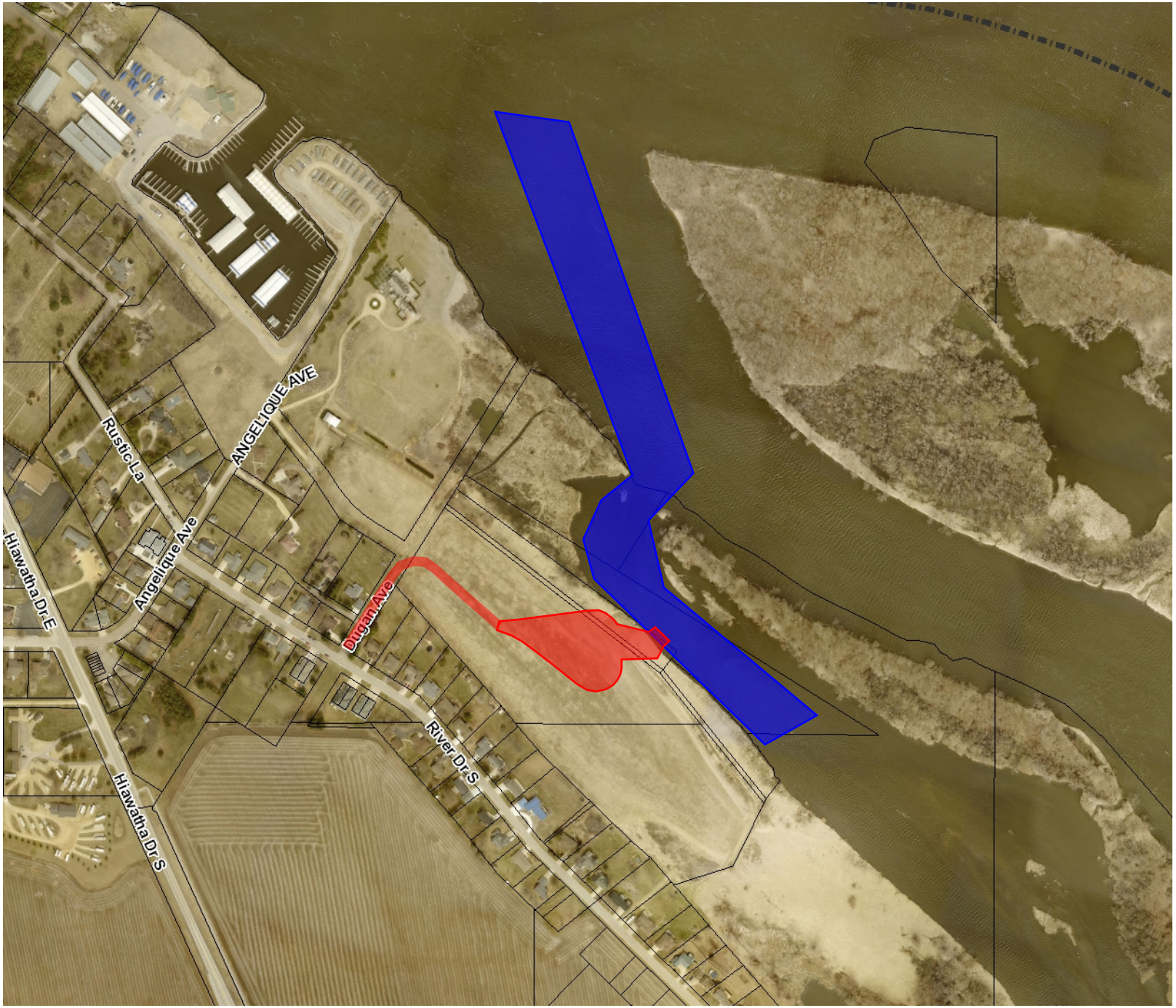

CITY OF WABASHA

Legend

- City Limits
- Parcels (02/26/24)
- Facility Footprint
- Dredge Area

