Water Resources Technical Report

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Blue Line Extension Project Technical Report

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Executive Summary

This technical report summarizes the Water Resources assessment within the proposed METRO Blue Line Light Rail Extension Project (Project) area. The intent of this technical report is to support and augment the Supplemental Draft Environmental Impact Statement being prepared for this Project. Wetlands, other aquatic resources, and floodplains within the study area were examined during 2022 with field work and published data sources. Impacts to wetlands, aquatic resources, and floodplains, described in this technical report, were established based on the Project's limits of disturbance. Some delineated wetland basins within the study area are classified as natural wetlands, whereas others have been excavated in uplands for the purpose of stormwater management or roadside ditches for the purpose of drainage.

Some wetlands are regulated by the Wetland Conservation Act (WCA) and others are not. Some wetlands are regulated by the United States Army Corps of Engineers (USACE), and others, such as "non-Waters of the United States" and isolated basins are not regulated by USACE. Impacts to wetland basins requiring mitigation per WCA are 2.3494 acres. Impacts to wetland basins requiring USACE mitigation are 3.1368 acres. Compensatory mitigation for permanent impacts to wetlands is proposed through debit of credits from an established wetland bank.

Floodplain impacts may be the result of excavation or fill required for the Project footprint or excavation impacts because of construction of permanent stormwater management features. Complete avoidance of floodplain impacts from the Project and associated facilities is not feasible. Potential floodplain impacts are 12.21 acres.

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Contents

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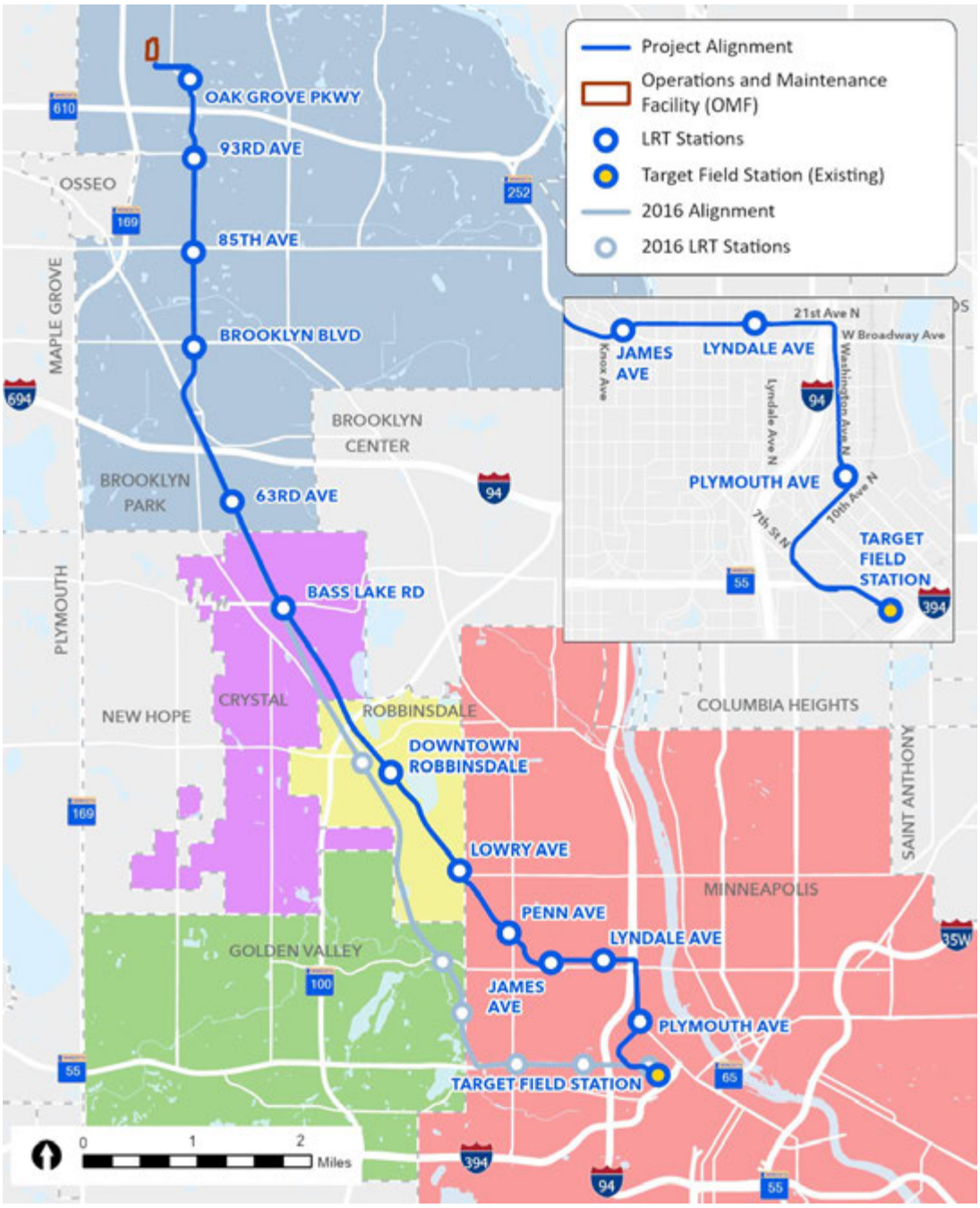
1 Introduction

This technical report supplements the Supplemental Draft Environmental Impact Statement (EIS) associated with the proposed METRO Blue Line Light Rail Extension Project (Project) as shown in Figure 1-1.

Figure 1-1 Project Area



1.1 Project Limits

The Project would be located in Hennepin County, Minnesota, extending from Downtown Minneapolis to the northwest, serving North Minneapolis and the Cities of Robbinsdale, Crystal, and Brooklyn Park.

The approximately 13.4-mile Project primarily follows W Broadway Ave (County Road [CR] 103) in the City of Brooklyn Park and CR 81 to Lyndale Ave N in the City of Minneapolis. Generally, the study area is characterized as highly urbanized from Downtown Minneapolis northwest to Trunk Highway (TH) 610. This southern portion of the Project is located within the existing road right-of-way, and there is relatively little undisturbed and maintained/mowed or wooded habitat. The portion north of TH 610 includes areas of natural habitat, although it has also been fragmented, disturbed, and is not high quality.

1.2 Report Purpose

The purpose of this technical report is to summarize water resources, including wetlands, streams, and other surface waters including floodplains within the study area and describe their regulatory context and potential impacts to them and mitigation for their impacts.

1.3 Data Collection

1.3.1 Wetland Delineation

Initial wetland delineation for the 2016 Alignment occurred in May and June of 2015 for areas meeting the technical wetland criteria in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Unites States Army Corps of Engineers [USACE] 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE 2012). Since the completion of the 2015 delineation, the wetland boundaries have expired, and thus an additional field delineation occurred in October 2022. During the October 2022, the Project Alignment was investigated for areas meeting the technical wetland criteria.

Prior to field investigations, geographic information system (GIS) databases were utilized to locate potential wetland habitats for further investigation during the onsite delineation. These data sources include aerial imagery, the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), the Hennepin County Soil Survey, Minnesota Department of Natural Resources (DNR) Public Waters Inventory (PWI) maps, Light Detection and Ranging (LiDAR) 2-foot contour maps, parcel maps, and municipal and watershed boundary maps.

Additional data were collected in the field, and locations were recorded in field notes and with global positioning system units capable of sub-foot accuracy. These data were added to GIS files and depicted in figures associated with this technical report.

Field notes, samples, and photographs were taken at representative locations in each wetland basin, with data transect locations following spacing guidelines in the *Regional Supplement.*

1.3.2 Floodplains

The Federal Emergency Management Agency (FEMA) Flood Insurance Study and the Flood Insurance Rate Maps for Hennepin County (panel numbers 27053C0182E, 27053C0201E, 27053C0203E, 27053C0212E, 27053C0214E, and 27053C0352E) dated Sept. 4, 2004, were used to identify floodplains and floodways within the Project area. The floodplains within the study area are associated with Bassett Creek, Grimes Ave Pond, North Rice Pond, Shingle Creek, and the Century Channel Ponds.

All floodplain elevations were adjusted from National Geodetic Vertical Datum of 1929 (NGVD 29) to North American Vertical Datum of 1988 (NAVD 88) by adding 0.20 feet to the NGVD 29 elevations. FEMA 100-year floodplain and floodway GIS shapefiles were downloaded from the DNR floodplain/floodway file transfer site and used to determine the impacts of the Project.

2 Regulatory Context

2.1 Wetlands & Other Surface Waters

Wetlands and other aquatic resources in the study area are regulated by several agencies at the federal, state, and local levels including USACE and the United States Environmental Protection Agency at the federal level; the Minnesota Board of Water and Soil Resources and Minnesota Pollution Control Agency at the state level; and the Wetland Conservation Act (WCA) local government unit (LGU) at the local level. Any proposed work below the ordinary high water (OHW) elevation in public waters, public waters wetlands, or unnumbered public watercourses is regulated by DNR.

2.1.1 Federal Regulation

Wetlands are defined in federal Executive Order (EO) 11990 as follows:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

USACE regulates wetlands per the Clean Water Act. According to the *Corps of Engineers Wetlands Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (USACE, 2012), one positive indicator (except in certain situations) from each of the following three elements must be present in order to make a positive wetland determination:

- Greater than 50 percent dominance of hydrophytic plant species.
- Presence of hydric soil.
- The area is either permanently or periodically inundated, or soil is saturated to the surface during the growing season of the dominant vegetation.

USACE regulates those areas that meet the definition of wetlands. Those wetland basins that are isolated hydrologically on the landscape, i.e., those with no inlets or outlets, are not typically regulated by USACE. However, if a Preliminary Jurisdictional Determination is requested, then USACE will assume jurisdiction regardless of hydrologic connection.

2.1.2 State Regulation

The Minnesota Board of Water and Soil Resources is the lead state agency that administers the WCA. WCA LGUs are delegated by the WCA to issue Notices of Decision regarding concurrence on delineated wetland boundaries and types and approvals for wetland replacement plans. The WCA LGU has jurisdiction over portions of wetlands that lie above the OHW level.

DNR has jurisdiction over public waters and public waters wetlands. The upper elevation limit of public waters and public waters wetlands is the OHW mark. In some cases, the elevation of the OHW has been calculated with hydraulic modeling. In other cases, the OHW is estimated through examination of evidence of hydrology and vegetation. Sometimes the bankfull streambank elevation serves as the demarcation of DNR jurisdiction.

Minnesota public waters and public waters wetlands are defined by Minn. Stat. 103G.005 as follows:

- **Public waters** are all waterbasins and watercourses that meet the criteria set forth in Minn. Stat. 103G.005, subd. 15 that are identified on DNR PWI maps authorized by Minn. Stat. 103G.201.
- **Public waters wetlands** are all types 3, 4, and 5 wetlands as defined in USFWS Circular No. 39 (1971 edition), not included within the definition of public waters, which are 10 or more acres in size in unincorporated areas or 2.5 acres or more in incorporated areas.

2.1.3 Local Regulation

Relevant WCA LGUs in the study area include:

- Shingle Creek and West Mississippi Watershed Management Commissions
- Basset Creek Watershed Management Commission (BCWMC)
- Minnesota Department of Transportation
- City of Minneapolis

For purposes of the Project, the WCA LGUs listed above retain their approval authority; however, wetland habitat is present only in the Shingle Creek and West Mississippi Watershed Management Commissions, and permits will be required only under this jurisdiction.

2.2 Floodplains

Floodplain management includes federal, state, and local regulatory and permitting authorities. The Jurisdictional authority corresponds to LGU and watershed management organizations. The following sections describe relevant federal, state, and local floodplain regulation.

2.2.1 Federal Regulation

FEMA, under the National Floodplain Insurance Program, has the authority to regulate floodplains and floodways. EO 11988, Floodplain Management, requires all federal agencies to evaluate and, to the extent possible, avoid adverse impacts to floodplain areas which may result in action they administer, regulate, or fund.

EO 11988 specifically requires floodplain impacts to be considered in the preparation of environmental documents. The following four areas must be adequately addressed in the Final EIS:

1. No significant impact on natural or beneficial floodplain values.
2. No significant increased risk of flooding will result.
3. No significant potential for interruption of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route.
4. Will the Project support and/or result in incompatible floodplain development?

EO 14030, Climate Related Financial Risk, was issued on May 20, 2021, reinstating EO 13690, Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input, which was implemented Jan. 30, 2015, and revoked in 2017. This policy sets forth the elevation requirements for non-critical actions. Applicable design standards include:

1. The elevation and flood hazard area that result from using a climate-informed science approach that uses the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science. This approach will also include an emphasis on whether the action is a critical action as one of the factors to be considered when conducting the analysis.
2. The elevation and flood hazard area that result from using the freeboard value, reached by adding an additional two feet to the base flood elevation for non-critical actions and by adding an additional three feet to the base flood elevation for critical actions. The term 'critical action' shall mean any activity for which even a slight chance of flooding would be too great.
3. Base flood elevation is the elevation of surface water resulting from a flood that has a one percent chance of equaling or exceeding that level in any given year.
4. The area subject to flooding by the 0.2 percent (500-year) annual chance flood.
5. The elevation and flood hazard area that results from using any other method identified in an update to Federal Flood Risk Management Standard.

As part of federal floodplain management regulations, the Federal Transit Administration floodplains compliance process and United States Department of Transportation (USDOT) Order 5650.2 prescribe policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts.

2.2.2 State Regulation

DNR has developed State Model Ordinances for floodplain management within the State. The most recent update was issued in November 2022.

The floodplain ordinance was adopted pursuant to the authorization and policies contained in Minn. Stat. ch. 103F, Minnesota Rules parts 6120.5000-6120.6200, the rules and regulations of the National Floodplain Insurance Program in 44 Code of Federal Regulations Parts 59–78, and other applicable legislation in Minnesota Statutes.

The legislature of the State of Minnesota has, in Minn. Stat. ch. 103F and ch. 462, delegated the responsibility to LGUs to adopt regulations designed to minimize flood losses. LGUs must, at a minimum, adopt these standards. DNR is required to review and approve all new and amended floodplain ordinances prior to their adoption to verify that minimum state and federal standards are met.

Development allowed in the floodway district is limited to that which has low flood damage potential. Railroad and light rail construction is allowed with a permit subject to the standards for permitted uses in the floodway and must demonstrate that the development will not result in any of the following during the 1 percent annual chance of flood:

1. Cause a stage increase of 0.00 feet or greater
2. Obstruct flood flows
3. Increase velocities

A permit must be obtained from the Zoning Administrator to verify compliance with all applicable standards. All development must be designed and adequately anchored to prevent floatation, collapse, or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effect of buoyancy, and be constructed by methods and practices that minimize flood damage and with materials and equipment resistant to flood damage.

Any development that would result in a stage increase greater than 0.00 feet may only be allowed with a conditional use permit or a variance; variances must be consistent with the general purpose of the MN State Floodplain Management Standards and the intent of applicable provisions in state and federal law. Though variances may be used to modify permissible methods of flood protection, no variance shall ever permit less flood protection than the Regulatory Flood Protection Elevation (RFPE).

Public Transportation Facilities such as railroads must be elevated to the RFPE where such facilities are essential to the orderly functioning of the area or where failure or interruption would result in danger to public health or safety. Minor or auxiliary roads or railroads may be constructed at a lower elevation where failure or interruption of transportation services would not endanger the public health or safety. All public transportation facilities should be designed to minimize increases in flood elevations. The Project has been defined as an auxiliary transportation facility and must be constructed to meet the minimum RFPE.

In USDOT Order 5650.2, *Floodplain Management and Protection*, Section 8, Environmental Review Process, establishes the policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain impacts in agency actions.

2.2.3 Local Regulation

LGUs and watershed management organizations within the study area are discussed in the following subsections.

2.2.3.1 Mississippi Watershed Management Organization

The Mississippi Watershed Management Organization (MWMO) manages the water resources and habitat within the watershed organization boundaries. The current watershed management plan (2021–2031) sets out goals, strategies, and implementation actions based on past studies and current data on the watershed.

Floodplain programs promote and ensure sound land use development in floodplain areas to promote the health and safety of the public, minimize loss of life, and reduce economic losses caused by flood damage by supporting both corrective and preventative measures for reducing flood damage. Programs often include requirements for zoning, subdivision, or building, and special purpose floodplain ordinances.

The MWMO requires members to have a DNR-approved Floodplain Ordinance as part of the review of local watershed plans for inclusion of appropriate floodplain policies. If no ordinance is applicable, the MWMO requires that there be no encroachment on floodways that results in reduced capacities or expedited flood flows. The only structures allowed in the flood zone are those that have been floodproofed and approved by DNR.

The MWMO does not issue permits or provide approval letters for construction projects. The MWMO will review the Project and work with the member communities to ensure the implementation of its current standards. MWMO's Floodplain standards are that public roadways shall not flood when adjacent to stormwater storage basins or subsurface stormwater management best management practices (BMPs) designated to store the 100-year event.

2.2.3.2 Bassett Creek Watershed Management Commission

BCWMC is a local unit of government that manages water resources within the Bassett Creek watershed per the authorities given in Minn. Stat. ch. 103B and Minnesota Rules ch. 8410. The 2015–2025 Watershed Management Plan sets the guidelines for managing the water resources within the boundaries of BCWMC to achieve the organization's vision. The watershed of Bassett Creek and its three branches cross nine cities: Plymouth, Medicine Lake, Golden Valley, Robbinsdale, Crystal, New Hope, Minnetonka, St. Louis Park, and Minneapolis.

BCWMC does not have a permit program. The BCWMC watershed management plan establishes goals, standards, and requirements that the member cities must incorporate into their official ordinances. BCWMC relies on its member cities to review improvement, redevelopment, and development proposals for compliance with BCWMC requirements and to issue permits only after compliance has been determined.