Dredging Volume
South Fitzgerald

0 500 Feet

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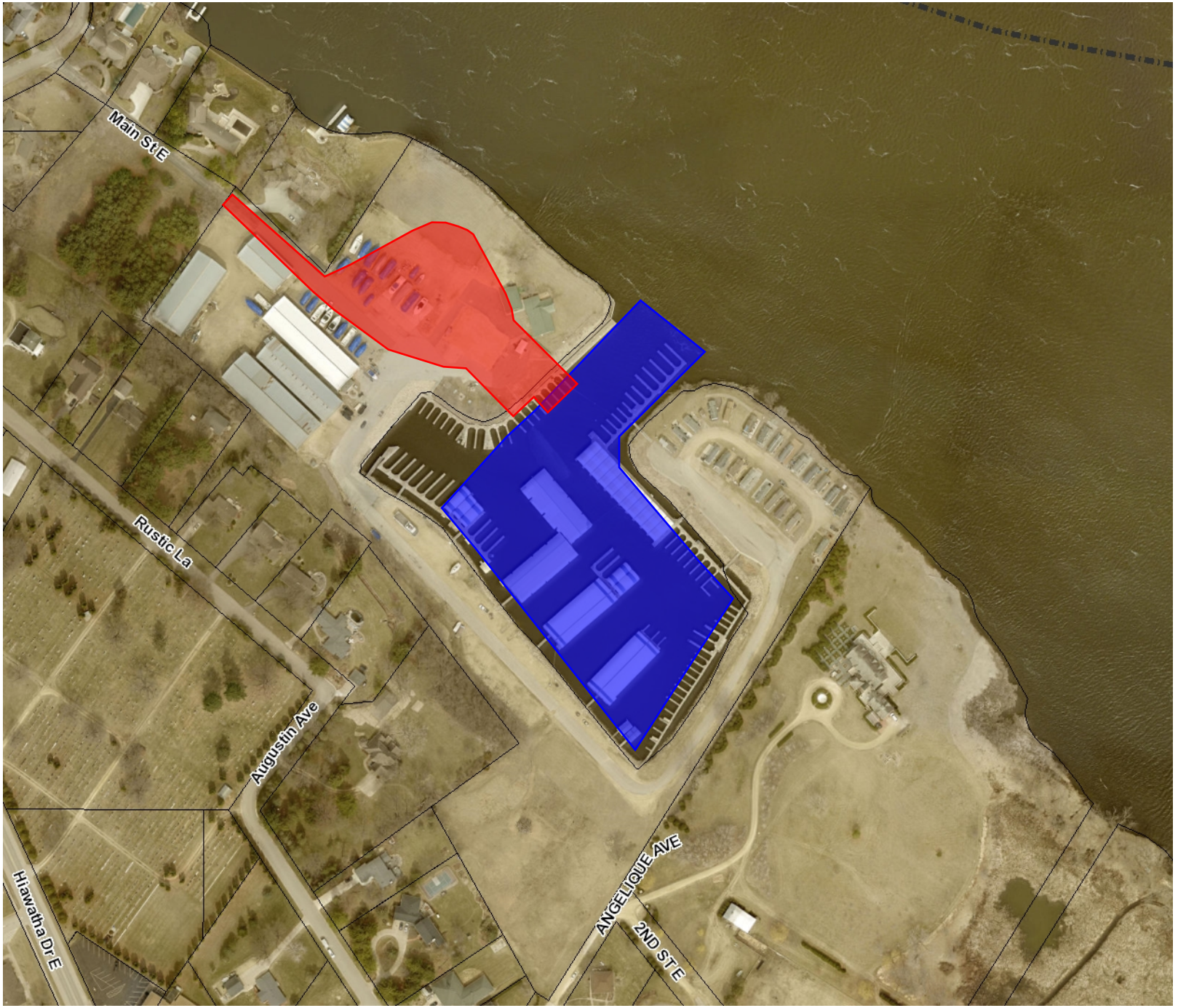