The BCWMC rules address floodplain alteration within the watershed. The rules prohibit new structures or improvements in the floodplain, which would be subject to damage by the 100-year flood, including basements, public utilities, and streets. Where streets, utilities, and structures currently exist below the 100-year floodplain, BCWMC encourages member cities to remove these features as development/redevelopment allows. Projects within the floodplain must maintain no net loss to floodplain storage and no increase in flood level at any point along the trunk system. BCWMC defines the trunk system as including the Bassett Creek Main Stem (including the East Channel), Grimes Pond, North Rice Pond, South Rice Pond, and inundation areas in Mary Hills Nature Area and Theodore Wirth Regional Park. The BCWMC rules prohibit expansion of existing non-conforming land uses within the floodplain unless fully flood proofed.

2.2.3.3 Shingle Creek and West Mississippi Watershed Management Commissions

The Shingle Creek Watershed Management Commission (SCWMC) and West Mississippi Watershed Management Commissions (WMWMC) are Joint Power Associations of the State under the Minnesota Watershed Act. The Commissions' purpose is to preserve and use natural water storage and retention in the Shingle Creek and West Mississippi watersheds to meet Surface Water Management Act goals. Because many of the communities that are members of the SCWMC are also members of the WMWMC, the Commissions often work jointly on issues of interest to both and have adopted similar standards. The communities within the boundaries include parts of Brooklyn Center, the City of Brooklyn Park, the City of Crystal, Maple Grove, the City of Minneapolis, New Hope, Osseo, Plymouth, the City of Robbinsdale, and Champlin.

The Fourth Generation Watershed Management Plan final draft was issued Feb. 14, 2023. The plan is expected to be officially adopted at the Commissions' May 2023 meeting. This plan complies with the water resource protection requirements under Minn. Stat. ch. 103A through ch. 103G in conformance with Minnesota Rules ch. 8410 and ch. 8420.

The Commissions will review projects involving land-disturbing activities as requested by the local municipalities. It is the policy of the Commissions to prevent and control flooding damage by preserving existing water storage capacity below the 100-year critical flood elevation on all waterbodies in the watershed to minimize the frequency and severity of high water by minimizing development in the floodplain that will unduly restrict flood flows or aggravate known high water problems.

Floodplain alteration or filling shall not cause a net decrease in flood storage capacity below the projected 100-year critical flood elevation unless it is shown that the proposed alteration or filling, together with the alteration or filling of all other land on the affected reach of the waterbody to the same degree of encroachment as proposed by the applicant, will not cause high water or aggravate flooding on other land and will not unduly restrict flood flows. The Commissions require compensatory storage for floodplain fill; compensatory storage is the excavated volume of material below the floodplain elevation required to offset floodplain fill.

2.2.3.4 City of Brooklyn Park

The City of Brooklyn Park has adopted zoning regulations to manage land uses in the mapped floodplain. These regulations include the minimum federal and state regulations, which are enforced on the 1 percent chance (100-year) floodplain that is mapped on the Flood Insurance Rate Map for the City of Brooklyn Park. The City of Brooklyn Park ordinance requires that no fill, excavation, or storage of materials or equipment that obstructs flows or increases flood elevations will be permitted within the flood fringe or floodway. The City's Zoning Code is the regulatory document that implements the Comprehensive Plan. The plan was accepted for implementation in January 2020.

There are two watersheds in the City of Brooklyn Park: Shingle Creek watershed in the south and West Mississippi watershed in the north. Development proposals affecting the watersheds are reviewed by the corresponding Commissions. The City of Brooklyn Park Local Water Management Plan goal is to provide a reasonable level of protection within the City to limit potential flood damage, for which the following policies have been established: Prohibit encroachment that will reduce the storage capacity of floodplains, unless mitigating action is undertake and allow only structures that have been flood-proofed or will not be subject to excessive damage in the floodway fringe.

For all development and redevelopment projects within the 100-year floodplain regardless of project size, compensating storage is required to mitigate floodplain fill. City Local Water Management Plan policy 2.1 prohibits encroachment that will reduce the storage capacity of floodplains unless mitigation action is undertaken. Ch. 152.515.B.3 requires the designated engineer to "…compute the floodway necessary to convey or store the regional flood without increasing flood stages and providing compensation storage volumes on a 1:1 basis below the 100-year flood elevation."

The City of Brooklyn Park is set to host five out of the 11 light rail stations in the Project, with the Project Alignment spanning about 5 miles along CR 81 and W Broadway Ave in the north/south direction through the City of Brooklyn Park. The vision for the station areas is to reinforce and strengthen the unique characteristics of each neighborhood surrounding the five stations. The Station Area Plans identify infrastructure improvements, redevelopment options, and opportunity sites within a half-mile of each stop. The Brooklyn Park Station Area planning process was a joint effort of Hennepin County and the City of Brooklyn Park.

FEMA revised the Flood Insurance Study and Flood Insurance Rate Map for Hennepin County Nov. 4, 2016.

2.2.3.5 City of Crystal

The City of Crystal Floodplain Overlay Ordinance ch. 515.09 states that no structure, fill (including roads and levees), deposit, obstruction, storage of materials or equipment, or other uses may be allowed as a conditional use in the floodway that will cause any increase in the stage of the 100-year regional flood or cause an increase in flood damages in the reaches affected. Floodplain development shall not adversely affect the hydraulic capacity of the channel and adjoining floodplain of any tributary watercourse or drainage system where a floodway or other encroachment limit has not been specified on the Official Zoning Map.

2.2.3.6 City of Robbinsdale

The City of Robbinsdale Floodplain Management Ordinance Section 530.01 states that no structure, fill (including roads and levees), deposit, obstruction, storage of materials or equipment, or other uses may be allowed as a conditional use in the floodway that will cause any increase in the stage of the 100-year regional flood or cause an increase in flood damages in the reaches affected. Floodplain development shall not adversely affect the hydraulic capacity of the channel and adjoining floodplain of any tributary watercourse or drainage system where a floodway or other encroachment limit has not been specified on the Official Zoning Map.

2.2.3.7 City of Minneapolis

The legislature of the State of Minnesota has, in Minn. Stat. ch. 103F and ch. 462, delegated the responsibility to LGUs to adopt regulations designed to minimize flood losses.

The City of Minneapolis is a member organization of the Mississippi Watershed Management Organization. The City administers and enforces DNR-approved ordinances, including review of development applications, to ensure compliance with ordinance and administers the Minneapolis Flood Mitigation Program, designing and implementing flood risk reduction projects to minimize the impact on the water quality of the receiving surface water in addition to providing localized flooding relief.

Ordinance 551.1610 regulates development in the flood hazard areas of the City of Minneapolis. The ordinance states that linear projects within the floodplain shall be designed to minimize the increases in flood elevations and shall be compatible with local comprehensive floodplain development plans. Protection to the RFPE shall be provided where failure or interruption of public facilities would result in danger to public health or safety where facilities are essential to orderly functioning of the area. Conditional uses in the floodway district are allowed provided such uses shall have a low flood damage potential, shall not cause an increase in the stage of the regional flood, or shall not cause an increase in flood damages in the reaches affected.

2.3 Findings

2.3.1 Wetlands

Twenty-six basins were delineated within the study area and are depicted in the Supplemental Draft EIS Chapter 5, Section 5.3.3, in Figure 5-9 through Figure 5-15. See Figure 2-1 for a map of the USFWS NWI and the DNR PWI for the entire Project Alignment. Some of the delineated basins are natural wetlands, whereas others are excavated in uplands for the purpose of stormwater management. Delineated basins are described in narrative below and summarized in Table 2-1. The wetlands are grouped by wetland habitat classification.