CITY OF WABASHA

Legend

- City Limits
- Parcels (02/26/24)
- Facility Footprint
- Dredge Area

Dredging Volume
Wabasha Marina

0 263 Feet

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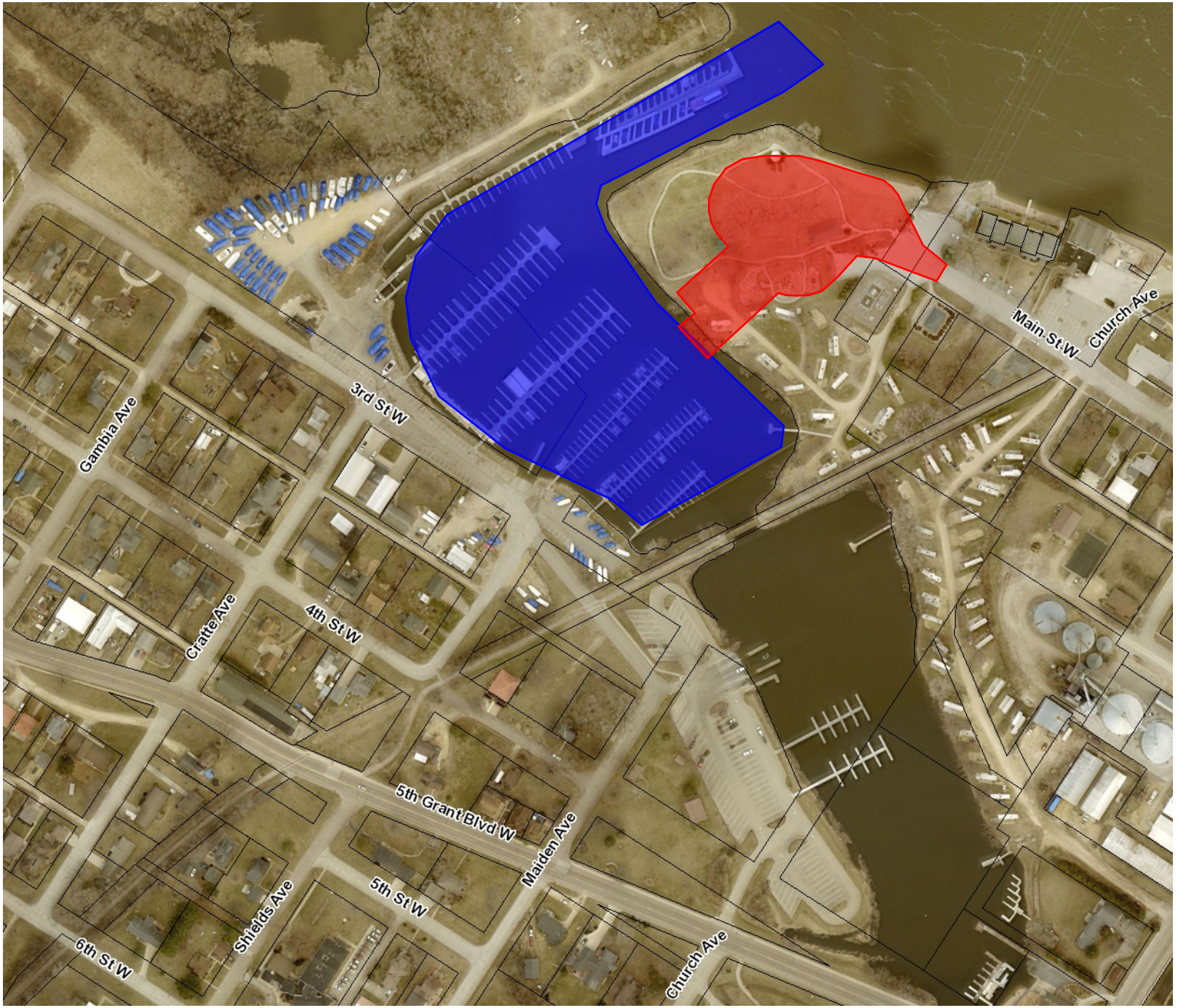