Figure 2-1 Overview of Wetlands near the Project

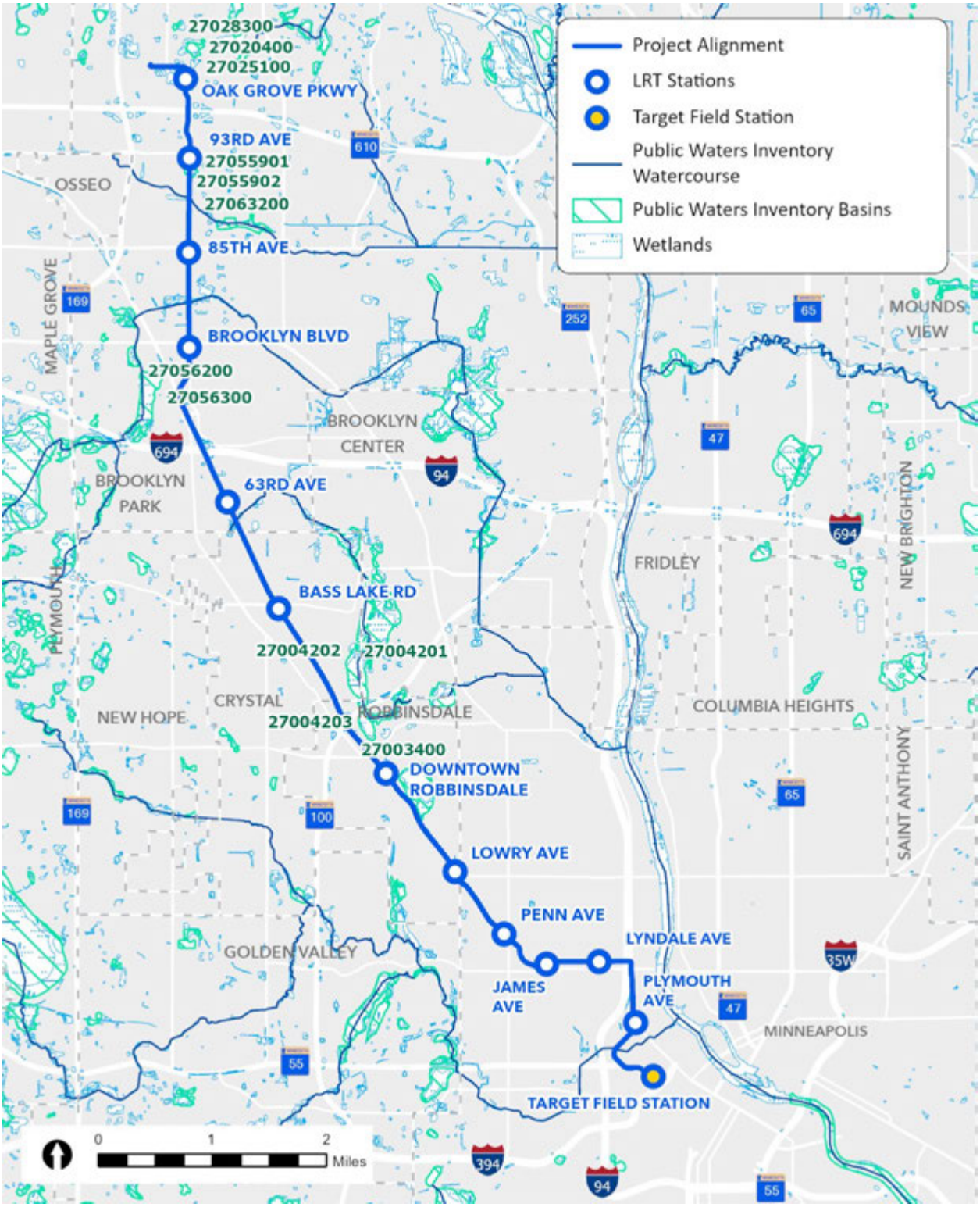


Table 2-1 Summary of Delineated Basins in the Study Area

Wetland ID	Size (acres)	NWI Type	Hydric Soil Rating	Cowardin Class.[1]	Eggers & Reed Class.[2]	Circ. 39 Class.[3]	Notes, Basin ID in 2015 Delineation
1	0.06	PEM1A	Predominately Hydric	PEM1A	Seasonally Flooded Basin	Type 1	Isolated basin, 2015 Basin ID #7
2	0.48	PEM1A	Predominately Hydric	PEM1Ax	Seasonally Flooded Basin	Type 1	Storm pond, 2015 Basin ID #14
3	0.76	PEM1C	Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, 2015 Basin ID #16
4	0.27	PEM1C	Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, not delineated in 2015
5	0.35	PEM1A/ PEM1C	All Hydric	PEM1C	Shallow Marsh	Type 3	Wetland extends off property, 2015 Basin ID #19
6	0.51	PEM1A/ PEM1C	All Hydric	PEM1C	Shallow Marsh	Type 3	Wetland extends off property, 2015 Basin ID #18
7	3.35	PEM1Ax	Nonhydric	PEM1Ax	Seasonally Flooded Basin	Type 1	Storm pond, 2015 Basin ID #21
8	1.33	PEM1F	Nonhydric	PEM1C	Shallow Marsh	Type 3	Adjacent to Shingle Creek, 2015 Basin ID #22
9	0.08	PUBGx	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond, not delineated in 2015
10	0.08	None	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond, not delineated in 2015
11	0.26	None	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond, not delineated in 2015
12	1.01	PEM1C	All Hydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond, 2015 Basin ID #29
13	0.83	PFO1A	Predominately Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, not delineated in 2015
14	0.05	PEM1C	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond adjacent to Twin Lake, not delineated in 2015

Wetland ID	Size (acres)	NWI Type	Hydric Soil Rating	Cowardin Class.[1]	Eggers & Reed Class.[2]	Circ. 39 Class.[3]	Notes, Basin ID in 2015 Delineation
15	0.18	PUBG	Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Roadside ditch near Crystal Lake, not delineated in 2015
16	0.43	PEM1Ad	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Roadside ditch near Crystal Lake, not delineated in 2015
17	0.12	PUBF	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Roadside ditch near Crystal Lake, not delineated in 2015
18	0.11	PFO1A	Predominately Hydric	PFO1A	Hardwood Swamp	Type 1	Isolated basin, 2015 Basin ID #6
19	0.311	PEMA/ PFO1A	Partially Hydric	PEM1B	Fresh (Wet) Meadow	Type 2	Wetland extends off property, 2015 Basin ID #11
20	0.04	None	Predominately Hydric	PEM1Ad	Seasonally Flooded Basin	Type 1	Roadside ditch, 2015 Basin ID #10
21	0.14	PEMA/ PFO1A	Partially Hydric	PEM1B	Fresh (Wet) Meadow	Type 2	Wetland extends off property, 2015 Basin ID #13
22	0.03	None	Predominately Nonhydric	PEM1Ad	Seasonally Flooded Basin	Type 1	Roadside ditch, 2015 Basin ID #26
	0.03			PEM1Cd	Shallow Marsh	Type 3	
23	0.23	PEM1Cx	Nonhydric	PEM1Cx	Shallow Marsh	Type 3	Storm pond, not delineated in 2015
24	0.12	PABGx	Predominately Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, not delineated in 2015
25	0.24	None	Nonhydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, not delineated in 2015
26	0.10	PFO1A	Predominately Hydric	PEM1A	Seasonally Flooded Basin	Type 1	Isolated basin, not delineated in 2015
unnamed	0.52	PEM1A	Predominately Hydric	PUBGx	Shallow Open Water Community	Type 5	Storm pond, not delineated in 2015

2.3.2 Wetland Classification

Wetland classification follows the methods described in *Wetlands and Deepwater Habitats of the United States* (Cowardin, et al. 1979) that is used by the USFWS NWI. The Circular 39 classification (Shaw and Fredine 1956) is also provided. Wetland classification is also provided following *Wetland Plants and Plant Communities of Minnesota and Wisconsin* (Eggers and Reed 2014), which is used for classifying wetlands for permitting-related activities under the WCA and the USACE *Final St. Paul District Policy for Wetland Compensatory Mitigation in Minnesota* (USACE 2009).

2.3.2.1 Seasonally Flooded Basin

Wetlands 1, 2, 7, 18, 20, 22, and 26 are classified as Seasonally Flooded Basin/Hardwood Swamp wetland communities. Basins 2 and 7 are classified as stormwater ponds and are not jurisdictional by WCA or USACE. Wetlands 20 and 22 are roadside ditches and are only jurisdictional by USACE. Wetlands 1 and 26 are natural basins under the jurisdiction of both WCA and USACE. The wetland vegetation in the seasonally flooded basins is characterized by the dominance of reed canary grass (*Phalaris arundinacea – FACW)* in the herbaceous layer. Quaking aspen (*Populus tremuloides – FAC)* was along the fringes of many of the seasonally flooded basins.

2.3.2.2 Hardwood Swamp

Wetland 18 is classified as a Hardwood Swamp wetland community. It is an isolated basin that is under the jurisdiction of WCA and USACE. Quaking aspen (*Populus tremuloides – FAC)* was also common within the hardwood swamp.

2.3.2.3 Fresh (Wet) Meadow

Wetlands 19 and 21 are classified as Fresh (wet) Meadow wetland communities. They are natural basins under the jurisdiction of both WCA and USACE. The wetland vegetation in fresh (wet) meadow wetlands is characterized by the dominance of reed canary grass and stinging nettle (*Urtica dioica – FACW)*.

2.3.2.4 Shallow Marsh

Wetlands 5, 6, 8, 9, 10, 11, 12, 14, 16, 17, 22, and 23 are classified as Shallow Marsh wetland communities. Basins 9, 10, 11, 12, 14, and 23 are classified as stormwater ponds and are not jurisdictional by WCA or USACE. Wetlands 16, 17, and 22 are roadside ditches and are only jurisdictional by USACE. Wetlands 5, 6, and 8 are natural basins under the jurisdiction of both WCA and USACE. The wetland vegetation in shallow marsh wetlands is characterized by the dominance of hybrid cattail (*Typha x glauca – OBL)* and reed canary grass on the fringes.

2.3.2.5 Shallow Open Water Community

Wetlands 3, 4, 13, 15, 24, and 25 are classified as Shallow Open Water wetland communities. Wetlands 15 is a roadside ditch that is only jurisdictional by USACE, while the remaining basins (3, 4, 13, 24, and 25) are classified as stormwater ponds and are not jurisdictional by WCA or USACE. The wetland vegetation in shallow marsh wetlands is characterized by the dominance of hybrid cattail (*Typha x glauca – OBL),* common duckweed (*Lemna minor – OBL),* and reed canary grass on the fringes.

2.3.3 Streams and Other Aquatic Resources

There are four stream crossings located within the study area. Shingle Creek, Mattson Brook, and the unnamed creek near the airport are crossings classified as DNR public watercourses. Bassett Creek is also a public watercourse, apart from a tunneled section directly underneath the Project Alignment. Along its entire length, Bassett Creek is currently listed on the Minnesota Pollution Control Agency 303(d) List of Impaired Waters. Aquatic recreation is impaired because of high fecal coliform. Aquatic life is impaired because of high chloride and stressors affecting the fish community in Bassett Creek.

In addition to the above watercourses, the Project intersects, or is directly adjacent to, several public water basins (PWs) and public water wetlands (PWWs). A total of two basins are located within the Project's limits of disturbance (LOD), and three are adjacent to the Project Alignment.

Table 2-2 summarizes the aquatic resources that are in (or directly adjacent to) the study area that are designated as DNR public waters.

Table 2-2 Public Waters Summary

Public Waters ID	Size [1]	Notes
27-559 W (Unnamed PWW)	0.70 acre	East side of W Broadway Ave. Two features are associated with this PWW basin ID on either side of W Broadway Ave.
27-559 W (Unnamed PWW)	0.46 acre	West side of W Broadway Ave. Two features are associated with this PWW basin ID on either side of W Broadway Ave.
119039 (Mattson Brook)	615 linear feet	Is a tunneled section within the Project's LOD.
84663 (Shingle Creek)	234 linear feet	Flows east under the roadway through culvert.
101730 (Unnamed Creek)	139 linear feet	Flows east under the roadway through culvert.
27-42 P (Unnamed PW)	0 (outside the Project Alignment)	Two features are associated with this PW on the eastern side of Bottineau Blvd. Both are completely outside the Project's LOD.
27-34 P (Unnamed PW)	0 (outside the Project Alignment)	Flows east under the roadway through culvert.
Bassett Creek	292 linear feet	Bassett Creek Tunnel crosses the Project Alignment at 10th south of the viaduct.

Source: DNR Public Waters Database (2014).

[1] Size includes areas of aquatic resources in the area of investigation only. They may extend beyond the limits of the area investigated.

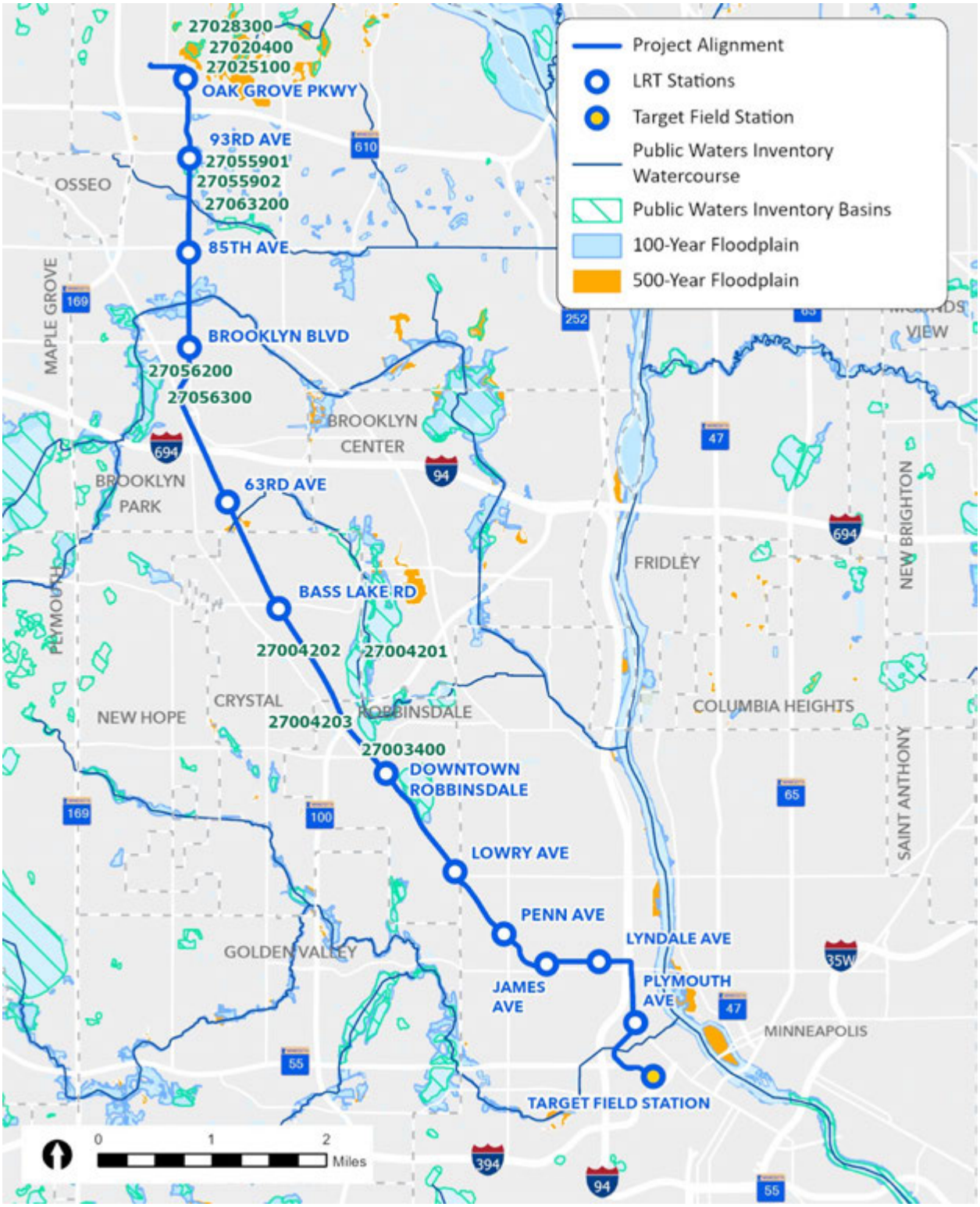
2.3.4 Floodplains

The study area for floodplain and floodway impacts is defined as the area coinciding with the Project's LOD, including associated facilities. Three potential floodplain encroachments resulting from the Project have been identified in the study area, all located within the City of Brooklyn Park (Table 2-3), and an overview of floodplains in the study area is shown in Figure 2-2.

Table 2-3 Floodplains in the Study Area

Water Body	Type of Encroachment
Century Channel Ponds	Century Channel ponds are located on the south side of 92nd Ave N (bisected by W Broadway Ave). This hydrologically isolated basin is mapped as a 100-year floodplain. Drainage improvements to the Century Channel ponds are proposed as part of the W Broadway Ave area road reconstruction project.
Setzler Pond	Located in the northwest quadrant of 89th Ave N and W Broadway Ave, this pond is used for stormwater management and is mapped as a 100-year floodplain. Setzler Pond was created as a regional rate control pond; much of the stormwater that flows into Setzler Pond is runoff from the commercial and industrial land surrounding the pond from the north and west, as well as large contributing areas in the Cities of Maple Grove and Osseo. Runoff from a portion of W Broadway Ave between 89th Ave N and Setzler Pkwy is conveyed to the pond via ditches. Setzler Pond discharges through an existing culvert traveling below W Broadway Ave, reconnecting into Edinbrook/Century Channel. Drainage improvements to Setzler Pond are proposed as part of the W Broadway Ave area road reconstruction project. The pond would continue to receive Project and off-site drainage. It is anticipated that with additional impervious area adjacent to the pond, a new outlet control structure would be required before discharging to Edinbrook/Century Channel.
Shingle Creek	Shingle Creek is managed by SCWMC. Shingle Creek receives runoff from the City of Brooklyn Park as well as the Cities of Maple Grove, New Hope, Osseo, and Plymouth. Shingle Creek is the main stormwater conveyance feature in this area. The 100-year floodplain and floodway associated with Shingle Creek crosses the Project Alignment at the existing culvert crossing at W Broadway Ave. The areas adjacent to Shingle Creek on the east and west sides of W Broadway Ave are mapped as a 100-year floodplain, and the channel of Shingle Creek is mapped as floodway. The estimated total area of floodplain identified in this assessment is specific to the area of floodplain within the study area, which is approximately from the eastern edge of the mapped floodplain at Candlewood Dr to the western edge at CR 81.
Stormwater Pond at TH 610	This stormwater pond is located within the southeast ramp of the intersection of TH 610 and W Broadway Ave. This permanent stormwater management feature is mapped as the 100-year floodplain with an elevation of 869 National Geodetic Vertical Datum of 1929. Drainage improvement and volumetric impact analysis will be completed as part of the final design phases of the project.

Figure 2-2 Overview of Potential Floodplain Impacts from Project



2.4 Environmental Consequences

2.4.1 Wetland Impacts Within the Study Area

Wetlands were delineated along the Project and associated facilities during the late summer/early fall of 2022. Table 2-4 describes a portion of the delineated basins as being currently used as stormwater ponds and others as being natural wetland basins. The wetlands inventoried along with potential impacts by wetland type are summarized in Table 2-5 per delineated basin. The jurisdictional status of all delineated basins in the study area with respect to WCA and USACE has been established based on agency comments and published information. Formal consultation with agencies on jurisdiction has not yet occurred. Detailed wetland impacts are shown in Figure 2-3 through Figure 2-9.

Standard erosion control BMPs would be used for work within adjacent wetland and aquatic resources where necessary, minimizing impacts to the waterbodies down slope and to aquatic wildlife.