CITY OF WABASHA

Legend

- City Limits
- Parcels (02/26/24)
- Facility Footprint
- Dredge Area

Dredging Volume
Wabasha Municipal
Dock

Disclaimer:

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DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabasha Barge Facility Alternative 2 - Izaak Walton Park

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Tree Removal;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology));Wetland impacts (e.g., dewatering, tiling, drainage, discharge, excavation, fill, runoff, sedimentation, changes in hydrology)

TRS: T111 R10 S29

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS, DNR Permit or License

Project Description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the ...

Existing Land Uses: Open Space, Institutional, and Medium Density Residential

Landcover / Habitat Impacted: Steam Impacts: 1,200 linear feet along the Zumbro Slough with no barge access.

Waterbodies Affected: Zumbro Slough and Mississippi River may be impacted by development/dredging

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Lakeshore - Recommendations Tree Removal - Recommendations
Ecologically Significant Area	Comments	Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review RPBB High Potential Zone

DEPARTMENT OF NATURAL RESOURCES

July 31, 2024

Project Name: Wabasha Barge Facility Alternative 2 - Izaak Walton Park
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2024-00636

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

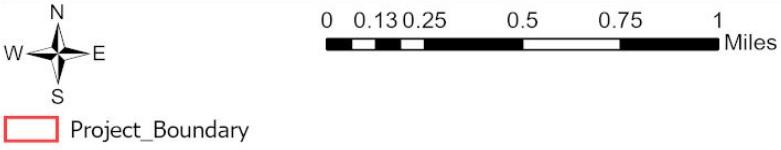
Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

Wabasha Barge Facility Alternative 2 - Izaak Walton Park

Aerial Imagery With Locator Map





Project_Boundary



Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 4.25

County(s): Wabasha

TRS: T111 R10 S29

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Wabasha Barge Facility Alternative 2 - Izaak Walton Park

USA Topo Basemap With Locator Map





Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 4.25

County(s): Wabasha

TRS: T111 R10 S29

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Esri, NASA, NGA, USGS, FEMA
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabasha Barge Facility Alternative 1 - Mississippi Parkside Marina

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Tree Removal;Grading;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology));Wetland impacts (e.g., dewatering, tiling, drainage, discharge, excavation, fill, runoff, sedimentation, changes in hydrology)

TRS: T111 R10 S29

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS, DNR Permit or License

Project Description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the ...

Existing Land Uses: Open Space and General Commercial

Landcover / Habitat Impacted: wetland, upland, stream, forested

Waterbodies Affected: Potential for 0.3 wetland impact 130 lf stream impacts

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Lakeshore - Recommendations Tree Removal - Recommendations
Ecologically Significant Area	Comments	MBS Sites - Recommendations Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review

DEPARTMENT OF NATURAL RESOURCES

August 1, 2024

Project Name: Wabasha Barge Facility Alternative 1 - Mississippi Parkside Marina
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2024-00638

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

ɔasha Barge Facility Alternative 1 - Mississippi Parkside Ma

Aerial Imagery With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 14.48

County(s): Wabasha

TRS: T111 R10 S29



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

ɔasha Barge Facility Alternative 1 - Mississippi Parkside Ma

USA Topo Basemap With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 14.48

County(s): Wabasha

TRS: T111 R10 S29



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Esri, NASA, NGA, USGS, FEMA
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabasha Barge Facility Alternative 5 - South Fitzgerald

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Tree Removal;Grading;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology));Wetland impacts (e.g., dewatering, tiling, drainage, discharge, excavation, fill, runoff, sedimentation, changes in hydrology)

TRS: T111 R10 S33

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS, DNR Permit or License

Project Description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the ...

Existing Land Uses: Water and Low-Density Residential

Landcover / Habitat Impacted: Mississippi River impacted by grading and dredging, wetlands impacted by fill/excavation

Waterbodies Affected: .17 ac wetland impacts and 130 lf stream impacts on table

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Lakeshore - Recommendations Tree Removal - Recommendations
Ecologically Significant Area	Comments	Local Conservation Value - Comment Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review RPBB High Potential Zone

DEPARTMENT OF NATURAL RESOURCES

August 1, 2024

Project Name: Wabasha Barge Facility Alternative 5 - South Fitzgerald
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2024-00639

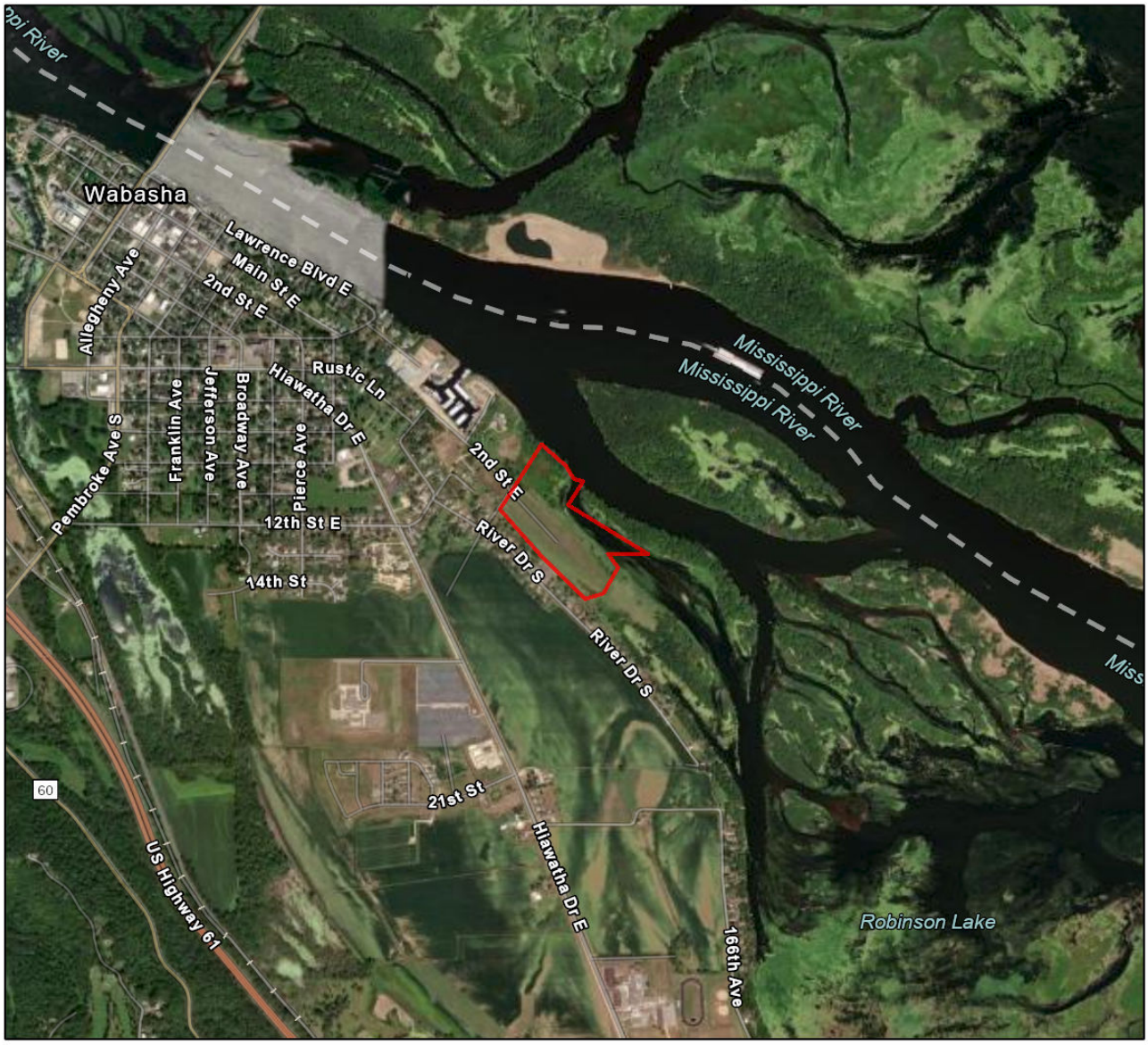
AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