Table 2-4 Impacts to Delineated Basins from the Project by Wetland Type

Circular 39 Wetland Classification [1]	Eggers and Reed Wetland Classification [2]	USACE Jurisdictional Impacts (Natural Basins and Ditches)	WCA Jurisdictional Impacts (Natural Basins)	Not Regulated Impacts (Stormwater Ponds[3])	Total Impacts
Type 1	Seasonally Flooded Basin	0.1949	0.1653	1.0324	1.2273
Type 1	Hardwood Swamp	0.1092	0.1092	0.00	0.1092
Type 2	Fresh (wet) Meadow	0.4524	0.4524	0.00	0.4524
Type 3	Shallow Marsh	2.2026	1.6225	2.2013	4.4039
Type 5	Open Water	0.1777	0.00	2.1989	2.3767
	Total	**3.1368**	**2.3494**	**5.4326**	**8.5694**

[1] Plant communities classified based on USFWS Circular 39.

[2] Plant communities classified based on *Wetland Plants and Plant Communities of Minnesota and Wisconsin* by Eggers and Reed (1997) (USACE St. Paul District).

[3] Stormwater ponds constructed in upland are not jurisdictional by USACE or WCA.

Table 2-5 Wetland Impacts Data per Delineated Basin

Wetland ID	Potential Wetland Impacts (acres)	Cowardin Class	Eggers & Reed Class [1]	Circular 39 Class [2]	Description	USACE Jurisdiction	WCA Jurisdiction
1	0.0634	PEM1A	Seasonally Flooded Basin	Type 1	Natural basin	Yes	Yes
2	0.4843	PEM1Ax	Seasonally Flooded Basin	Type 1	Storm pond	No	No
3	0.7616	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No
4	0.2554	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No
5	0.3026	PEM1C	Shallow Marsh	Type 3	Natural basin	Yes	Yes
6	0.4927	PEM1C	Shallow Marsh	Type 3	Storm pond	No	No
7	0.5481	PEM1Ax	Seasonally Flooded Basin	Type 1	Storm pond	No	No
8	1.3200	PEM1C	Shallow Marsh	Type 3	Natural basin	Yes	Yes
9	0.0815	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
10	0.0823	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
11	0.2630	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
12	1.0089	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
13	0.8220	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No
14	0.0471	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
15	0.1778	PUBGx	Shallow Open Water Community	Type 5	Roadside ditch	Yes	No
16	0.4283	PEM1Cx	Shallow Marsh	Type 3	Roadside ditch	Yes	No
17	0.1170	PEM1Cx	Shallow Marsh	Type 3	Roadside ditch	Yes	No

Wetland ID	Potential Wetland Impacts (acres)	Cowardin Class	Eggers & Reed Class [1]	Circular 39 Class [2]	Description	USACE Jurisdiction	WCA Jurisdiction
18	0.1092	PFO1A	Hardwood Swamp	Type 1	Natural basin	Yes	Yes
19	0.3085	PEM1B	Fresh (Wet) Meadow	Type 2	Natural basin	Yes	Yes
20	0.1439	PEM1Ad	Seasonally Flooded Basin	Type 1	Roadside ditch	Yes	No
21	0.0297	PEM1B	Fresh (Wet) Meadow	Type 2	Natural basin	Yes	Yes
22	0.0347	PEM1Ad	Seasonally Flooded Basin	Type 1	Roadside ditch	Yes	No
	0.2259	PEM1Cd	Shallow Marsh	Type 3	Roadside ditch	Yes	No
23	0.1223	PEM1Cx	Shallow Marsh	Type 3	Storm pond	No	No
24	0.2376	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No
25	0.1019	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No
26	0.2863	PEM1A	Seasonally Flooded Basin	Type 1	Natural basin	Yes	No
unnamed	0.0634	PUBGx	Shallow Open Water Community	Type 5	Storm pond	No	No

[1] Wetland types classified based on *Wetland Plants and Plant Communities of Minnesota and Wisconsin* by Eggers and Reed (USACE St. Paul District).

[2] Wetland types classified based on USFWS Circular 39.

Figure 2-3 Detail of Wetlands near the Oak Grove Pkwy Station Area

Figure 2-4 Detail of Wetlands near the 85th and 93rd Ave N Station Areas

Figure 2-5 Detail of Wetlands near the Brooklyn Blvd Station Area

Figure 2-6 Detail of Wetlands near the 63rd Ave N Station Area

Figure 2-7 Detail of Wetlands near the Bass Lake Rd Station Area

Figure 2-8 Detail of Wetlands North of the Downtown Robbinsdale Station Area

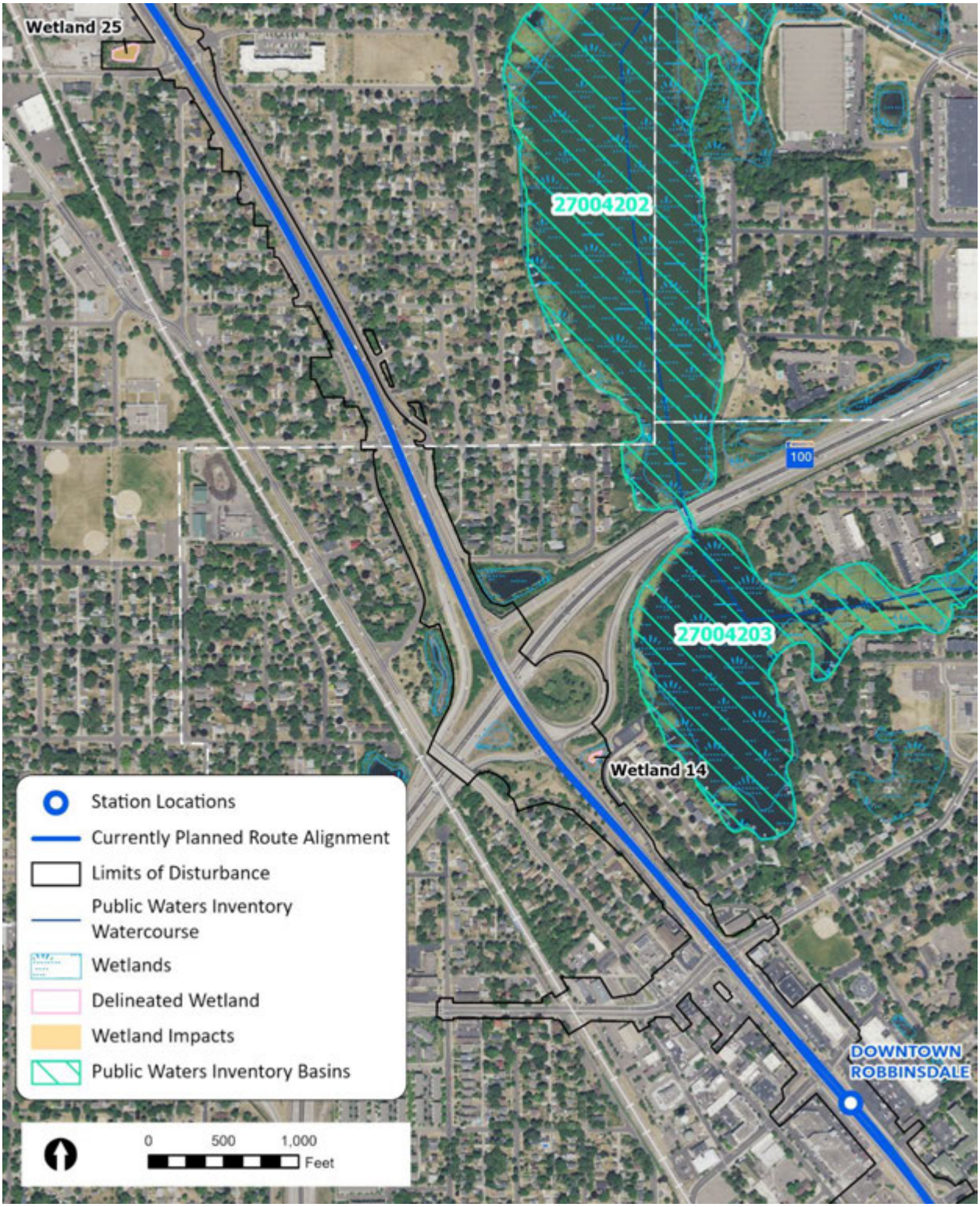
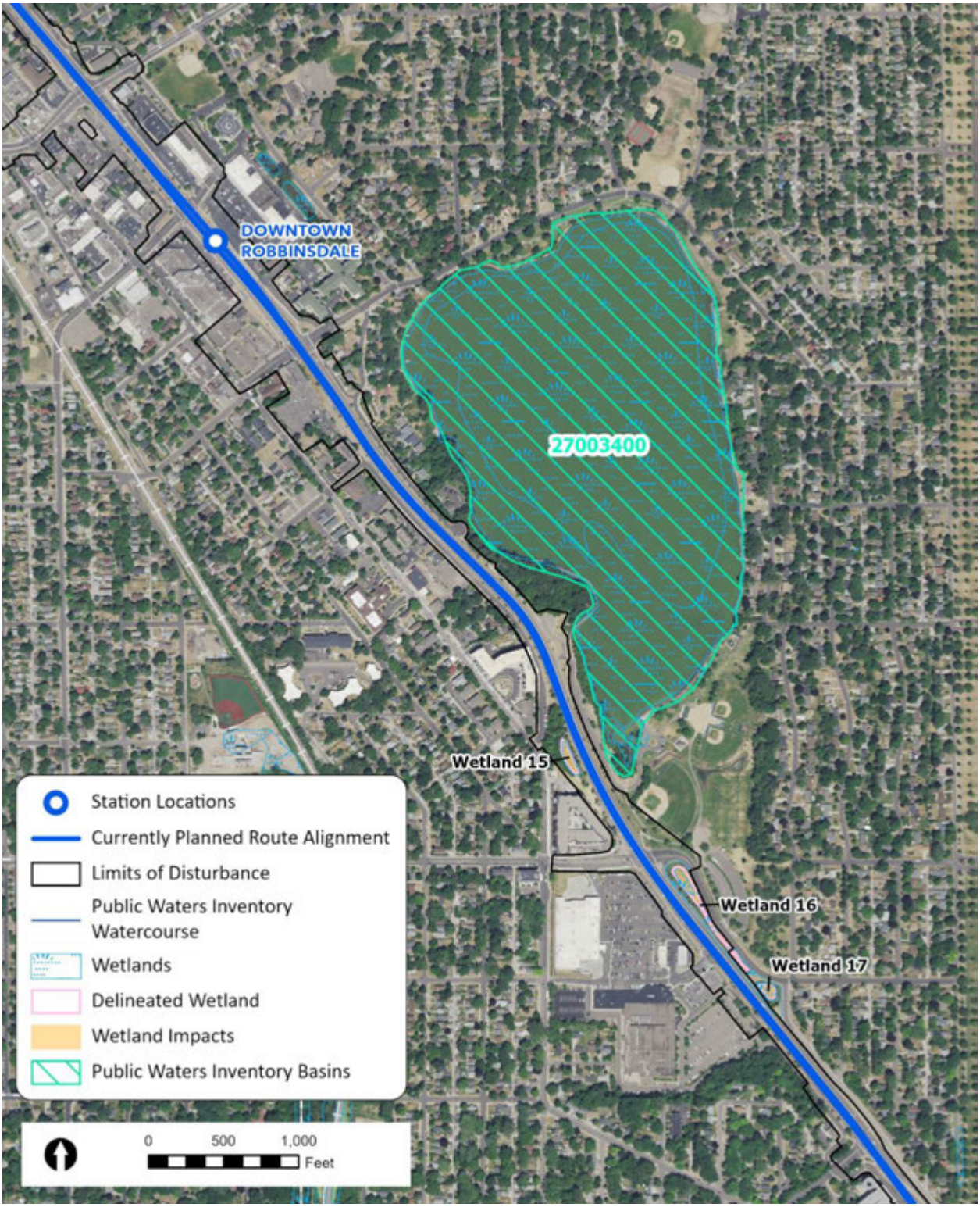