Wabasha Barge Facility Alternative 5 - South Fitzgerald

Aerial Imagery With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 30.76

County(s): Wabasha

TRS: T111 R10 S33

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS



Wabasha Barge Facility Alternative 5 - South Fitzgerald

USA Topo Basemap With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 30.76

County(s): Wabasha

TRS: T111 R10 S33



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Esri, NASA, NGA, USGS, FEMA
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabasha Barge Facility Alternative 4 - Wabasha Marina

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Tree Removal;Grading;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology))

TRS: T111 R10 S28, T111 R10 S33

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS, DNR Permit or License

Project Description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the ...

Existing Land Uses: General Commercial

Landcover / Habitat Impacted: stream and upland

Waterbodies Affected: Mississippi River impacted by grading and dredging

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Lakeshore - Recommendations Tree Removal - Recommendations
Ecologically Significant Area	Comments	Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review RPBB High Potential Zone

DEPARTMENT OF NATURAL RESOURCES

August 1, 2024

Project Name: Wabasha Barge Facility Alternative 4 - Wabasha Marina
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2024-00641

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

Wabasha Barge Facility Alternative 4 - Wabasha Marina

Aerial Imagery With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 18.60

County(s): Wabasha

TRS: T111 R10 S28, T111 R10 S33



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Wabasha Barge Facility Alternative 4 - Wabasha Marina

USA Topo Basemap With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 18.60

County(s): Wabasha

TRS: T111 R10 S28, T111 R10 S33



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Esri, NASA, NGA, USGS, FEMA
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: Wabasha Barge Facility Alternative 3 - Wabasha Municipal Dock

Project Proposer: City of Wabasha

Project Type: Development, Commercial/Institutional/Industrial

Project Type Activities: Lakeshore;Grading;Waterbody or watercourse impacts (e.g., dewatering, discharge, excavation, fill, runoff, sedimentation, changes in hydrology));Wetland impacts (e.g., dewatering, tiling, drainage, discharge, excavation, fill, runoff, sedimentation, changes in hydrology)

TRS: T111 R10 S29

County(s): Wabasha

DNR Admin Region(s): Central

Reason Requested: State EIS, DNR Permit or License

Project Description: The City of Wabasha, in cooperation with the Wabasha Port Authority, is proposing to construct a commercial port facility on the Mississippi River in the ...

Existing Land Uses: Open Space and Institutional

Landcover / Habitat Impacted: beach, parkland, developed

Waterbodies Affected: Mississippi River impacted by grading and dredging, wetlands impacted by fill/excavation

Groundwater Resources Affected: NA

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	Comments	Lakeshore - Recommendations
Ecologically Significant Area	Comments	Lakes - Recommendations
State-Listed Endangered or Threatened Species	Needs Further Review	State-protected Species in Vicinity
State-Listed Species of Special Concern	Comments	Recommendations
Federally Listed Species	Comments	Visit IPaC for Federal Review

DEPARTMENT OF NATURAL RESOURCES

August 1, 2024

Project Name: Wabasha Barge Facility Alternative 3 - Wabasha Municipal Dock
Project Proposer: City of Wabasha
Project Type: Development, Commercial/Institutional/Industrial
Project ID: MCE #2024-00640

AUTOMATED RESULTS: FURTHER REVIEW IS NEEDED
As requested, the above project has undergone an automated review for potential impacts to rare features. Based on this review, one or more rare features may be impacted by the proposed project and further review by the Natural Heritage Review Team is needed. You will receive a separate notification email when the review process is complete and the Natural Heritage Review letter has been posted.

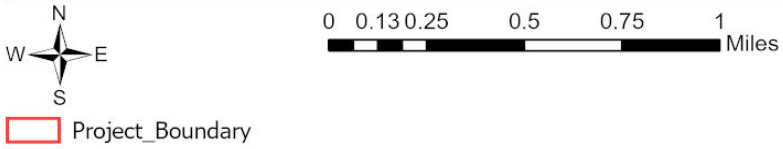
Please refer to the table on the cover page of this report for a summary of potential impacts to rare features. For additional information or planning purposes, use the Explore Page in Minnesota Conservation Explorer to view the potentially impacted rare features or to create a Conservation Planning Report for the proposed project.

If you have additional information to help resolve the potential impacts listed in the summary results, please attach related project documentation in the Edit Details tab of the Project page. Relevant information includes, but is not limited to, additional project details, completed habitat assessments, or survey results. This additional information will be considered during the project review.

ıbasha Barge Facility Alternative 3 - Wabasha Municipal D

Aerial Imagery With Locator Map





Project_Boundary



Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 5.64

County(s): Wabasha

TRS: T111 R10 S29

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

ıbasha Barge Facility Alternative 3 - Wabasha Municipal D

USA Topo Basemap With Locator Map



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Project_Boundary

Project Type: Development, Commercial/Institutional/Industrial

Project Size (acres): 5.64

County(s): Wabasha

TRS: T111 R10 S29



Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS
Esri, NASA, NGA, USGS, FEMA
Buffalo County, Wisconsin, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies,

Wabasha Barge Facility

City of Wabasha, MN

Preferred Site - Expanded Dredge Material Storage

May 2024

BOLTON & MENK
Real People. Real Solutions.

Mississippi River

Expanded Storage Area
Additional Impacts:
Wetland = 0.94 acres
Tree Clearing = 4 acres

5th Grant Blvd W

5th Grant Blvd W

CP Rail Systems

Steele Rd

Brisbois Ave

5th Grant Blvd W

Impact Table - Expanded Dredge Material Storage		
Wetland	=	1.34 acres
Stream	=	10.22 acres
Tree Removal	=	7 acres

Legend

- Project Area
- Delineated Wetlands
- Grading
- Expanded Storage Area - Dredged Materials
- Preferred Layout Impacts
- Additional Impacts

Feet
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Source: MnGeo, MNDNR

Map Document: H:\WABASHA_CI_MN\H191114396\GIS\ESRI\Aquatic Resources\WABASHA EIS\WABASHA EIS.aprx | Date Saved: 12/15/2023 8:44 AM

Wabasha Barge Facility

City of Wabasha, MN

Preferred Site - Larger Dredge Area

December 2023

BOLTON & MENK

Real People. Real Solutions.

Larger Dredging Area - Barge Maneuverability
Additional Impacts:
Stream = 2.4 acres

Mississippi River

5th Grant Blvd W

5th Grant Blvd W

CP Rail Systems

Steele Rd

Brisbois Ave

5th Grant Blvd W

Impact Table - Larger Dredging Area		
Wetland	=	0.40 acres
Stream	=	12.62 acres
Tree Remc	=	2.7 acres

Legend

- Project Area
- Delineated Wetlands
- Grading
- Preferred Layout Impacts
- Larger Dredge Area

Feet

0 150 300

Source: MnGeo, MNDNR

Map Document: H:\WABASHA_CI_MNH19114396\GIS\ESRI\Aquatic Resources\WABASHA EIS\WABASHA EIS.aprx | Date Saved: 12/15/2023 9:49 AM