Figure 2-9 Detail of Wetlands near the Downtown Robbinsdale Station Area



2.4.2 Stream and Floodplain Impacts Within the Study Area

Impacts to three streams anticipated from the Project are presented in Table 2-6. These impacts are associated with widening the roadway to accommodate the rail and lengthening culverts. Impacts are outlined below.

Table 2-6 Stream Impacts within the Study Area

Stream Name	Impact Action	Potential Impact (linear feet)
Mattson Brook	Culvert Lengthening	441.82
Shingle Creek	Culvert Lengthening	238.86
Unnamed Creek	Culvert Lengthening	142.10
Total		**822.78**

Impacts may be the result of excavation or fill required for the Project, or there may be excavation impacts because of construction of permanent stormwater management features. The anticipated impacts of the Project are summarized in Table 2-7 by water body. Impact areas are shown in Figure 2-10, Figure 2-11, and Figure 2-12.

Standard erosion control BMPs would be used for work within adjacent wetland and aquatic resources where necessary, minimizing impacts to the waterbodies down slope and to aquatic wildlife.

Table 2-7 Potential Area of Impacted Floodplains by Water Body

Water Body	Type of Encroachment	Potential Area of Floodplain Impact (Acres)	Estimated Total Area of Floodplain (Acres)
Century Channel ponds	Transverse	0.75	5.61
Setzler Pond	Transverse	1.99	5.13
Shingle Creek	Transverse	9.47	94.8
Stormwater Pond at TH 610	Transverse	0.05	2.56

As part of the environmental review process and as required by the Federal Transit Administration and USDOT Order 5650.2, this impact analysis includes the evaluation of the potential impact on natural and beneficial floodplain values.

The preliminary estimated potential area of impact on existing floodplain resources within the study area is 12.56 acres, which is approximately 11 percent of the total area of floodplain resources evaluated, estimated as 108.10 acres, as described in Table 2-7. Potential volumetric impacts will be identified in future analysis.

Figure 2-10 Potential Floodplain Impacts to Stormwater Pond at TH 610

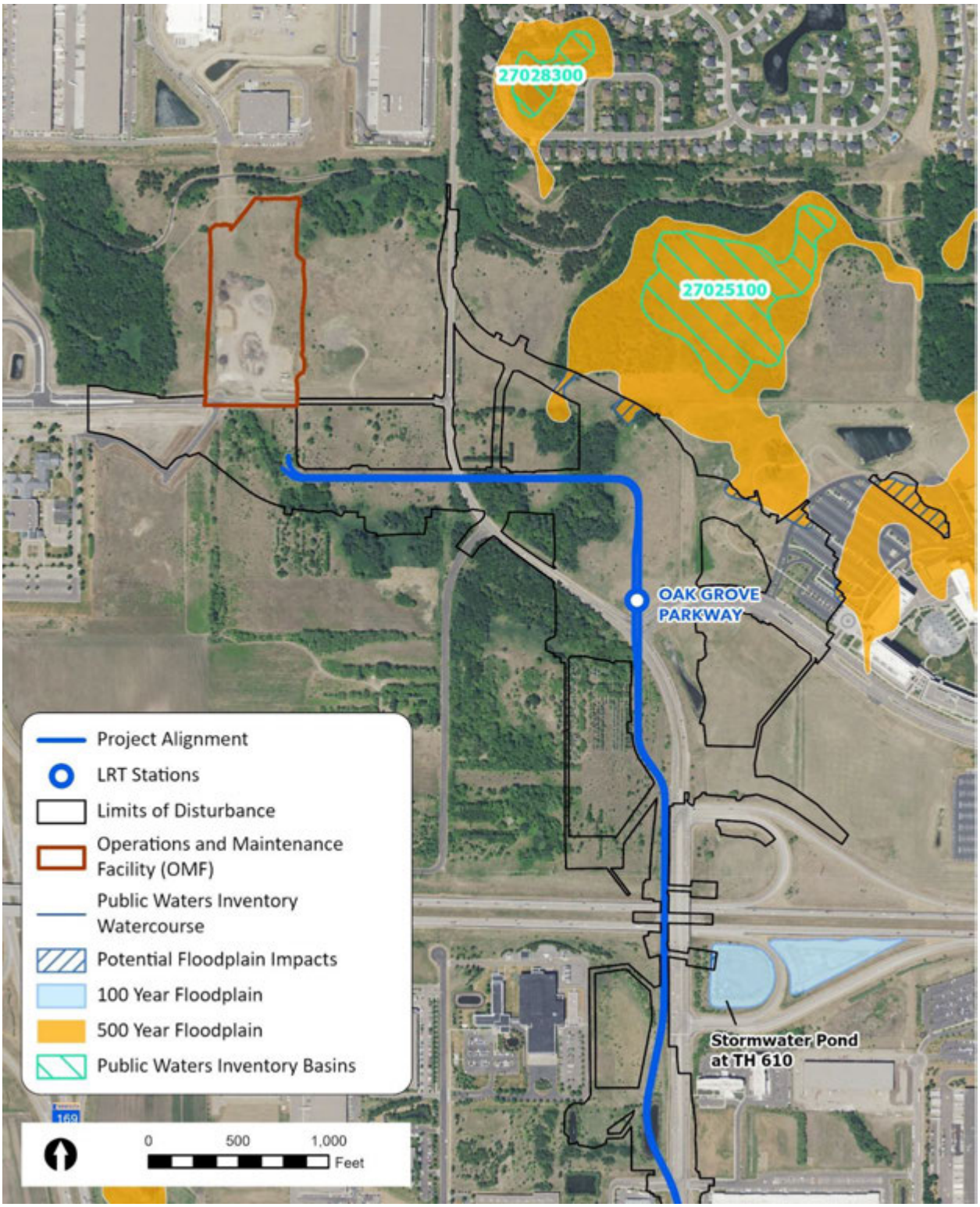
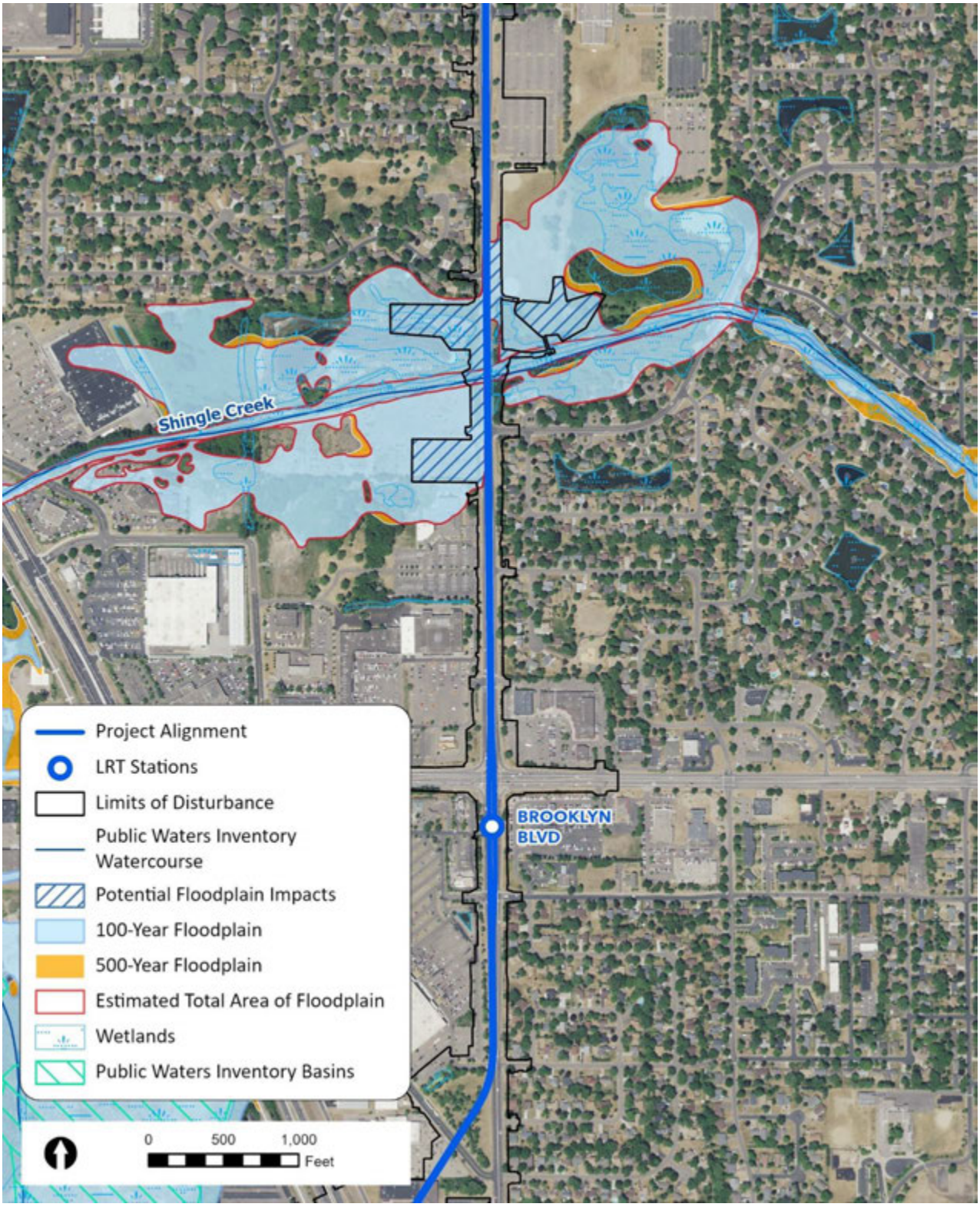