Wabasha Barge Facility

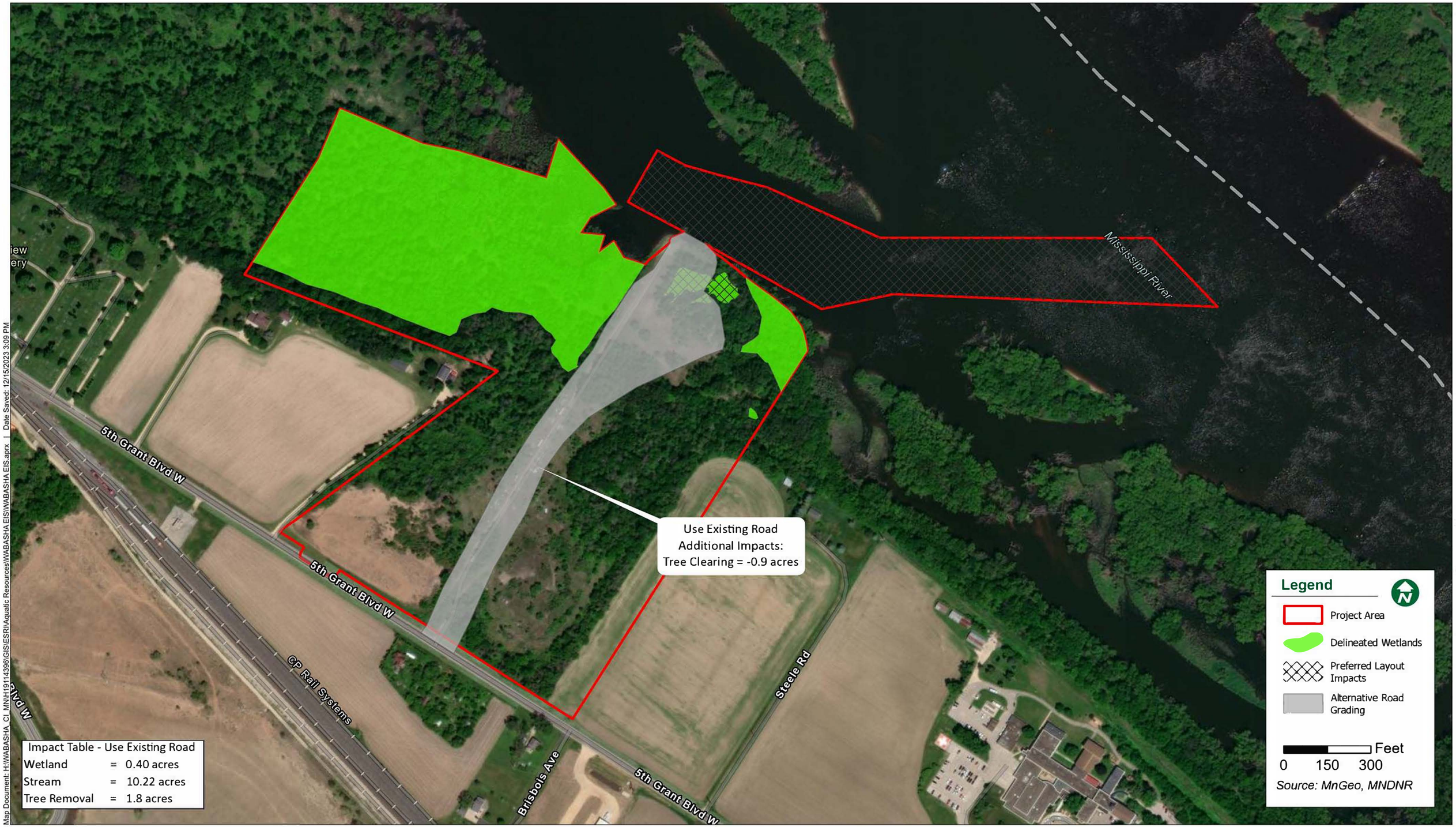
City of Wabasha, MN

Preferred Site - Use Existing Road

December 2023

BOLTON & MENK

Real People. Real Solutions.



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