Figure 2-11 Potential Floodplains Impacts to Century Channel Ponds and Setzler Pond

Figure 2-12 Potential Floodplain Impacts to Shingle Creek



Mitigation measures including compensatory storage will provide direct support for the base floodplain's development. Compensatory storage will be determined in future technical reports as Project design advances and as required by jurisdictional authorities. BMPs will be incorporated as part of the Project final design to ensure the restoration and preservation of the natural and beneficial floodplain values potentially impacted by the Project.

Permanent stormwater management features and improvements to existing infrastructure aim to provide direct support for the preservation of surface waters and floodplain resources.

2.5 Mitigation Measures

2.5.1 Wetlands

Throughout the planning and design phases of the Project, wetland impacts will be avoided and minimized to the extent practicable. For those wetland impacts that cannot be avoided, suitable wetland mitigation will be required.

The current replacement ratio for wetland credits in the Twin Cities Metropolitan Area including the study area is 2.5 to 1, although under certain conditions it may be reduced to 2 to 1. Such conditions include the use of mitigation that is functioning prior to wetland impacts, mitigation using the same wetland type as the impacts, and mitigation geographically close to the impacts. The final amount, type, and location of wetland replacement or bank credits will be determined by the respective permitting agencies during final design and the permit review process.

Wetland mitigation for the Project will be accomplished through the purchase of private wetland credits from existing mitigation banks in suitable Major Watersheds and Bank Service Areas (BSAs).

A total of 8.5694 acres of wetland impacts are identified for the Project. There are a total of 12.0166 acres of wetland habitat present within the study area. There are no temporary impacts associated with the Project. However, not all wetland impacts associated with the Project require mitigation. 5.4326 acres of the total impact are identified to stormwater ponds, and those impacts are not regulated nor require mitigation under the WCA or USACE. Additionally, of the total impact amount, 0.2120 acre of wetland are associated with wet ditches and are considered incidental by WCA and do not count toward the permit threshold for USACE (guidance from USACE). Impacts to linear ditches, provided the ditch is not constructed in a wetland, do not count toward the impact thresholds of the Transportation Regional General Permit (2017-02361), Section D(4)b. All the impacts to (wet) ditches along County State Aid Highway 26 (CSAH 26) are considered linear ditches as defined by USACE.

A total of 2.3494 acres of the wetland impacts within the Project will require mitigation under USACE requirements and the WCA requirements. It is anticipated that these impacts will be mitigated at a 2:1 ratio, and 4.6988 credits will be purchased to satisfy the mitigation needs for this Project.

The entire Project Alignment lies within the “<50 percent area” of Minnesota, Major Watershed #20 (Mississippi River – Twin Cities) and BSA 7. Thus, purchases of private wetland mitigation credits will first be sought within the “<50 percent area” of Minnesota, BSA 7, and Major Watershed #20. Purchase of

credits from Hennepin County banks will be prioritized. Wetland banking will be finalized during the permit application process, but it appears that sufficient credit is available within BSA 7, with the majority available within Hennepin County.

Standard erosion control BMPs will be used for work within adjacent wetland and aquatic resources where necessary, minimizing impacts to the waterbodies down slope and to aquatic wildlife.

2.5.2 Stream and Other Aquatic Resource

Stream mitigation is not anticipated to be required for the Project. According to USACE's Impact Severity Tier table derived from Debit Calculator workbook (Table 2-8), USACE has classified any impacts on streams resulting from the project as Tier 1 or Tier 2 impacts. The impact severity tier categorizes the adverse effects on stream functions, ranging from no loss to total loss. Tier 0 signifies no permanent loss, while Tiers 1–4 represent varying impacts from proposed activities. Information to determine the tier can be derived from project plans, documents, permit applications, and discussions with the Corps.

Table 2-8 USACE Impact Severity Tiers and Example Activities[1]

Tier	Description (Impacts to Function-Based Parameters)	Example Activities
0	No permanent impact on any of the key function-based parameters	Bioengineering of streambanks
1	Impacts to riparian vegetation and/or lateral migration	Bank stabilization and utility crossings
2	Impacts to riparian vegetation, lateral migration, and bed form diversity	Utility crossings, bridges, bottomless arch culverts
3	Impacts to riparian vegetation, lateral migration, bed form diversity, and floodplain connectivity	Bottomless arch culverts, channelization/grading projects
4	Impacts to riparian vegetation, lateral migration, bed form diversity, and floodplain connectivity. Potential impacts to temperature, processing of organic matter, and macroinvertebrate and fish communities	Channelization, bottomless arch culverts, weirs/impoundments
5	Loss of all aquatic functions	Pipes, relocation, fill of channels from mining or development

Source:
https://www.spa.usace.army.mil/Portals/16/docs/civilworks/regulatory/Mitigation/COMP_v1_AppendixA_20190510.pdf?ver=2020-06-29-123232-010 COMP_v1_AppendixA_20190510.pdf (army.mil)

Based on the information provided, the four waterways or streams within the study area are highly urbanized and controlled by man-made measures. Consequently, any impacts to these streams would likely be classified as Tier 1 or Tier 2 impacts by USACE.

USACE has established thresholds for impacts requiring mitigation. For Tier 1 impacts, the threshold is 900 linear feet, while for Tier 2 impacts, it is 500 linear feet. All impacts are below the 500 linear feet threshold (see Table 2-6), so mitigation is not anticipated to be required.

Although the exact construction limits have not yet been defined, the maximum length of impacts on each waterway is outlined in Table 2-6. All impacts fall below the thresholds outlined in the St. Paul District Stream Mitigation Procedures (v1).[i]

2.5.3 Floodplain

Throughout the planning and design phases of the Project, floodplain impacts will be avoided and minimized to the extent practicable. For those floodplain impacts that cannot be avoided, suitable mitigation measures will be required. At the time of publication of this technical report, volumetric floodplain impacts have not been identified. After the volume of floodplain impact is determined, mitigation measures will be defined to create compensatory storage to offset any loss of flood storage capacity. Each jurisdictional authority has set specific compensatory storage requirements.

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